

### Finding of No Significant Impact

On the basis of the environmental assessment, 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 environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated December 10, 2002. 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](mailto:pdr@nrc.gov).

Dated at Rockville, Maryland, this 10th day of July 2003.

For the Nuclear Regulatory Commission.

#### L. Raghavan,

Chief, Section 1, Project Directorate III,  
Division of Licensing Project Management,  
Office of Nuclear Reactor Regulation.

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## NUCLEAR REGULATORY COMMISSION

[Docket No. 70-143]

### Nuclear Fuel Services, Inc.; Environmental Assessment and Finding of No Significant Impact

#### I. Introduction

The Nuclear Regulatory Commission (NRC) staff has received a license amendment request from Nuclear Fuel Services, Inc. (NFS) dated January 23, 2003, to amend Special Nuclear Material License SNM-124 to use International Commission on Radiation Protection (ICRP) Publication 68 for Derived Air Concentration (DAC) and the Annual Limit on Intake (ALI) determinations (Ref. 1, 2). An Environmental Assessment (EA) was performed by the NRC staff in support of its review of NFS' license amendment request, in accordance with the requirements of 10 CFR part 51. The conclusion of the EA is a Finding of No

Significant Impact (FONSI) for the proposed licensing action.

#### II. Supplementary Information

##### Background

The NFS facility in Erwin, TN is authorized under SNM-124 to possess nuclear materials for the fabrication and assembly of nuclear fuel components. The facility fabricates research and university reactor components and manufactures compact reactor fuel elements. The facility also performs recovery of scrap uranium.

Inhalation of dust in radiologically controlled areas poses an internal radiation hazard, and the NRC regulations in 10 CFR part 20 require licensees to implement certain protective measures to minimize that hazard. These measures include taking a variety of air samples, using respirators in certain work areas, posting airborne radioactivity warning signs outside the work areas, and putting the potentially exposed workers on a routine bioassay program to assess their intakes and verify the effectiveness of the protection program. Many of these protective measures are triggered when the air concentrations in the workplace reach specified fractions of the air concentrations tabulated in 10 CFR part 20 appendix B. NFS has requested to amend its license to permit the use of values other than those tabulated in Part 20 as the basis for triggering protective measures, and for assessing the internal dose to its workers. The basis for the amendment request is the recommendations in ICRP 68. In the amendment application, NFS maintains that the assessment of the radiological hazard based on 10 CFR part 20 Appendix B requires it to implement monitoring and protection programs at levels that are out of proportion with the true level of hazard, and that do not significantly add to worker protection. NFS believes that granting the exemption would enable it to reduce the size of its internal exposure program while, at the same time, provide a level of protection proportional to the actual hazard. NFS references an NRC Staff Requirements Memorandum (SECY-99-077) which directs the staff to grant exemptions to 10 CFR part 20 on this modeling issue on a case-by-case basis.

##### Review Scope

In accordance with 10 CFR part 51, this EA serves to (1) present information and analysