request: 89,465 (81,765 reporting hours + 7,700 recordkeeping hours) or an average of 125 hours per response (81,765 reporting burden hours/655 responses) and an average of 13 hours per recordkeeper (7,700 recordkeeping burden hours/601 recordkeepers).

9. *An indication of whether Section 3507(d), Pub. L. 104–13 applies:* Not applicable.

10. *Abstract:* Part 70 establishes requirements for licenses to own, acquire, receive, possess, use, and transfer special nuclear material. The information in the applications, reports, and records is used by NRC to make licensing and other regulatory determinations concerning the use of special nuclear material. The revised estimate of burden reflects the addition of requirements for documentation for termination or transfer of licensed activities, and modifying licenses.

A copy of the final supporting statement may be viewed free of charge at the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Room O–1 F21, Rockville, MD 20852. OMB clearance requests are available at the NRC worldwide Web site: *http://www.nrc.gov/public-involve/doc-comment/omb/index.html*. The document will be available on the NRC home page site for 60 days after the signature date of this notice.

Comments and questions should be directed to the OMB reviewer listed below by September 16, 2004. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given to comments received after this date.

OMB Desk Officer, Office of Information and Regulatory Affairs (3150–0009), NEOB–10202, Office of Management and Budget, Washington, DC 20503.

Comments can also be submitted by telephone at (202) 395–3087.

The NRC Clearance Officer is Brenda Jo. Shelton, 301–415–7233.

Dated at Rockville, Maryland, this 11th day of August 2004.

For the Nuclear Regulatory Commission.

Beth St. Mary,

Acting NRC Clearance Officer, Office of the Chief Information Officer.

[FR Doc. 04–18730 Filed 8–16–04; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. 50–400]

Carolina Power & Light Company, et al.

Notice of Withdrawal of Application for Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has granted the request of Carolina Power & Light Company (the licensee) to withdraw its December 8, 2003, application for proposed amendment to Facility Operating License No. NFP–63 for the Shearon Harris Nuclear Power Plant, Unit 1, located in Wake and Chatham Counties, North Carolina.

The proposed amendment would have revised the Technical Specifications to allow a one-time revision to the steam generator (SG) inservice inspection frequency requirements to allow a 40-month inspection interval after the first inservice inspection following SG replacement rather than after two consecutive inspections resulting in C–1 classification.

The Commission had previously issued a Notice of Consideration of Issuance of Amendment published in the **Federal Register** on February 17, 2004 (69 FR 7519). However, by letter dated August 6, 2004, the licensee withdrew the proposed change.

For further details with respect to this action, see the application for amendment dated December 8, 2004 and the licensee's letter dated August 6, 2004, which withdrew the application for license amendment. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management Systems (ADAMS) Public Electronic Reading Room on the internet at the NRC Web site, *http://www.nrc.gov/reading-rm/adams/html*. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1–800–397–4209, or 301–415–4737 or by e-mail to *pdr@nrc.gov*.

Dated at Rockville, Maryland, this 10th day of August 2004.

For the Nuclear Regulatory Commission.

Chandu P. Patel,

Project Manager, Section 2, Project Directorate II, Division of Licensing Project Management, Office of Nuclear Reactor Regulation.

[FR Doc. 04–18732 Filed 8–16–04; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50–413 AND 50–414]

Duke Energy Corporation; Concerning the Application for Irradiation of Mixed Oxide Lead Test Assemblies at Catawba Nuclear Station, Units 1 and 2; Environmental Assessment and Finding of No Significant Impact

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment to the Facility Operating Licenses to permit the use of mixed oxide (MOX) lead test assemblies (LTAs) in one of the two Catawba units and is considering the granting of exemptions from (1) the requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50.44(a), 10 CFR 50.46(a)(1) and 10 CFR Part 50, Appendix K with respect to the use of M5™ fuel rod cladding; (2) 10 CFR 50.46(a)(1) and Appendix K to Part 50 with respect to the use of MOX fuel; and (3) certain physical security requirements of 10 CFR Parts 11 and 73 that are usually required at fuel fabrication facilities for the protection of strategic quantities of special nuclear material. A similar request for an exemption from the requirements of 10 CFR Part 50.44(a) with respect to the use of M5™ fuel rod cladding is not being granted since 10 CFR Part 50.44 has been changed and an exemption from it is no longer necessary. The amended license and exemptions would apply to Renewed Facility Operating License Nos. NPF–35 and NPF–52, issued to Duke Energy Corporation (Duke, the licensee), for operation of the Catawba Nuclear Station, Units 1 and 2, (Catawba) located in York County, South Carolina. Therefore, pursuant to 10 CFR 51.21, the NRC is issuing this environmental assessment (EA) and finding of no significant impact (FONSI).

1.0 Introduction

The NRC staff has organized the discussion and evaluation to provide users with the context of the proposed action, supporting information that is available for tiering, the independent analyses performed, technical bases, and NRC conclusions. The following structure was crafted to aid in its presentation:

1.0 Introduction
2.0 Background
3.0 Need for and Description of the Proposed Action
4.0 Non-Radiological Environmental Impacts of the Proposed Action
5.0 Radiological Environmental Impacts of the Proposed Action
6.0 Irreversible or Irretrievable Commitment of Resources
7.0 Unavoidable Adverse Impacts
8.0 Mitigation
9.0 Cumulative Impacts
10.0 Alternatives to the Proposed Action
11.0 Agencies and Persons Consulted
12.0 References
13.0 Finding of No Significant Impact

On the basis of the EA that follows, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement (EIS) for the proposed action.

By letter dated February 27, 2003, as supplemented by letters dated September 15, September 23, October 1 (two letters), October 3 (two letters), November 3 and 4, December 10, 2003, and February 2 (two letters), March 1 (three letters), March 9 (two letters), March 16 (two letters), March 26, March 31, April 13, April 16, May 13, and June 17, 2004, Duke submitted a license amendment request that, if granted, would authorize the irradiation of four mixed uranium and plutonium oxide MOX LTAs at either Catawba, or McGuire Nuclear Station (McGuire), Units 1 and 2, to support the U.S. Department of Energy (DOE) program for the disposition of fissile material. The DOE is responsible for implementing the national policy for disposition of fissile material. Duke has requested that the NRC staff's review only consider Catawba, as the proposed action because it no longer needed the option of conducting an LTA irradiation program at McGuire (Reference 6). In a previous, separate licensing action to support the renewal of the operating licenses for Catawba, Duke provided an environmental report (ER) (Reference 3); the ER provides useful background information about the site and its environs.

The proposed action involves issuance of three exemptions (for the use of M5™ cladding, instead of zircaloy; for fuel in the form of mixed uranium and plutonium oxide, rather than uranium oxide; and from certain physical security requirements usually required at fabrication facilities for the protection of strategic quantities of special nuclear material) and a license amendment for accompanying changes to the Catawba Technical Specifications (TSs) contained in Appendix A of each of the Catawba Nuclear Station operating licenses.

The NRC staff has prepared this EA to comply with its National Environmental Policy Act (NEPA) responsibilities to evaluate the environmental impacts resulting from Duke's proposed action. An EA is a concise public document prepared by the NRC to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI; (2) aid the Commission's compliance with NEPA when no EIS is necessary; and (3) facilitate preparation of an EIS when one is necessary.

The NRC has completed a number of environmental reviews for activities that can inform this action and for activities specifically at the Catawba site. These reviews were published as environmental statements (ESs), EISs, or EAs, which were considered during the preparation of this assessment. In particular, in 1983, the NRC issued the final ES (FES) related to the operation of Catawba, NUREG–0921 (Reference 18). In 2002, the NRC issued a site-specific supplement to the Generic EIS for license renewal of nuclear plants regarding Catawba, NUREG–1437, Supplement 9 (Reference 32) (hereafter referred to as Supplement 9). In 1999, the NRC issued a final addendum to the Generic EIS for license renewal of nuclear plants regarding the potential impacts of transporting spent nuclear fuel in the vicinity of a single high-level waste repository, NUREG–1437, Addendum 1 (Reference 26). In 2001, the NRC issued the final EIS on the construction and operation of an independent spent fuel storage installation in Utah, NUREG–1714 (Reference 30). Finally, in 2003, the NRC issued a draft EIS on the construction and operation of a MOX fuel fabrication facility in South Carolina, NUREG–1767 (Reference 33).

DOE has issued a number of environmental documents that provide useful insights to the assessment of issues involved in this proposed action. In fulfilling its responsibility for developing and implementing a framework for the disposition of fissile material, the DOE has issued its final programmatic EIS (PEIS) on storage and disposition of weapons-usable fissile materials, DOE/EIS–0229 (Reference 12). A supplemental analysis was issued by DOE in November 2003, specifically addressing the fabrication of MOX LTAs in Europe, DOE/EIS–0229–SA3 (Reference 16), hereafter referred to as Supplement Analysis 3. The DOE has issued its final EIS on surplus plutonium disposition (SPD), or SPD EIS, DOE/EIS–0283 (Reference 13). A supplemental analysis to the SPD EIS was issued by DOE in April 2003, specifically addressing changes to the SPD program as it eliminated some of the alternatives, DOE/EIS–0283–SA1 (Reference 15), hereafter referred to as Supplement Analysis 1, and modified its Record of Decision (ROD). The ROD indicated that the disposition program would implement the National policy that was embodied in the September 2000 Agreement between the Government of the United States and the Government of the Russian Federation Concerning Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation. Finally, in 2002, DOE issued the final EIS on the geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste in Nevada, DOE/EIS–0250 (Reference 14).

This EA focuses on whether the proposed action could result in a significant environmental impact different from the ones considered by the NRC staff in earlier environmental reviews. The assessment considers whether changes have occurred in the human environment in the Catawba vicinity since the NRC staff previously considered environmental issues there. In a number of issue areas, the NRC references work that was documented in other publicly available environmental documents, for example, the EISs referenced above. In Supplement 9, the NRC staff evaluated the environmental impacts expected to result from continued operation and maintenance of the two Catawba facilities for an additional 20 years beyond the original license period. The Catawba plant operations for the proposed action would be conducted within the current license time frame; the NRC environmental reviews for this time frame were considered in the NRC FES and Supplement 9.

2.0 Background

2.1 The Plant and Its Environs

Catawba is located on 158 ha (391 acres) in York County, South Carolina, approximately 29 km (18 mi) southwest of Charlotte, North Carolina. Rock Hill, South Carolina, the nearest city, is about 10 km (6 mi) south of the site. Catawba is situated on a peninsula that protrudes into Lake Wylie, a man-made lake created by the Wylie Dam on the Catawba River. The lake was initially impounded in 1904. Present full pond was obtained in 1924 when an increase in the dam height raised the water level and increased the size of the lake. Duke either owns the land under the lake or the flood rights to that land. The lake level fluctuates in accordance with hydroelectric generation needs. Lake Wylie is a source of drinking water for several municipalities and supports extensive recreational use by fishermen, boaters, water skiers, and swimmers. As Lake Wylie is situated in both North Carolina and South Carolina, both States are involved in the protection, from a watershed perspective, of Lake Wylie's water quality. Lake Wylie exhibits thermal and oxygen dynamics similar to other southeastern reservoirs of comparable size, depth, flow conditions, and trophic status. Lake Wylie supports a good warm-water fishery.

Each reactor is a pressurized light-water reactor (LWR) with four steam generators (SGs) producing steam that turns turbines to generate electricity. Duke refuels each Catawba nuclear unit on an 18-to 24-month schedule. Catawba has approximately 1200 full-time workers and site contractors employed by Duke during normal plant operations. During refueling periods, site employment increases by as many as 500 workers for temporary duty over a 30-to 40-day period. At the behest of the DOE and its fissile material disposition program, Duke has requested that NRC authorize it to use four MOX fuel LTAs for up to three refueling cycles. The four LTAs contemplated under this action would be used in lieu of four uranium dioxide fuel assemblies out of 193 assemblies in the reactor core. The LTAs would not require a physical modification to the reactors or to any support structures, laydown areas or storage facilities, nor would it result in any change in infrastructure or in any land disturbance on the Catawba site.

Catawba consists of two reactor buildings, two turbine buildings, two diesel generator buildings, six mechanical draft cooling towers, one shared service building, one auxiliary building, one water chemistry building, and one switchyard. The cooling water intake and discharge structures and standby nuclear service water pond are shared features. The reactors each have four reactor coolant loops, each of which contains a SG that produces steam and turns turbines to generate electricity. Each unit is designed to operate at core power levels up to 3411 megawatts (thermal) (MW[t]), with a corresponding net electrical output of approximately 1129 megawatts (electric) (MW[e]). The nuclear steam supply system for each unit and the Unit 2 SGs were supplied by Westinghouse Electric Corporation. The current Unit 1 SGs, installed in 1996, were supplied by Babcock & Wilcox International.

The reactor containment is housed in a separate free-standing steel containment structure within a reinforced concrete shield building. The containment employs the ice condenser pressure-suppression concept, and is designed to withstand environmental effects and the internal pressure and temperature accompanying a postulated loss-of-coolant accident or steam-line break. Together with its engineered safety features, the containment structure for each unit is designed to adequately retain fission products that may escape from the reactor coolant system (RCS).

The Catawba reactors are licensed for fuel that is slightly enriched uranium dioxide, up to 5 percent by weight uranium-235. The Catawba reactor core has several different fuel designs that will reside in the core with the MOX LTAs. They will include the Westinghouse Robust Fuel Assembly design and the Westinghouse Next Generation fuel design.

Catawba uses water from Lake Wylie for cooling and service water. Lake Wylie is the seventh of 11 impoundments in the 410-km (255-mi) Catawba-Wateree Project managed by Duke and licensed by the Federal Energy Regulatory Commission (FERC). Lake Wylie extends 45 km (28 mi) upstream from Wylie Dam to Mountain Island Dam. Flow through the Catawba-Wateree Project is managed by Duke to optimize hydroelectric generation, provide flood control, meet FERC minimum release requirements, and maintain a constant and reliable water supply for thermoelectric generating stations, surrounding communities, and industry. The average daily withdrawal from Lake Wylie for the cooling water and other service water systems is 386 million liters per day (L/d) (102 million gallons per day [MGD]). Water from Lake Wylie is taken in through two intake structures. The low-pressure service water (LPSW) intake structure is located on the Beaver Dam Creek arm of Lake Wylie. Trash racks and traveling screens are used to remove trash and debris from this intake water. The intake structure is designed for a maximum water velocity of 0.15 m/s (0.5 ft/s) in front of the trash racks at the maximum design drawdown of Lake Wylie. The LPSW system supplies water for various functions on the secondary side of the plant. The nuclear service water (NSW) intake structure also is located in the Beaver Dam Creek arm. This intake supplies cooling water to various heat loads in the primary side of the plant and supplies water to the standby NSW pond. Catawba does not use cooling ponds for normal operations; however, it does have a standby NSW pond. The purpose of this pond is to provide an ultimate heat sink in the event of a rapid decline in water level in Lake Wylie. The pond is isolated from the plant service water during normal plant operations. The average daily discharge back into Lake Wylie from Catawba is 230 million L/d (60.7 MGD). The consumptive water losses result from evaporation and drift from the six mechanical-draft cooling towers that provide cooling for the condenser circulating water system.

The discharge structure is located on the Big Allison Creek arm of Lake Wylie. This structure is designed to allow warm discharge water to float on the surface with a minimum amount of mixing. Approximately 1.48 million L/d (0.39 MGD) from the conventional waste water treatment system and from the sewage treatment system is discharged to Lake Wylie. Catawba obtains potable water from the city of Rock Hill, South Carolina. In addition, there are a total of three groundwater supply wells at the Catawba site. These wells supply water on a periodic basis to remote locations and for seasonal irrigation. The average annual groundwater withdrawal rate from these wells is 1.89 L/s (30 gallons per minute [gpm]).

Catawba uses liquid, gaseous, and solid radioactive waste management systems to collect and process the liquid, gaseous, and solid wastes that are the by-products of operations. These systems process radioactive liquid, gaseous, and solid effluents before they are released to the environment. The waste gas and solid waste systems are common to both units. Portions of the liquid radioactive waste system are shared. The waste disposal systems for Catawba meet the design objectives of 10 CFR Part 50, Appendix I (Numerical Guide for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents). These systems control the processing, disposal, and release of radioactive liquid, gaseous, and solid wastes. Radioactive material in the reactor coolant is the source of gaseous, liquid, and solid radioactive wastes in LWRs. Radioactive fission products build up within the fuel as a consequence of the fission process. These fission products mostly are contained in the sealed fuel rods, but small quantities escape and contaminate the reactor coolant. Neutron activation of the primary coolant system also is responsible for coolant contamination.

Nonfuel solid waste results from treating and separating radionuclides from gases and liquids and from removing contaminated material from various reactor areas. Solid wastes also consist of reactor components, equipment, and tools removed from service, as well as contaminated protective clothing, paper, rags, and other trash generated from plant design modifications and operations and routine maintenance activities. Solid waste may be shipped to a waste processor for volume reduction before disposal at a licensed burial site (Reference 3). Spent resins and filters are stored or packaged for shipment to a licensed offsite processing or disposal facility.

Routine maintenance performed on plant systems and components is necessary for safe and reliable operation. Maintenance activities conducted at Catawba include inspection, testing, and surveillance to maintain the current licensing basis of the plant and to ensure compliance with environmental and safety requirements. Certain activities can be performed while the reactor is operating, but others require that the plant be shut down. Long-term outages are scheduled for refueling and for certain types of repairs or maintenance, such as replacement of a major component. Fuel rods that have exhausted a certain percentage of their fuel and are removed from the reactor core for disposal are called spent fuel. Duke refuels each of the Catawba units every 18 to 24 months (Reference 3). Each outage is typically scheduled to last approximately 30 to 40 days, and the outage schedules are staggered so that both units are not shut down at the same time. Typically, one-third of the core is replaced at each refueling.

Catawba has five 230-kV transmission lines leaving the site from the switch yard (References 3 and 18). The five lines are contained within rights-of-way ranging from 35 to 46 m (115 to 150 ft) in width and from 1 to 40 km (0.7 to 24.4 mi) in length covering a total of 75.7 km (42.4 mi) and approximately 295 ha (730 ac) (References 3 and 18). The rights-of-way extend out from Catawba to the north, south, and west. The lines and rights-of-way were constructed or rebuilt between 1973 and 1983. Duke owns less than 10 percent of the rights-of-way and has easements for the remaining 90 percent. Vegetation in the rights-of-way is managed through a combination of mechanical and herbicide treatments (Reference 3). Initial treatments include mowing and/or treatment with Arsenal (imazapyr) and Accord (glyphosate). Spot treatments then are applied once every 3 years using Arsenal, Accord, Garlon4A, and Krenite. Herbicide treatments in wetlands are limited to Arsenal and Accord, which are approved for use in wetlands. In addition, Duke cooperates with the South Carolina Department of Natural Resources regarding protection of rare species and partners with The Wildlife Federation on vegetation management in some portions of the rights-of-way.

2.2 Supporting DOE Analyses

DOE has issued a number of environmental documents that provide useful insights to the assessment of issues involved in this proposed action. In fulfilling its responsibility for developing and implementing a framework for the disposition of fissile material, DOE has issued its final PEIS on storage and disposition of weapons-usable fissile materials, DOE/EIS–0229 (Reference 12). A supplemental analysis to the PEIS was issued by DOE in November 2003, specifically addressing the fabrication of MOX LTAs in Europe, DOE/EIS–0229-SA3 (Reference 16), hereafter referred to as Supplement Analysis 3. The DOE has issued its final EIS on SPD, or SPD EIS, DOE/EIS–0283 (Reference 13). A supplemental analysis to the SPD EIS was issued by DOE in April 2003, specifically addressing changes to the SPD program as it eliminated some of the alternatives, Supplement Analysis 1. Finally, in 2002, DOE issued the final EIS on the geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste in Nevada, DOE/EIS–0250 (Reference 14).

As background, in the following, the NRC staff summarizes the DOE analyses regarding transportation risk of the LTAs to Catawba. The transportation and associated impacts of the MOX LTAs to Catawba are not related to the proposed action; the complete analysis is included in Supplement Analysis 3. The LTAs would be shipped by truck from one of three marine military ports near the Atlantic Ocean: Charleston Naval Weapons Station (South Carolina), Yorktown Naval Weapons Station (Virginia) or Naval Station Norfolk (Virginia). The ultimate selection of the porting facility will be made by DOE and would influence the transportation risk because transportation routing and distance, the accident statistics for the states through which the route passes, and the population distribution along transportation corridors would be different, depending on which port is selected. The LTAs would be shipped from the selected marine port by truck.

If the proposed action is approved, then, once the LTAs are inserted into the reactor and are irradiated, the DOE proposes to take possession of a small portion of the irradiated fuel and to conduct post-irradiation examination and testing at one of its National laboratories. The irradiated LTAs that remain at Catawba are expected to be managed in a manner similar to other spent fuel and are expected to be shipped to a high-level waste repository for ultimate disposition; because LTAs will be used in lieu of other fuel assemblies, the total number of spent fuel rods that have to be managed by Duke at Catawba would be reduced by the small number that will return to the DOE under this campaign. As part of this action to assess the impacts of transporting the spent fuel rods to a high-level waste repository, the NRC staff will assume that DOE will not remove any of the spent fuel rods from the LTAs, but will ship complete fuel assemblies to a permanent geologic repository.

3.0 Need for and Description of Proposed Action

Duke proposes three exemptions (for the use of M5™ cladding instead of zircaloy; for fuel in the form of mixed uranium and plutonium oxide, rather than uranium oxide; and from physical security requirements usually required at fabrication facilities for the protection of strategic quantities of special nuclear material) and a license amendment to the TSs in Appendix A of the Catawba operating licenses. The need for these changes is that they will permit the insertion of four LTAs containing mixed uranium dioxide (UO_2) and plutonium dioxide (PuO_2), also referred to as MOX, fuel into one of the Catawba reactor cores and thus support the U.S. Department of Energy (DOE) program for the disposition of fissile material. It is important to note that the action is not ''batch,'' or routine widescale use of MOX fuel at Catawba or any other reactor. The irradiation of four MOX LTAs is part of DOE's program for fissile material disposition.

The physical design and material composition of each LTA is identical (within manufacturing tolerances); the physical design is based on the Framatome Advanced Mark BW design. The fuel assembly upper and lower nozzles are 304L stainless steel. The lower nozzle has a debris filter which is A–286 steel alloy. The grid straps located axially along the fuel assembly are either Inconel 718 or M5™ zirconium alloy. The hold down springs on the fuel assembly top nozzle are Inconel 718. The fuel rod cladding is M5™ zirconium alloy as well as the rod upper and lower end caps. The fuel rod is filled with helium gas and contains a plenum spring manufactured from either 302 or 304 stainless steel.

With the exception of the M5™ cladding, the materials used in the fuel assembly structural components are typical of those currently or previously in use at Catawba. The M5™ alloy is a proprietary zirconium based alloy, composed primarily of zirconium and niobium, that has demonstrated superior corrosion resistance and reduced irradiation growth relative to both standard and low tin zircaloy. Although Catawba has not previously used the M5™ alloy, the alloy has been used in at least four other pressurized-water reactors (PWRs).

The fuel pellet contains a mixture of UO_2 and PuO_2, thus, the term MOX. The fuel is manufactured through a sintering process like that used for the current fuel which consists of only UO_2. The current fuel is referred to as low-enriched uranium (LEU) fuel. The fuel proposed in this application is referred to as MOX fuel and has only been used in a limited number of applications in PWRs in the U.S. However, reactors located in Europe have more than 35 years of experience with MOX fuel. As of 1998, three European fabrication plants have produced more than 435,000 MOX fuel rods, which have been used in 35 different PWRs. The plutonium for use in the Catawba fuel will be obtained from highly-enriched material blended down to a fissile content useful for reactor operations. By contrast, the European MOX fuel is recycled from commercial operating reactor fuel. The source of the fuel feedstock determines its grade; Catawba fuel has been referred to as ''weapons grade'' and the European fuel as ''reactor grade.'' The Catawba fuel will be chemically polished to meet specifications for reactor operations and, therefore, ''grade'' does not have a bearing on the presence of impurities.

During manufacturing, the composition of the LEU fuel is approximately 3 percent to 5 percent of the U–235 isotope with the balance of the uranium almost completely consisting of the U–238 isotope. During reactor operations a substantial portion of the uranium in LEU fuel is converted into plutonium. The conversion of uranium to plutonium in LWR fuel, whether LEU or MOX, is a function of burnup. An LEU fuel assembly begins its life with an inventory of U–238 and U–235 and ends its life with an inventory that includes Pu isotopes, the remaining U–235 and U–238, and other fission products. A MOX fuel assembly begins its life with an inventory of uranium and Pu isotopes; it ends its life with the remaining uranium and Pu isotopes and other fission products. At a burnup of 50 MWd/MT (megawatt-days/metric ton), a fuel assembly fabricated with MOX is estimated to contain approximately 13 kg of plutonium, whereas an LEU assembly with the same burnup would contain approximately 6 kg of plutonium. Therefore, even with just the current LEU fuel in Catawba, and in all operating LWRs of this design, plutonium already exists in substantial quantities.

No other primary or secondary plant structures, systems or components are affected by this application. None of the plant structures, systems or components, including waste systems, will be modified and none of these systems will be operated in a different manner or with different operating limits because of the proposed action. The proposed use of the MOX assemblies does not represent the introduction of any new sources of compounds, materials or elements beyond the new clad alloy or the MOX fuel. In addition, Duke is not requesting any changes to the TSs on coolant system specific activity or the radioactive effluent controls program nor is it planning any changes to the detailed radioactive effluent controls in the selected licensee commitments in Chapter 16 of the updated final safety evaluation report (UFSAR).

4.0 Non-Radiological Environmental Impacts of the Proposed Action

The NRC staff has completed a number of environmental reviews for activities specifically at the Catawba site. These reviews were published as ESs, EISs, or EAs. These reviews were considered during the completion of this assessment and provide a current baseline of non-radiological and radiological environmental analyses that serve as a platform to consider whether, and if so, how the human environment can be affected by the proposed action. In particular, in 1983, the NRC issued the final EIS related to the operation of Catawba, NUREG–0921 (Reference 18). In 2002, the NRC issued the final supplement to the Generic EIS for license renewal of nuclear plants, regarding Catawba, NUREG–1437, Supplement 9. In this assessment, the NRC staff has focused its attention on whether the proposed irradiation of four MOX LTAs has the potential to change how an environmental resource may be affected and whether the environmental impacts of the proposed action are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.1 Surface and Groundwater Use

Catawba uses water from Lake Wylie, an impoundment on the Catawba River for the source of main condenser cooling and service water at Catawba. There are three groundwater supply wells on the Catawba site that are used on a periodic basis to supply remote locations and for seasonal irrigation. The proposed action is not expected to change the manner in which the facility is operated nor does it increase surface or groundwater usage from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.2 Water Quality

Pursuant to the Federal Water Pollution Control Act of 1977 (the Clean Water Act), the South Carolina Department of Health and Environmental Control (SCDHEC) regulates the impacts of non-radiological effluents discharged from Catawba via a National Pollutant Discharge Elimination System (NPDES) permit. Adherence by the licensee to the provisions of the permit maintains water quality standards in Lake Wylie and in the vicinity that could potentially be affected by operation of Catawba. The current NPDES wastewater permit for Catawba, issued on April 30, 2001, expires on June 30, 2005.

The proposed action is not expected to change the types, characteristics, or quantities of non-radiological effluents discharged to the environment. There will be no change in the use or discharge of biocides or other chemicals at Catawba as a result of the proposed action. As discussed above, this application is for the use of four MOX fuel LTAs to be irradiated in the reactor core. Aside from the LTAs isolated in the reactor core, the proposed action will not introduce any materials or chemicals into the plant that could affect the characteristics or types of non-radiological effluents. In addition, the method of operation of non-radiological waste systems will not be affected by the proposed change. There are no known mechanisms associated with a change in fuel isotopic content that would alter the non-radiological effluent quantity. None of the parameters regulated under the Clean Water Act will be changed by the proposed action. The proposed action is not expected to change the manner in which the facility is operated nor does it alter water quality from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.3 Thermal Effluents

The proposed action will not change the licensed power level for Catawba. There will be no increase in the amount of heat that is produced by the facility and subsequently discharged via cooling tower blowdown to Lake Wylie. Therefore, there will be no change to the discharge temperature and no increase in the impact of thermal effluents on aquatic biota. The proposed action is not expected to change the manner in which the facility is operated nor does it alter thermal effluents that may affect aquatic biota from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.4 Impingement and Entrainment

The proposed action does not involve an increase in the licensed thermal power level for Catawba that would require additional cooling. Because there will be no increase in the volume of water drawn into the plant, there will be no incremental impact on aquatic biota associated with the withdrawal of cooling water from Lake Wylie. The proposed action is not expected to change the manner in which the facility is operated nor does it alter impingement of adult or juvenile fish or on the entrainment of fish eggs and larvae from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.5 Air Quality

Transmission lines have been associated with the production of minute amounts of ozone and oxides of nitrogen as a result of corona discharges from the breakdown of air near high-voltage conductors. Through the years, line designs have been developed that greatly reduce corona effects. The transmission lines associated with the Catawba facility meet the 1997 version of National Electric Safety Code and corona effects are minimal on those lines.

SCDHEC has issued a Clean Air Act air emissions and operating permit to Catawba for the release of controlled amounts of effluents to the atmosphere resulting from operation of the emergency diesel generators (EDGs) and other equipment on the site. The Charlotte, North Carolina, metropolitan area has not been identified as a non-attainment or maintenance area, therefore, no assessment of the vehicle exhaust emissions anticipated at the time of peak workforce is required by the Clean Air Act. The proposed use of the MOX LTAs will not result in an increase in station electrical output or a change in the operation of the station EDGs or other equipment.

The proposed action is not expected to change the manner in which the facility is operated nor does it alter air quality, either as a result of release of increased amounts of effluents to the atmosphere or as a result of corona associated with the transmission lines for Catawba, from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.6 Noise

The proposed action will not result in any increase in ambient noise level either on-site or beyond the site boundary. When noise levels are below the levels that result in hearing loss, impacts have been judged primarily in terms of adverse public reactions to the noise. As noted in the Generic EIS for License Renewal, NUREG–1437 (Reference 24), no nuclear plants have offsite noise levels sufficient to cause hearing loss. Generally, power plant sites do not result in offsite levels more than 10 dB(A) above background. Noise level increases more than 10 dB(A) would be expected to lead to interference with outdoor speech communication, particularly in rural areas or low-population areas, such as Catawba, where the background noise level is in the range of 45–55 dB(A). Generally, noise surveys around major sources of noise such as large highways and airports have found that, when the background noise level increases beyond 60–65 dB(A), noise complaints increase significantly. Noise levels below 60–65 dB(A) are generally considered to be of small significance. The principal sources of noise at Catawba are the result of operation of mechanical draft cooling towers, transformers, and loudspeakers. These noise sources are not perceived by large numbers of people offsite. In addition, these sources of noise are sufficiently distant from critical receptors outside the plant boundaries that the noise is attenuated to nearly ambient levels and is scarcely noticeable.

The proposed action is not expected to change the manner in which the facility is operated nor does it alter ambient noise level onsite or beyond the site boundary at Catawba from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.7 Thermophilic Organisms

Thermophilic organisms are known to inhabit cooling tower basins and natural bodies of water in the southern latitudes of the U.S., including water bodies in the vicinity of Catawba. Waste heat from power plant facilities could stimulate the growth of these organisms, some of which are known to be potentially harmful to man.

The use of MOX LTAs will not change the licensed power level at Catawba. There will be no increase in the amount of heat that is produced by the facility and subsequently discharged via cooling tower blowdown to Lake Wylie that would change the discharge temperature or that would increase the impact of thermal discharges on thermophilic organisms. The proposed action is not expected to change the manner in which the facility is operated nor would it alter the abundance of pathogenic thermophilic microbiological organisms due to heated discharges from Catawba from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.8 Aquatic Ecology

Recently, in Supplement 9, the NRC staff evaluated and disclosed the impacts resulting from the current mode of operation and that are expected to occur during the extended term of the renewed operating licenses at Catawba. The NRC staff has considered the potential impacts of the proposed action on water use and quality, impingement and entrainment, thermal effluents, and thermophilic organisms. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with aquatic ecology at Catawba from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.9 Terrestrial Ecology

Recently, in Supplement 9, the NRC staff evaluated and disclosed the impacts resulting from the current mode of operation and that are expected to occur during the extended term of the renewed operating licenses at Catawba. The NRC staff has considered the potential impacts of the proposed action on cooling tower operation, transmission line operation and maintenance, and on-site or off-site land use. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with terrestrial ecology at Catawba from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.10 Threatened or Endangered Species

On the basis if its conclusions of no impact on aquatic or terrestrial resources as discussed above, the NRC staff concludes that the proposed use of four MOX fuel LTAs at Catawba will have no effect on any Federally-listed threatened or endangered species or their designated critical habitat.

4.11 Socioeconomic Impacts

The licensee plans to implement additional security measures to support activities associated with the proposed action, from the time the material (MOX) arrives on site until it is irradiated. Duke has not identified the need to hire additional staff to support the proposed action. Catawba already has over 1200 full-time workers employed by Duke and site contractors during normal plant operations. During refueling periods, site employment increases by as many as 500 workers for temporary duty over a 30-to 40-day period. Even if a limited number of additional security personnel were hired to implement the proposed action, it will not significantly increase the number of licensee staff or contractors employed at the facility; therefore, there would be no noticeable impact on housing or transportation that might result from an increase in workforce. Likewise, there will be no need for additional public services, such as for public safety, public utilities, social services, or education. Finally, no impacts are expected on tourism and recreation or taxes as a result of the proposed action. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with socioeconomics in the Catawba vicinity from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.12 Offsite Land Use

The land occupied by Catawba is in unincorporated York County. York County and its municipalities currently have land use plans and zoning requirements that govern development activities within the county. Duke has not identified the need to hire additional staff to support the proposed action. Catawba already has over 1200 full-time workers employed by Duke and site contractors during normal plant operations. During refueling periods, site employment increases by as many as 500 workers for temporary duty over a 30- to 40-day period. Even if a limited number of additional personnel were hired to implement the proposed action, it will not significantly increase the number of licensee staff or contractors employed at the facility. The proposed action will not have any impact on the local infrastructure, such as transportation or housing in the Catawba vicinity that might result from an increased workforce. Because there will not be any need to augment the local infrastructure, the proposed change will not be accompanied by any land-disturbing activities offsite. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with land use in the Catawba vicinity from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.13 Cultural Resources and Historic Properties

The proposed action will not result in any changes in off-site land use or in any land-disturbing activities. There will be no physical changes to the existing facility or disturbances to undeveloped portions of the site. The NRC staff concludes that the use of MOX lead test assemblies at Catawba will not have environmental impacts on cultural resources and historic properties. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with cultural resources and historic properties in the Catawba vicinity from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.14 Aesthetics

As noted above, the proposed action will not require any physical changes to the existing facility or be accompanied by any land-disturbing activities, either off-site or on-site. Also, the proposed change will not result in any changes in land use plans or zoning requirements in unincorporated York County or its municipalities. The proposed action is not expected to change the manner in which the facility is operated nor does it alter any resource components associated with aesthetics or viewsheds in the Catawba vicinity from that previously considered by the NRC staff in the final EIS (Reference 18) and Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the final EIS and Supplement 9.

4.15 Summary

In summary, the proposed irradiation of four MOX LTAs at Catawba would not result in a significant change in non-radiological impacts in the areas of surface or groundwater use, chemical or thermal discharges, intake effects, air quality, noise, thermophilic organisms, aquatic or terrestrial ecology, threatened or endangered species, socioeconomics, off-site land use, cultural resources or historic properties, aesthetics, or environmental justice. No other non-radiological impacts were identified or would be expected. Therefore, based on the above discussions, the NRC staff concludes that there are no significant non-radiological environmental impacts associated with the proposed action.

5.0 Radiological Environmental Impacts of the Proposed Action

5.1 Gaseous Effluents

The licensee has evaluated the potential impacts that could result from the proposed use of MOX LTAs on the type or amount of gaseous radioactive effluents that could be released from the Catawba facility. This evaluation includes a consideration of fuel cladding performance and fuel integrity considerations and is based on the similarity of MOX fuel to the present LEU fuel, both from a fuel design and a fission product inventory perspective. The analysis takes into account the replacement of four out of 193 fuel assemblies with the assemblies containing MOX fuel; this action considers the four MOX LTAs.

As fuel is irradiated, both activation and fission products are created. The activation products that are created are a function of impurities and the chemistry of the reactor coolant and the neutron flux that the materials encounter. Thermal neutron flux is significantly lower in MOX fuel than in LEU fuel, which would tend to lower activation products. However, for four lead assemblies, this is expected to be an insignificant effect.

The outer surfaces of the fuel assemblies which are exposed to the RCS are the same materials which have been used at Catawba for many years. The exception is the introduction of the M5™ alloy. This material is a zirconium-based alloy and is more corrosion resistant than currently-used zirconium-based alloys. Therefore, the fuel assembly surfaces exposed to reactor coolant should not interact to produce any different quantity or type of radioactive material in the RCS.

The performance of M5™ cladding is expected to meet or exceed that of the current zircaloy cladding. Therefore, there is not expected to be any increase in the quantity of failed fuel rods. In the event of failed fuel rods, the MOX fuel could release fission products from the gap into the RCS. However, the chemical volume and control system and radioactive waste systems are designed to cope with fuel rod failures. The same fission products present from the failure of a LEU fuel rod would be present for the failure of a MOX fuel rod. Only slight differences in curie content of respective isotopes would be expected in the event of a cladding failure.

Fission product inventories and fuel gap inventories are of the same order of magnitude in both MOX fuel and LEU fuels. In particular, the amount of iodine and noble gas that would be released into the reactor coolant in the event of a leaking fuel rod would be similar. Additionally, any liquid or gaseous effluents would be processed by the plant liquid waste and waste gas systems prior to release to the environment. These waste treatment systems would limit radioactive discharges to the environment as a result of hold-up for decay, filtering, and demineralization. The plant treatment systems are capable of treating these radioactive effluents because the types of radioactive material in MOX and LEU fuel are the same and the curie content of MOX fuel is of the same order of magnitude as LEU fuel. Thus, the licensee is expected to maintain the same level of radioactive control and to remain within the same regulatory limits with the MOX fuel as for the LEU fuel.

Therefore, based on the materials and performance capabilities of the fuel and plant systems, there is no basis to expect any change in gaseous effluent characteristics typical of normal plant operations. In addition, Duke has not requested any changes to the TSs limits on RCS specific activity or to the radioactive effluent controls program and is not planning any changes to the selected licensee commitments of Chapter 16 of the UFSAR. These requirements and commitments place limits on various isotopes and specify requirements for monitoring and surveillance, thereby limiting the release of gaseous radioactive effluents from the Catawba facility.

The NRC staff concludes that there will be no anticipated changes in the type or amount of gaseous radiological effluents resulting from the use of MOX fuel lead assemblies compared to the current LEU fuel. The licensee will continue to maintain its radioactive gaseous effluents within license conditions and regulatory limits. Therefore, there will be no additional environmental impacts as a result of gaseous radioactive effluents from the proposed action.

5.2 Liquid Effluents

Duke has evaluated the potential impacts that could result from the proposed use of MOX lead assemblies on the type or amount of liquid radioactive effluents that could be released from the Catawba facility. This evaluation includes a consideration of fuel cladding performance and fuel integrity considerations and is based on the similarity of MOX fuel to the present LEU fuel, both from a fuel design and a fission product inventory perspective. The analysis takes into account the replacement of four out of 193 fuel assemblies with fuel assemblies containing MOX fuel.

As fuel is irradiated, both activation and fission products are created. The activation products that are created are a function of impurities and the chemistry of the reactor coolant and the neutron flux that the materials encounter. Impurities in the reactor coolant and reactor coolant water chemistry are independent of the fuel type, whether MOX or LEU. Thermal neutron flux is significantly lower in MOX fuel than in LEU fuel, which would tend to lower activation products. However, for four lead assemblies, this is expected to be an insignificant effect.

There are no expected changes to liquid radioactive effluents as a result of the proposed action. As discussed above, with the exception of the M5™ alloy cladding on the MOX fuel rods in the LTAs, the outer surfaces of the fuel assemblies which are exposed to the RCS and several other components are very similar to the materials that have been used at Catawba for many years. The M5™ alloy material is a zirconium-based alloy and is more corrosion resistant than currently used zirconium-based alloys. Therefore, the fuel assembly surfaces exposed to reactor coolant should not interact to produce any different quantity or type of radioactive material in the RCS.

The cladding performance of M5™ is expected to meet or exceed that of the current zircaloy cladding, therefore, there is not expected to be any increase in the quantity of failed fuel rods. In the event of failed fuel rods the MOX fuel could release fission products from the gap into the RCS. However, the chemical volume and control system and radioactive waste systems are designed to cope with fuel rod failures. The same fission products present from the failure of a LEU fuel rod would be present for the failure of a MOX fuel rod. Only slight differences in curie content of respective isotopes are expected.

Therefore, based on the materials and performance capabilities of the fuel and plant systems there is no basis to expect any change in liquid effluent characteristics typical of normal plant operations. In addition, Duke is not requesting any changes to the TSs on RCS specific reactivity or the radioactive effluent controls program, nor is it planning any changes to the detailed radioactive effluent controls in the selected licensee commitments section of Chapter 16 of the UFSAR. These requirements and commitments place limits on the concentration of radioactive material released in liquid effluents and specify requirements for monitoring and surveillance, thereby limiting the release of liquid radioactive effluents from the Catawba facility. Therefore, there will be no additional environmental impacts as a result of liquid radioactive effluents from the proposed action.

5.3 Waste Management and Solid Radioactive Waste

The introduction of the four LTAs should have minimal impact on solid waste. As discussed above, there is no change to radioactive liquid effluents and no need for liquid effluent cleanup that would generate additional solid radioactive waste in the form of resins or evaporator bottoms. There would be no expected impact on primary system filters or resins associated with normal plant operations.

The quantity of waste associated with a pool side post-irradiation examination program which will be conducted for the MOX fuel assemblies is minimal and consistent with other post-irradiation examinations performed during refueling outages. This waste would be small volumes of low-level waste such as disposable portions of anti-contamination clothing.

The proposed action would not result in an increase in authorized power level, therefore, there will be no increase in the amount of water required to remove heat from the reactor. This means that there will be no need for additional water treatment in the secondary system that could lead to an increase in the amount of spent resins and evaporator bottoms.

The proposed action would not increase the number of fuel rods irradiated in the reactor. Four assemblies containing MOX fuel will replace four LEU assemblies in the reactor core. No additional fuel assemblies will be irradiated. Therefore, this will not result in an increase in the volume of solid radioactive waste from fittings, endcaps, and springs for fuel assemblies.

The spent fuel storage racks will not be changed; therefore there will be no change in the volume of irradiated/contaminated material that will need to be disposed of in an off-site burial facility.

Therefore, based on the discussion above, the NRC staff concludes that the proposed action will have no impact on waste management and solid radioactive waste.

5.4 Occupational Dose

The licensee estimates that there will be slight increases in the radiation exposure of its workforce during the handling of MOX fuel during receipt and handling operations. The increase in dose is due to a higher dose rate from a fresh MOX fuel assembly as compared to a fresh LEU fuel assembly. The total neutron and gamma dose rate at 10 centimeters from the face of a fresh MOX fuel assembly averages about 6 mrem/hour, falling off to about 1.8 mrem/hour at 100 centimeters (Reference 5). This is a relatively low radiation field; however, it is larger than that associated with a LEU fuel assembly, which has virtually no radiation field at these distances.

The initial fuel receipt, handling, and inspection activities for the fresh MOX fuel LTAs could result in a conservatively estimated total occupational dose in the range of 0.020 to 0.042 person-rem (Reference 5). However, the licensee will use the application of the As Low As Reasonably Achievable principles to try to effect lower doses than are estimated. Radiation doses of this magnitude are well within regulatory occupational exposure limits and do not represent an impact to worker health. There are no other expected changes in normal occupational operating doses as a result of the proposed action.

Not included among the workforce on the Catawba site are the workers who will conduct hot-cell examinations of the irradiated MOX fuel after it has been taken from the Catawba reactor core and shipped to Oak Ridge National Laboratory (ORNL). In order to assess the impact of the proposed action on the workers at ORNL, the NRC staff has referenced DOE's SPD EIS to provide an assessment of the occupational doses resulting from post-irradiation examinations following irradiation of the LTAs. DOE has estimated the radiological consequences for the hot-cell examination of fuel assemblies at ORNL. There are an estimated 10 workers associated with the hot-cell examination work, each estimated to accumulate approximately .177 person-rem (Reference 9). The hot-cell post-irradiation examinations at ORNL will be conducted in accordance with DOE radiation protection programs and procedures Occupational doses in the range of 0.020 to 0.042 total person-rem as a result of poolside examination and 0.177 person-rem for each of the 10 workers performing hot-cell examinations at ORNL would be far below the regulatory limit for individual workers of 5 rem/year. Therefore, the NRC staff concludes that there will be no significant increase in occupational dose as a result of the proposed use of MOX LTAs at Catawba.

5.5 Dose to the Public

Dose to the public will not be changed by the use of four lead assemblies at Catawba during normal operations. As discussed above, there is no basis to contemplate an increased source of liquid, gaseous or solid radiological effluents that could contribute to increased public exposure during normal operations. The SPD EIS states that no change would be expected in the radiation dose to the general public from normal operations associated with disposition of MOX fuel at the proposed reactors (Reference 13). In addition, DOE has performed an analysis that demonstrates no incremental change in doses for 16 years of reactor operation.

For members of the public, the licensee estimates that there will be no detectable increase in public dose during normal operations with the MOX fuel assemblies (Reference 5). Use of the lead assemblies in the reactor core will not change the characteristics of plant effluents or water use. During normal plant operation, the type of fuel material will have no effect on the chemistry parameters or radioactivity in the plant water systems. The fuel material is sealed inside fuel rods that are seal-welded and leaktight. Therefore, there would be no direct impact on plant radioactive effluents and the associated radiation exposure.

5.6 Design-Basis Accident Consequences

The models used by Duke to assess design-basis accident (DBA) consequences reflect conservative assumptions to ensure that there is an adequate safety margin. In particular, the NRC staff notes that Duke assumed that plutonium concentration of the pins in the LTAs was 5 percent. The nominal LTA fuel design calls for 176 fuel pins with a plutonium concentration of 4.94 percent; 76 pins at 3.35 percent, and 12 pins at 2.40 percent. The nominal average plutonium concentration is 4.37 percent. Conservatively basing the calculation on 5 percent plutonium concentration provides margin to compensate for differences (*e.g.*, manufacturing tolerances and power history differences) between the nominal design and the actual fuel as loaded in the core.

The differences in the initial fuel isotopics between MOX and LEU fuel are potentially significant to accident radiological consequences because the distribution of fission products created depends on the particular fissile material. If the fissile material is different, it follows that the distribution of fission products may be different. For example, one atom of I–131 is created in 2.86 percent of all U–235 fissions, whereas one atom of I–131 is created in 3.86 percent of all Pu-239 fissions. This shift in fission product distribution was assessed for its influence on postulated radiological consequences of DBAs.

Duke's application provided an accident source term for irradiated MOX fuel. The NRC staff compared that source term to data prepared by Sandia National Laboratory and performed independent calculations of core inventory using the ORIGEN–S code (as described in NUREG/CR–0200 (Reference 28). The NRC staff has determined that source term assumptions used by Duke in its analyses of the accident consequences of the use of the MOX LTAs are adequate and conservative for assessing the consequences of DBAs.

To address the impact of MOX fuel on gap fractions, Duke assumed an increase of 50 percent over that provided in Regulatory Guide 1.183 (Reference 23), for LEU fuel for each of the MOX LTAs. Duke provided information to support this assumption with comparative data from European MOX facilities. The NRC staff obtained the assistance of Pacific Northwest National Laboratory to confirm the adequacy of Duke's assumed increase in the gap fractions. Based upon its review, the NRC staff determined that the gap fraction increase assumed by Duke in its analyses is acceptable.

Duke has evaluated the radiological consequences of postulated DBAs involving MOX LTAs. Duke has categorized various DBAs on the basis of how many fuel assemblies would be affected by that event. Duke identified two major categories:

• Fuel-handling accidents (FHA) involving damage to a few fuel assemblies. These include fresh and irradiated FHAs (involving the drop of a single fuel assembly) and the weir gate drop (WGD) accident (causing damage to seven fuel assemblies). A small number of assemblies are involved such that if the four MOX LTAs were in the damaged population, they would comprise all or a significant portion of the damaged population. As such, these events are limiting with regard to the potential increase in dose that would result if they occurred while the MOX LTAs were in the core. [The loss of coolant accident (LOCA) discussed below is limiting with regard to the magnitude of the dose.]

• At-power accidents involving fuel damage to a significant portion of the entire core. These accidents range from the locked rotor accident with 11 percent core damage (21 assemblies damaged), to the rod ejection accident with 50 percent core damage (97 fuel assemblies damaged), to the large break loss-of-coolant accident (LOCA) with full core damage (all 193 fuel assemblies damaged). In this case, the relative effect of damaging all four MOX LTA is reduced as the fuel damage population increases. For example, in a DBA LOCA, all 193 fuel assemblies are postulated to be damaged and the four MOX LTAs constitute just 2 percent of all the fuel assemblies in the core.

The NRC staff considered the following additional category to further assess potential DBA consequences:

• Accident source term assumptions derived from RCS radionuclide concentrations, such as SG tube rupture, main steam line break, instrument line break, waste gas decay tank rupture, and liquid storage tank rupture (LST). Estimates of the radionuclide releases resulting from these events are based on pre-established administrative controls that are monitored by periodic surveillance requirements, for example: RCS and secondary plant-specific activity LCO, or offsite dose calculation manual effluent controls. Increases in specific activities due to MOX, if any, would be limited by these administrative controls. Because the analyses were based upon the numerical values of these controls, there is no impact on the previously analyzed DBAs in this category and no further discussion of these events is warranted.

The analysis of public doses for the Exclusion Area Boundary (EAB) and Low-Population Zone (LPZ) resulting from the two classes of accidents considered by Duke are discussed below. In addition, the NRC staff has evaluated the radiological consequences of affected DBAs on the operators in the control room.

5.6.1 Fuel-Handling Accidents

Duke has performed analyses of the dose consequences of FHAs, including: the drop of a single fresh fuel assembly; the drop of a single irradiated MOX fuel assembly during refueling; and a weir drop accident, which leads to damage of seven irradiated fuel assemblies including the four MOX fuel assemblies.

Fresh MOX LTA Drop

This accident analysis is not currently part of the Catawba licensing basis. Duke performed this analysis to assess the radiological consequences of a drop of a fresh MOX LTA prior to it being placed in the spent fuel pool (SFP). Duke stated that plutonium isotopes have a much higher specific activity than uranium isotopes and, if inhaled, could present a more severe radiological hazard. Although the configuration of the MOX pellets and LTA fuel rods provides protection against inhalation hazards, some plutonium could become airborne if the MOX LTA is damaged.

Duke performed an analysis to estimate the radiological consequences from a fresh MOX fuel drop accident. The approach for this analysis was consistent with the assumptions and methodologies that were used in the calculations supporting the MOX Fuel Fabrication Facility (MFFF) construction authorization request. The MOX MFFF application and review did not address the MOX fuel drop accident and although the guidance of NUREG/CR–6410 has not been used previously for DBA analyses for power reactors, the NRC staff concludes that the overall methodology used in the MFFF review is appropriate for the present application.

The dose estimated by the licensee for the postulated drop of a single fresh MOX fuel assembly was 0.3 rem total effective dose equivalent (TEDE) at the EAB, which is a small fraction of the 10 CFR 50.67 dose criterion (*i.e.*, 25 rem TEDE at the EAB) and is, therefore, found to be acceptable. The NRC staff has evaluated the analysis provided by the licensee and concludes that the methodology and calculations have been applied in a conservative manner. Therefore, the NRC staff concludes that there will be no significant adverse environmental impact as a result of a fresh MOX fuel drop accident.

Irradiated MOX LTA Drop

Duke has calculated that the radiological consequences resulting from a FHA involving the drop of a single irradiated MOX fuel assembly would be 2.3 rem TEDE at the EAB, 0.34 rem TEDE at the edge of the LPZ, and 2.1 rem TEDE in the control room—increases of about 64 percent over the previous analysis for LEU fuel.

The NRC staff performed confirmatory analyses of the spent FHA using the MOX LTA source term that it generated using the SCALE SAS2H computer code (as described in NUREG/CR–0200, (Reference 28)). For the irradiated FHA, the source term reflected the decay of the radionuclides for a 72-hour period after shutdown of the reactor prior to moving fuel and, conservatively, was increased (multiplied) by a radial peaking factor of 1.65. The results of the NRC staff's analyses confirmed the results obtained by Duke. The doses estimated by the licensee for the postulated spent FHA are a small fraction of the 10 CFR 50.67 dose criterion and are, therefore, acceptable and will not result in a significant adverse environmental impact.

Weir Gate Drop

Duke has calculated the radiological consequences resulting from a FHA involving the drop of a weir gate, which is assumed to damage 7 fuel assemblies, including all four MOX fuel assemblies. The calculated doses would be 3.5 rem TEDE at the EAB, 0.5 rem TEDE at the edge of the LPZ, and 3.3 rem TEDE in the control room. These dose estimates represent increases of about 58 percent over the previous analysis for LEU fuel, but are still well below the 10 CFR 50.67 dose criterion.

The NRC staff performed confirmatory analyses of the weir gate drop accident using the MOX LTA source term that it generated using the SCALE SAS2H computer code. For this accident, the source term for the four MOX assemblies and the three LEU assemblies reflected the decay of the radionuclides for 19.5 days after shutdown of the reactor prior to moving fuel and, conservatively, was increased (multiplied) by a radial peaking factor of 1.65 (Reference 36). The results of the NRC staff's analyses confirmed the results obtained by Duke. The doses estimated by the licensee for the postulated accident were below the 5 rem TEDE criterion specified in 10 CFR 50.67 and are, therefore, acceptable and will not have a significant adverse environmental impact.

5.6.2 At-Power Accidents

The current licensing basis analyses assume that all fuel assemblies (193) are affected by a LOCA. For the locked-rotor accident, 11 percent of the core (21 assemblies) is assumed to be affected; for the rod-ejection accident, 50 percent of the core (97 assemblies) is assumed to be affected. For these events, Duke assumes that the four MOX LTAs are in the affected fuel population displacing four LEU assemblies. Because the dose is directly proportional to the fuel assembly inventory and gap fractions, the impact on the previously analyzed accident doses is based on quantifying the change in fission product release due to replacing up to four LEU fuel assemblies with the MOX LTAs. Although the consequences of these accidents could be determined by updating the current licensing basis analyses, Duke elected to perform a comparative evaluation, which the NRC staff has independently verified.

Duke selected the thyroid dose due to I–131 as the evaluation benchmark because the thyroid dose is typically more limiting than the whole body dose in that there is less margin between calculated thyroid doses and its associated dose criterion. Also, I–131 is generally the most significant contributor to thyroid dose due to its abundance and long decay half-life. Duke has determined that the I–131 inventory in a MOX LTA is 9 percent greater than that of an equivalent LEU fuel assembly.

Loss-of-Coolant Accident

For the LOCA, the four MOX LTAs represent 2.1 percent of the 193 assemblies in the core and the potential increase in the iodine release and the thyroid dose would be 1.32 percent. The previously-calculated thyroid dose would increase to 90.2 rem at the EAB and to 25.3 rem at the LPZ, which is well below the 300 rem dose criterion of 10 CFR 100.11.

Locked-Rotor Accident

For the locked-rotor accident, the four MOX LTAs represent 19 percent of the 21 assemblies in the core assumed to be involved in the postulated accident and the potential increase in the iodine release and the resulting thyroid dose would be 12 percent. The previously-calculated thyroid dose would increase to 4.1 rem at the EAB and to 1.3 rem at the LPZ, which is well below the 300 rem dose criterion of 10 CFR 100.11.

Rod-Ejection Accident

For the rod-ejection accident, the four MOX LTAs represent 4.1 percent of the 97 assemblies in the core assumed to be involved in the postulated accident and the potential increase in the iodine release and the resulting thyroid dose would be 2.63 percent. The previously-calculated thyroid dose would increase to 1.03 rem at the EAB and to 0.1 rem at the LPZ, which is well below the 300 rem dose criterion of 10 CFR 100.11.

5.6.3 Control Room Dose

Control room dose is the only occupational dose that has been previously considered for DBA conditions. The at-power accident with the most severe consequences for the control room operators is the LOCA; the control room doses from postulated locked-rotor or rod-ejection accidents are bounded by the calculated control room dose from the LOCA. Duke determined that the control room thyroid dose after a postulated LOCA that could be attributable to the irradiation of four MOX fuel LTAs would increase by 1.32 percent to 5.37rem. This is below the dose criterion set forth in 10 CFR Part 50, Appendix A, Criterion 19, and is not considered significant.

Duke determined that the radiological consequences to workers in the control room following a postulated WGD accident would result in a calculated dose to control room operators of 3.3 rem TEDE. While this is an increase of 58 percent over the dose previously analyzed for LEU fuel, it remains below the 5 rem TEDE criterion specified in 10 CFR 50.67. The change in calculated doses to control room operators attributable to the use of the four MOX fuel LTAs does not represent a significant environmental impact.

5.6.4 Conclusion

The most-limiting DBA (a LOCA) would result in a calculated off-site dose at the EAB of 90.2 rem to the thyroid and 25.3 rem to the thyroid at the edge of the LPZ. These doses represent increases of less than 1.32 percent of the dose previously calculated for LEU fuel and remain well below the limit of 300 rem thyroid specified in 10 CFR 100.11 for off-site releases. The calculated change in dose consequences at the EAB and at the LPZ that could be attributable to the use of the four MOX fuel LTAs is not significant.

The NRC staff concludes that the environmental impact resulting from incremental increases in EAB, LPZ, and control room dose following postulated DBAs that could occur as a result of the irradiation of four MOX LTAs does not represent a significant environmental impact.

5.7 Fuel Cycle Impacts

The source of fissionable material is outside of the fuel cycle (coming, as it does, from the pits of dismantled nuclear warheads that are excess to the strategic stockpile). Therefore, the proposed irradiation of four MOX LTAs at Catawba would preclude use of four LEU assemblies. This would have only negligible impact on the fuel cycle.

5.8 Transportation of Fresh Fuel

The transportation of the unirradiated MOX fuel assemblies is the responsibility of the DOE and has been addressed by the DOE in Supplement Analysis 3, regarding the fabrication of MOX fuel LTAs in Europe and their return to the U.S. In Section 5.2 of Supplement Analysis 3, the truck transportation risks from U.S. ports to Catawba, the methodology used, and the summary results are described.

DOE indicates that LTAs will be one shipment using Safe Secure Trailer/SafeGuards Transports (SST/SGTs); DOE stated that the shipment would be made in SST/SGTs because unirradiated MOX fuel in large enough quantities is subject to security concerns similar to those associated with weapons-grade plutonium (Reference 13). The SST/SGT is a specially designed component of an 18-wheel tractor-trailer vehicle that has robust safety and security enhancements.

The risks and consequences associated with exposures to transportation workers and persons residing near or sharing transportation links with shipments of radioactive material packages during routine transport operations or as a result of accidents were assessed by DOE using the RADTRAN 5 computer code (Reference 29); see, Chapter 5 of Supplement Analysis 3 (Reference 16). For incident-free transportation risk, DOE used the RADTRAN 5 code to calculate the dose and corresponding risk based on the external dose rate from the shipping vehicle, the transportation route and population density along the route. For accident transportation risk, DOE used the State-specific accident rates between the marine ports and Catawba, and a conditional accident frequency-severity relationship that considered the route conditions. DOE used the accident rate for SST/SGT transport and the accident severity category classifications of NRC's NUREG–0170 (Reference 17). DOE also calculated the non-radiological accident risks.

The radiological risk of transporting the four fresh MOX LTAs is an estimate of the number of latent cancer fatalities (LCFs) and is small for both the public and the driver. Table 2 (Page 17 of Supplement Analysis 3) indicates that for incident-free transportation of the fresh MOX LTAs, the radiological risk to the crew which corresponds to shipping from the Naval Station Norfolk port in Virginia, is a maximum of 4.0×10^{-6} LCFs. DOE indicates that the maximum radiological risk to the public for incident-free transportation is 3.2×10^{-6} LCFs, associated with shipping from Naval Station Norfolk or Yorktown Naval Weapons Station. For accidents, in Table 2 DOE provides an estimate of the radiological risk in terms of LCFs. Non-radiological risks are stated as expected number of accident fatalities from non-radiological factors. The accident risk analysis does not distinguish between the crew and the public. For postulated accidents, the radiological risk is calculated to be a maximum of 2.1×10^{-7} LCFs, which corresponds to transporting the MOX LTAs to Catawba from either the Naval Station Norfolk port or the Yorktown Naval Weapons Station port. The maximum non-radiological risk is calculated to be 1.7×10^{-4} which also corresponds to shipping from Naval Station Norfolk or Yorktown Naval Weapons Station. For both normal and accident conditions, no fatalities associated with incident free or accidents during transportation are expected.

5.9 Transportation of Spent Fuel

Radiological risks during routine transportation would result from the potential exposure of people to low levels of external radiation near a loaded shipment, either stationary or in transit. Any irradiated MOX fuel rods that are not shipped offsite for post irradiation examination will be stored on-site until they are shipped to a permanent high-level waste repository. A shipping container must have a certificate of compliance (COC) issued by the NRC. As specified in 10 CFR Part 71 Subpart D, the applicant for a COC must submit a Safety Analysis Report (SAR) which the NRC staff then reviews against a number of standards. After review, the NRC staff issues a safety evaluation report (SER) describing the basis of approval.

The only disposal site currently under consideration in the U.S. is the proposed geologic repository in Nevada (Reference 14). For purposes of complying with NEPA requirements, it is assumed that spent MOX LTAs would eventually be shipped to the proposed repository in Nevada. However, the DOE's application for a license to operate the repository has not yet been submitted to the NRC. There is no assurance that the DOE's application, if submitted, would be approved, but it is reasonable to use the Nevada repository as a surrogate for this assessment.

On a per-kilometer-traveled basis, the NRC reported that the routine radiological and vehicle-related transportation risks for spent MOX fuel would be similar to those estimated for fresh MOX fuel, plutonium metal, or transuranic radioactive waste (Reference 33). The transportation risks of LEU spent nuclear fuel and spent MOX fuel transport, in particular, were estimated in the DOE final EIS concerning disposal of spent nuclear fuel and high-level waste in Nevada (Reference 14). DOE reported that under the mostly legal-weight truck scenario, approximately 53,000 truck shipments were estimated to result in approximately 12 LCFs to workers, 3 LCFs to the public, and 5 traffic fatalities.

The NRC has assessed the transportation impacts of a campaign of batch MOX fuel use in conjunction with an application for the construction and operation of a MOX fuel fabrication facility (Reference 33); the NRC's impact evaluation from that assessment is used to put the spent MOX LTA transportation risks into proper context. It should be noted that the NRC has not received an application requesting widescale or batch use of recycled plutonium for use in MOX fuel for any commercial reactor, and the NRC has not made any determination regarding any proposal for such use. In NUREG–1767 (Reference 33), the NRC estimated the transportation risks of the spent MOX fuel based on average shipment risks calculated from the DOE results (Reference 14); the estimates show that no fatalities would be expected. Shipment of all of the spent MOX fuel generated under a batch use scenario would result in approximately 598 shipments (Reference 33). Further, assuming three assemblies per cask, the campaign might be expected to result in approximately 0.1 worker LCFs, 0.03 public LCFs, and 0.05 transportation fatalities. Under this proposed action, only four MOX LTAs are contemplated. Even if the number of shipments were minimized to ship the highest concentration of MOX spent fuel, *i.e.*, all four assemblies in two casks, and, using the results of the aforementioned assessment, the MOX LTAs might be expected to result in a small fraction (*i.e.*, 2 ÷ 598) of the quantified risk estimates, above, and not discernible from earlier NRC analyses involving solely LEU spent fuel.

DOE proposes to take possession of a small portion of the irradiated fuel (*i.e.*, spent fuel) from Catawba and to conduct post-irradiation examination and testing at one of its national laboratories. DOE described these activities in the SPD EIS (Reference 13). The transportation risks for this limited amount of spent MOX fuel that would be shipped to ORNL in Tennessee from Catawba is considered to be bounded by the risk estimates from the spent MOX LTAs. Apart from the smaller quantities involved for the post-irradiation examination and testing, the total number of kilometers traveled from Catawba to ORNL is less than that from Catawba to any contemplated repository.

In light of the above, no significant impacts would be expected from the shipment of either the spent MOX LTAs to a repository or the shipment of a small portion of the spent MOX LTAs to ORNL. Furthermore, the estimated risks are only a very small fraction of the radiological annual transport risks estimated in NUREG–0170, the NRC's Final EIS on the transportation of radioactive material (Reference 17). The NRC has determined that the impact from normal transportation and accidents is small.

5.10 Severe Accidents

Environmental issues associated with postulated severe accidents are discussed in the Final Environmental Impact Statement for Catawba, NUREG–0921 (Reference 18), the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), NUREG–1437, Volumes 1 and 2 (Reference 24) and in Supplement 9 to NUREG–37, the site-specific supplement. Severe nuclear accidents are those accidents that are more severe than DBAs because they could result in substantial damage to the reactor core, whether or not there are serious off-site consequences. In the environmental reviews identified above, the NRC staff assessed the impacts of severe accidents, using the results of existing analyses and site-specific information to conservatively predict the environmental impacts of severe accidents for Catawba.

Severe accidents initiated by external phenomena such as tornadoes, floods, earthquakes, and fires have not traditionally been discussed in quantitative terms in FESs and were not specifically considered for the Catawba site in the GEIS (Reference 24). However, in the GEIS, the NRC staff did evaluate existing impact assessments performed by NRC and by the industry at 44 nuclear plants in the U.S. and concluded that the risk from beyond design-basis earthquakes at existing nuclear power plants, including Catawba, was small. [The NRC's standard for significance was established using the Council on Environmental Quality's terminology for ''significantly'' (40 CFR 1508.27, which requires consideration of both ''context'' and ''intensity''). ''Small'' in this context means ''environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.''] The NRC staff did conclude in the GEIS that the risks from other external events were adequately addressed by a generic consideration of internally initiated severe accidents.

As part of its ongoing licensing reviews, the NRC staff also reviewed Revision 2b of the Catawba Probabilistic Risk Assessment (PRA) (Reference 4), which is a full scope Level 3 PRA. In this case, the Catawba PRA included the analysis of internal as well as external events. The internal events analysis was an updated version of the Individual Plant Examination (IPE) model (Reference 1), and the external events analysis was based on the Individual Plant Examination for External Events (IPEEE) model (Reference 2). The calculated total core damage frequency (CDF) for internal and external events in Revision 2b of the Catawba PRA is 5.8×10^{-5} per year. Internal event initiators represent about 80 percent of the total CDF and were composed of transients (24 percent of total CDF), loss of coolant accidents (29 percent of total CDF), internal flood (24 percent of total CDF), and reactor pressure vessel rupture (2 percent of total CDF). Remaining contributors together accounted for less than 3 percent of total CDF. External event initiators represented about 20 percent of the total CDF and are composed of seismic initiators (15 percent of total CDF), tornado initiators (4 percent of total CDF), and fire initiators (2 percent of the total CDF). Duke estimated the dose to the population within 80 km (50 mi) of the Catawba site from all initiators (internal and external) to be 0.314 person-sieverts (Sv) (31.4 person-rem) per year (Reference 3); internal events account for approximately 0.21 person-Sv (21 person-rem). Early and late containment failures accounted for the majority of the population dose.

In its most recent review of severe accidents for the purpose of determining whether mitigation alternatives were warranted, the NRC staff considered the following major elements:

- The Level 1 and 2 risk models that form the basis for the September 1992 IPE submittal (Reference 1);
- The major modifications to the IPE models that have been incorporated in Revision 2b of the PRA (Reference 4);
- The external events models that form the basis for the June 1994 IPEEE submittal (Reference 2); and
- The analyses performed to translate fission product release frequencies from the Level 2 PRA model into offsite consequence measures (Reference 3).

The NRC staff's review of the Catawba IPE was described in an NRC safety evaluation dated June 7, 1994 (Reference 22). In that review, the NRC staff evaluated the methodology, models, data, and assumptions used to estimate the CDF and characterize containment performance and fission product releases. The NRC staff concluded that Duke's analysis met the intent of Generic Letter (GL) 88–20 (Reference 19) and NUREG–1560 (Reference 25), which means the IPE was of adequate quality to be used to look for design or operational vulnerabilities. The NRC staff's review primarily focused on the licensee's ability to examine Catawba for severe accident vulnerabilities and not specifically on the detailed findings or quantification estimates. Overall, the NRC staff concluded that the Catawba IPE was of adequate quality to be used as a tool in searching for areas with high potential for risk reduction and to assess such risk reductions, especially when the risk models are used in conjunction with insights, such as those from risk importance, sensitivity, and uncertainty analyses.

The NRC staff's review of the Catawba IPEEE was described in a SER dated April 12, 1999 (Reference 27). Duke did not identify any fundamental weaknesses or vulnerabilities to severe accident risk with regard to the external events. In the SER, the NRC staff concluded that the IPEEE met the intent of Supplement 4 to GL 88–20 (Reference 21), and that the licensee's IPEEE process was capable of identifying the most likely severe accidents and severe accident vulnerabilities.

The NRC staff reviewed the process used by Duke to extend the containment performance (Level 2) portion of the IPE to the off-site consequence (Level 3) assessment. This included consideration of the source terms used to characterize fission product releases for each containment release category and the major input assumptions used in the off-site consequence analyses. The NRC staff reviewed Duke's source term estimates for the major release categories and found these predictions to be in reasonable agreement with estimates of NUREG–1150 (Reference 20) for the closest corresponding release scenarios. In Supplement 9, the NRC staff concluded that the assignment of source terms was acceptable. The differences in the source terms for a severe accident involving substantial damage to the core solely with LEU fuel assemblies or substituting four LEU assemblies with MOX LTAs are indistinguishable, given the uncertainty, and would result in no appreciable change in the risk estimates.

The plant-specific evaluation included the Catawba reactor core radionuclide inventory, emergency response evacuation modeling based on Catawba evacuation time estimate studies, release category source terms from the Catawba PRA, Revision 2b, analysis (same as the source terms used in the IPE), site-specific meteorological data for a representative year, and projected population distribution within a 80 km (50 mi) radius (Reference 4). The NRC staff confirmed that Duke used appropriate values for the consequence analysis and reported the results of its risk evaluation for Catawba in Supplement 9. The NRC staff concluded that the methodology used by Duke to estimate the CDF and offsite consequences for Catawba was adequate.

In the license renewal GEIS (Reference 24), the NRC staff concluded that the probability-weighted consequences from atmospheric releases associated with severe accidents was judged to be of small significance for all plants, including Catawba. The NRC staff concluded that, for both the drinking water and aquatic food pathways, the probability-weighted consequences from fallout due to severe accidents is of small significance for all plants, including Catawba. The NRC staff concluded that the probability-weighted consequences from groundwater releases associated with severe accidents was judged to be of small significance for all plants, including Catawba.

Nothing about the proposed action would significantly change either the probability or consequences of severe accidents. The small percentage of non-LEU fuel assemblies that could be involved in a severe accident would not result in an appreciable change in the risk estimates. The proposed action is not expected to change the manner in which the facility is operated nor does it alter Catawba's risk profile for severe accidents analyzed in the GEIS for license renewal (Reference 24) and, more recently, its assessment of mitigation alternatives in Supplement 9. Therefore, the NRC staff concludes that the environmental impacts of the proposed use of MOX LTAs are bounded by the environmental impacts previously evaluated in the GEIS and Supplement 9.

5.11 Decommissioning

Once a nuclear power generating facility permanently ceases commercial operation, the licensee is required to begin decommissioning. Decommissioning is the process of removing a facility or site safely from service and reducing residual radioactivity to a level that permits either the release of the property for unrestricted use and termination of the license or release of the property under restricted conditions and termination of the license. In November 2002, the NRC staff issued Final Supplement 1 to NUREG–0586, entitled ''Generic EIS on Decommissioning of Nuclear Facilities,'' (Reference 31) regarding the decommissioning of power reactors. Supplement 1 to the GEIS for decommissioning comprehensively evaluated all environmental impacts related to the radiological decommissioning of nuclear power facilities. By rule, if a licensee anticipates the need to perform activities that have not been previously considered or activities with impacts greater than those considered in the decommissioning GEIS, then it must obtain NRC approval with a license amendment request. At this time, Duke has not identified and the NRC staff is unaware of any activities that are dissimilar from those assessed in NUREG–0586 that might occur as a result of the LTA campaign. Therefore, the NRC staff has determined that the impacts associated with the decommissioning of a facility that would irradiate four MOX LTAs would be bounded by the impacts predicted by Supplement 1 to NUREG–0586 (Reference 31).

Decommissioning impacts are primarily related to the activities associated with the decontamination and dismantlement of the structures, systems, and components of the facility. The use of the MOX fuel LTAs will not change the scope or impact of those activities. During decommissioning, the primary system is typically decontaminated using a chemical flush. Contamination in the primary system is removed by the chemical flush and deposited in ion exchange resins that are permanently disposed in licensed burial facilities. Decommissioning of the facility would not result in the generation of any significant increase in liquid or solid radioactive waste. No increases in offsite or occupational exposure would be expected. No significant quantities of contaminated or activated additional structural material would be generated during decommissioning because of the use of the lead assemblies.

Therefore, the NRC staff concludes that the decommissioning of the facility after use of the lead assemblies would not result in impacts that are significantly different from a facility undergoing decommissioning that did not use the lead assemblies. Furthermore, the impacts of decommissioning the Catawba facility after the irradiation of four MOX fuel LTAs are bounded by the impacts evaluated in NUREG–0586, Supplement 1 (Reference 31).

5.12 Summary

The proposed irradiation of four MOX fuel LTAs at Catawba would not significantly increase the probability or consequences of accidents, would not introduce any new radiological release pathways, would not result in a significant increase in occupational or public radiation exposure, and would not result in significant additional fuel cycle environmental impacts. Accordingly, the Commission concludes that there are no significant environmental radiological impacts associated with the proposed action.

6.0 Irreversible or Irretrievable Commitment of Resources

The NRC staff has considered the commitment of resources related to operation of Catawba. These resources include materials and equipment required for plant maintenance and operation, the nuclear fuel used by the reactors, and ultimately, permanent offsite storage space for the spent fuel assemblies. As described in Supplement 9, the most significant resource commitments related to operation of the Catawba facility are the fuel and the permanent storage space. The resource commitments to be considered in this assessment are associated with the proposed irradiation of four MOX fuel LTAs in the reactor core of one of the Catawba facilities. Aside from the plutonium in the MOX fuel (20.2 kg Pu per assembly), all of the materials that are to be used would be used if the action were not to proceed.

7.0 Unavoidable Adverse Impacts

The NRC staff has considered whether the proposed action would cause significant unavoidable adverse impacts and concludes that the proposed irradiation of four MOX fuel LTAs will have no environmental non-radiological impacts and only minor radiological impacts. Therefore, the NRC staff concludes that there will be no significant adverse impacts as a result of the proposed action.

8.0 Mitigation

The NRC staff has evaluated the impacts that would accrue from the proposed action. The NRC staff has concluded that there will be no environmental non-radiological impacts and only minor radiological impacts. Therefore, the NRC staff concludes that mitigation is not warranted or necessary to minimize the impacts of this action.

9.0 Cumulative Impacts

The NRC staff considered potential cumulative impacts during its evaluation of the proposed action. For the purposes of this analysis, past actions were those related to the resources at the site at the time of the plant licensing and construction;

present actions are those related to the resources at the site at the time of current operations of the power plant; and future actions are considered to be those that are reasonably foreseeable through the end of plant operation. The impacts of the proposed action are combined with other past, present, and reasonably foreseeable future actions at Catawba regardless of what agency (Federal or non-Federal) or person undertakes such other actions. These combined impacts are defined as ''cumulative'' in 40 CFR 1508.7 and include individually minor, but collectively significant, actions taking place over a period of time. The NRC staff concludes that the proposed action would add only minute, incremental effects to those already accruing from current operation at Catawba using LEU fuel.

10.0 Alternatives to the Proposed Action

The NRC staff has evaluated a number of reasonable alternatives to the proposed action, including the no-action alternative. Two of the alternatives involve use of the reactors at two other Duke facilities, McGuire and Oconee Nuclear Station. A fourth alternative involves a different scheme than is currently proposed for transporting all of the rods from the irradiated MOX fuel LTAs offsite for post-irradiation examination (PIE) at ORNL.

10.1 No-Action Alternative

The NRC staff has considered the no-action alternative. If the four MOX fuel LTAs are not irradiated in one of the Catawba reactors, four LEU fuel assemblies with comparable performance characteristics will be used. The impacts resulting from the proposed action and the no-action alternative are similar.

10.2 Use of the McGuire Nuclear Station, Units 1 and 2 as an Alternative

MOX fuel lead assembly irradiation at a McGuire unit is a technically feasible alternative to using MOX LTA fuel at Catawba. McGuire and Catawba share the same fuel assembly design, and the RCS operating parameters are similar among all four units. All of the reactors are base loaded, with approximately 18 month intervals between refueling. All four reactors have the same rated thermal power—3411 MW(t) nominal. In addition, transportation modes and means of delivery to the two plants are the same.

Due to these and other similarities, there is a *de minimis* difference in the environmental impacts of MOX fuel lead assembly use at McGuire as compared to MOX fuel lead assembly use at Catawba. The ER on MOX fuel lead assembly use submitted to the NRC in support of the license amendment request (Reference 5), is applicable to both plants. Duke's responses to NRC requests for additional information (Reference 7 and Reference 9) related to environmental consequences would be technically applicable to irradiation of the MOX LTAs at McGuire as well as at Catawba.

In a letter dated September 23, 2003, Duke amended its license amendment request to apply to Catawba only (Reference 6). This action was based on refueling schedule considerations and the desire to minimize the resource requirements associated with MOX fuel lead assembly licensing. While use of MOX fuel lead assemblies at McGuire remains technically feasible, these refueling schedule and resource considerations make Catawba preferable for use of the MOX fuel lead assemblies in the late spring of 2005. That date, in turn, is driven by lead assembly fabrication and transportation (Reference 10).

10.3 Use of Oconee Nuclear Station, Units 1, 2, and 3 as an Alternative

MOX fuel lead assembly irradiation at Oconee is not considered to be a technically feasible alternative to using MOX fuel lead assemblies at a Catawba unit. As described in Duke's license amendment request, the reason for the lead assembly program is to demonstrate the acceptable performance of MOX fuel derived from weapons grade plutonium in reactors. McGuire and Catawba are very similar in design to European reactors that have amassed decades of experience using reactor grade MOX fuel. Further, McGuire and Catawba are the facilities that have been proposed to and accepted by the DOE for the larger-scale irradiation of the MOX fuel. It should be noted that the NRC has not received an application for wide scale routine, or batch, use of MOX fuel in any reactor and the NRC has not made any determination regarding any proposal for wide scale routine, or batch, use.

McGuire and Catawba share the same fuel assembly design. By contrast, Oconee has a different fuel assembly design and a different RCS design than the McGuire and Catawba plants. Oconee fuel assemblies have a 15x15 lattice; McGuire and Catawba use 17x17 fuel. The fuel rod pitch is 0.568 inches at Oconee, versus 0.496 inches at McGuire and Catawba. Oconee has 177 fuel assemblies in each core; McGuire and Catawba have 193 fuel assemblies in each core. Oconee uses a fixed incore detector system with rhodium detectors to measure neutron flux; McGuire and Catawba use a movable incore detector system with fission chambers. Oconee is a Babcock and Wilcox-designed reactor; McGuire and Catawba are four-loop Westinghouse plants. The core thermal power level is 2568 MW(t) at Oconee, vs. 3411 MW(t) at McGuire and Catawba. RCS average temperature is 579 °F at Oconee, vs. 586 °F at McGuire and Catawba.

Duke considers that a lead assembly program with the prototypical fuel design under prototypical conditions is required prior to contemplating use of significant quantities of MOX fuel at McGuire or Catawba. The differences between McGuire/Catawba and Oconee, while not extreme, are great enough such that MOX fuel lead assembly use at Oconee would not be considered prototypical (Reference 10). For those same reasons, Duke considers it likely that NRC would not consider a MOX fuel lead assembly program at Oconee to be sufficient for NRC to authorize Duke to use significant quantities of MOX fuel at McGuire or Catawba. Therefore, Oconee is not a practical alternative for a MOX fuel lead assembly program.

Duke has stated that it knows of no technical reason that MOX fuel could not be used safely at Oconee (Reference 10). However, in the context of the ongoing U.S. program to dispose of surplus plutonium using MOX fuel, McGuire and Catawba are the only reactors selected for the program and the only technically feasible alternatives under Duke's control for a MOX fuel lead assembly program.

10.4 Offsite Storage of All MOX LTA Fuel Rods

As part of the MOX Fuel Project lead assembly program, a small number of irradiated MOX fuel rods will, at the direction of DOE, be transported to ORNL for post-irradiation examination (PIE). The fuel rods would be destructively examined at ORNL and eventually disposed of as waste. The remainder of the MOX fuel rods (approximately 1000 rods) would remain in the SFP at Catawba until they are accepted by DOE pursuant to the Nuclear Waste Policy Act, presumably to a permanent geologic repository.

Transportation of irradiated MOX fuel to an interim offsite location is beyond the scope of the Duke lead assembly license amendment application (Reference 10). Duke's application is specifically limited to the receipt and storage of MOX fuel as well as incore irradiation of the MOX fuel. The environmental impacts of irradiated

MOX fuel transportation and disposal have been addressed in other EISs. There are no specific plans in place to transport offsite all of the MOX fuel rods from the MOX fuel lead assemblies in conjunction with the offsite shipment of a limited number of rods to ORNL for PIE.

Nevertheless, the NRC staff requested that Duke consider an alternative involving a variation of the proposed DOE transportation of the irradiated MOX fuel rods in the LTAs (Reference 35). Duke could ship all of the MOX fuel assemblies to ORNL for storage even though there are no facilities for such storage at ORNL (Reference 10). Nevertheless, in this hypothetical case, following interim storage, ORNL could ship the four MOX fuel assemblies to another storage location. The difference in these approaches is minor from an environmental perspective. The alternative approach would eliminate the need for the direct shipment of four fuel assemblies from Catawba to Yucca Mountain, should Yucca Mountain eventually be licensed, however, offsetting this benefit is the shipment from Catawba to ORNL and from ORNL to Yucca Mountain and additional handling. Duke has stated that it expects that the difference between the alternatives would be negligible (Reference 10).

It should be noted that it is necessary to cool spent fuel assemblies in the SFP prior to shipping them offsite. Therefore, the alternative of shipping all of the fuel offsite would by necessity involve some period of onsite storage at Catawba. There is no conceivable alternative (other than no-action) that involves no spent MOX fuel assembly storage at Catawba (Reference 10).

If DOE were to transport all of the rods in the four MOX LTAs offsite, no irradiated MOX fuel would need to be stored on the Catawba site. The NRC staff concludes that the environmental impacts from this alternative would be similar to those for the proposed action.

11.0 Agencies and Persons Consulted

On July 30, 2004, the NRC staff consulted with the South Carolina State official, Mr. Mike Gandy of the Department of Health and Environmental Controls, regarding the environmental impact of the proposed action. The State official had no comments.

12.0 References

1. Duke letter to NRC, Catawba Individual Plant Examination (IPE) Submittal, September 10, 1992.
2. Duke letter to NRC, Individual Plant Examination of External Events (IPEEE) Submittal, Catawba Nuclear Station, June 21, 1994.
3. Duke letter to NRC, Applicant's Environmental Report—Operating License Renewal Stage Catawba Nuclear Station Units 1 and 2, June 12, 2001, ADAMS ML011660138.
4. Duke, Probabilistic Risk Assessment Revision 2b, Catawba Nuclear Station, April 18, 2001.
5. Duke letter to NRC, Proposed Amendments to the Facility Operating License and Technical Specifications to Allow Insertion of Mixed Oxide (MOX) Fuel Lead Assemblies and Request for Exemption from Certain Regulations in 10 CFR Part 50, February 27, 2003, ADAMS ML030760734.
6. Duke letter to NRC, Catawba and McGuire, Mixed Oxide Fuel Lead Assembly License Amendment Request, September 23, 2003, ADAMS ML032750033.
7. Duke letter to NRC, Catawba, Response to Request for Additional Information Regarding the Use of Mixed Oxide Lead Fuel Assemblies, November 3, 2003, ADAMS ML033210369.
8. Duke letter to NRC, Response to Request for Additional Information dated November 30, 2003, Regarding the Use of Mixed Oxide Lead Fuel Assemblies, December 10, 2003, ADAMS ML033510563.
9. Duke letter to NRC, Catawba, Response to Request for Additional Information, Mixed Oxide Fuel Assemblies (Environmental, Radiological, and Materials), February 2, 2004, ADAMS ML040510064.
10. Duke letter to NRC, Catawba, Response to Request for Additional Information Mixed Oxide Fuel Lead Assemblies (Environmental), March 1, 2004, ADAMS ML040710492.
11. Duke letter to NRC, Catawba, Amended Information Regarding Radiological Consequences for MOX Fuel Lead Assemblies, March 16, 2004, ADAMS ML040840483.
12. U.S. Department of Energy (DOE), DOE/EIS–0229, Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement, December 1996.
13. DOE/EIS–0283, Surplus Plutonium Disposition Environmental Impact Statement, 1 through 5, November 1999.
14. DOE/EIS–0250, Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, February 2002.
15. DOE/EIS–0283–SA1, Supplemental Analysis and Amended Record of Decision—Changes Needed to the Surplus Plutonium Disposition Program, April 2003.
16. DOE/EIS–0229–SA3, Supplemental Analysis—Fabrication of Mixed Oxide Fuel Lead Assemblies in Europe, November 2003.
17. NRC NUREG–0170, Final Environmental Impact Statement on the Transportation of Radioactive Material by Air and Other Means, December 1977.
18. NRC NUREG–0921, Final Environmental Impact Statement Related to the Operation of Catawba Nuclear Station, Units 1 and 2, January 1983.
19. NRC Generic Letter 88–20, Individual Plant Examination for Severe Accident Vulnerabilities, November 23, 1988.
20. NRC NUREG–1150, Severe Accident Risks—An Assessment for Five U.S. Nuclear Power Plants, December 1990.
21. NRC Supplement 4 to Generic Letter 88–20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities,'' June 28, 1991.
22. NRC Letter to Duke, Safety Evaluation of Catawba Nuclear Station, Units 1 and 2, Individual Plant Examination (IPE) Submittal, June 7, 1994.
23. NRC Regulatory Guide 1.183, ''Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors.''
24. NRC NUREG–1437, Volumes 1 and 2, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, May 1996.
25. NRC NUREG–1560, Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance, December 1997.
26. NRC NUREG–1437, Vol. 1, Addendum 1, Final Report—Generic Environmental Impact Statement—License Renewal of Nuclear Plants—Main Report—Section 6.3—Transportation Table 9.1, Summary of Findings on NEPA issues for license renewal of nuclear power plants, August 1999.
27. NRC Letter Duke, Catawba—Review of Individual Plant Examination of External Events (IPEEE), April 12, 1999.
28. NRC NUREG/CR–0200, Revision 6, Volume 1, SAS2H: A Coupled One-Dimensional Depletion and Shielding Analysis Module, March 2000.
29. Sandia National Laboratories, SAND 2000–1256, RADTRAN 5 Technical Manual, May 2000.
30. NRC NUREG–1714, Vol. 1, Final Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Toole County, Utah, December 2001.
31. NRC NUREG–0586, Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, November 2002.
32. NRC NUREG–1437, Supplement 9 (Catawba) to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, December 2002.
33. NRC NUREG–1767, Draft Report for Comment—Environmental Impact Statement on the Construction and Operation of a Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina, February 2003.
34. NRC Letter to Duke, Catawba—Request for Additional information Regarding Mixed Oxide Lead Fuel Assemblies, December 16, 2003, ADAMS ML033500408.
35. NRC Letter to Duke, Catawba—Request for Additional Information Regarding Mixed Oxide Lead Fuel Assemblies, February 20, 2004, ADAMS ML040490683.
36. NRC Letter to Duke, transmitting safety evaluation for proposed amendments to the operating license, April 5, 2004, ADAMS ML040970046.

13.0 Finding of No Significant Impact

On the basis of the EA, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an EIS for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated February 27, 2003, as supplemented by letters dated September 15, September 23, October 1 (two letters), October 3 (two letters), November 3 and 4, December 10, 2003, and February 2 (two letters), March 1 (three letters), March 9 (two letters), March 16 (two letters), March 26, March 31, April 13, April 16, May 13, and June 17, 2004. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, *http://www.nrc.gov/reading-rm/adams.html*. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1–800–397–4209 or 301–415–4737, or by e-mail to *pdr@nrc.gov.*

Dated at Rockville, Maryland, this 10th day of August 2004.

For the Nuclear Regulatory Commission.

Edwin M. Hackett,

Project Director, Project Directorate II, Division of Licensing Project Management, Office of Nuclear Reactor Regulation.

[FR Doc. 04–18731 Filed 8–16–04; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Notice of Public Meeting of the Interagency Steering Committee on Radiation Standards With the International Commission on Radiation Protection

AGENCIES: U.S. Nuclear Regulatory Commission and U.S. Environmental Protection Agency.

ACTION: Notice of public meeting.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) will host a topical public meeting of the Interagency Steering Committee on Radiation Standards (ISCORS) with representatives from the International Commission on Radiation Protection (ICRP) on September 15, 2004, in Rockville, Maryland. The purpose of ISCORS is to foster early resolution and coordination of regulatory issues associated with radiation standards. Agencies represented as members of ISCORS include the following: NRC; U.S. Environmental Protection Agency; U.S. Department of Energy; U.S. Department of Defense; U.S. Department of Transportation; the Occupational Safety and Health Administration of the U.S. Department of Labor; U.S. Department of Homeland Security; and the U.S. Department of Health and Human Services. ISCORS meeting observer agencies include the Office of Science and Technology Policy, Office of Management and Budget, Defense Nuclear Facilities Safety Board, as well as representatives from both the States of Illinois and Pennsylvania.

The ICRP representatives, Dr. Roger Clarke, Chairman, and Dr. Lars-Erik Holm, Vice-Chairman, will be presenting the draft revision of the ICRP recommendations on radiation protection, currently available for public consultation at *http://www.icrp.org.* The objective of the meeting is to provide an opportunity for exchange of ideas and comments with the ICRP during the time the draft recommendations are available for public consultation. The tentative agenda includes an ICRP presentation followed by open, moderated discussion of the draft recommendations with attendees. There will be time on the agenda for members of the public to ask questions. The final agenda for the September 2004 meeting will be posted on the ISCORS Web site, *http://www.iscors.org,* shortly before the meeting. Space is limited and advanced registration is requested to assure attendance upon arrival. Attendees should plan to provide two forms of identification and arrive early in anticipation of security screening and related delays.

In the executive summary of the draft report, ICRP concluded that its recommendations should be based on a simple, but widely applicable, general system of protection that will clarify its objectives and will provide a basis for the more formal systems needed by operating managements and regulators. The report specifies that ICRP also recognizes the need for stability in regulatory systems at a time when there is no major problem identified with the practical use of the present system of protection in normal situations. The use of the optimization principle, together with the use of constraints and the current dose limits, has led to a general overall reduction in both occupational and public doses over the past decade. The ICRP now proposes to strengthen its recommendations by quantifying constraints for all controllable sources in all situations. Further, the system of protection now recommended by the ICRP is intended to be seen as a natural evolution of, and as a further clarification of, their 1990 Recommendations. Specifically, the draft report addresses the following areas: quantities used in radiation protection; biological aspects; the general attributes of the system of protection; levels of protection for individuals; optimization of protection; exclusion of sources; medical exposures; potential exposure; and protection of the environment.

DATES: The meeting will be held from 1 p.m. to 5 p.m. on Wednesday, September 15, 2004.

ADDRESSES: The meeting will be held in the ACRS hearing room, T2B3, at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION, CONTACT: Susanne Woods or Jennifer Davis, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 415–7319; FAX (301) 415–5398; electronic mail to both *SRW@NRC.GOV* and *BJD1@NRC.GOV.*

SUPPLEMENTARY INFORMATION: Visitor parking around the NRC building is limited; however, the Two White Flint North building is located adjacent to the White Flint Metro Station on the Red Line.

Dated at Rockville, MD, this 11th day of August, 2004.

For the Nuclear Regulatory Commission.

Scott Flanders,

Deputy Director, Environmental and Performance Assessment Directorate, Division of Waste Management and Environmental Performance, Office of Nuclear Materials Safety and Safeguards.

[FR Doc. 04–18733 Filed 8–16–04; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Sunshine Act Meeting

DATE: Weeks of August 16, 23, 30, September 6, 13, 20, 2004.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public and Closed.

MATTERS TO BE CONSIDERED: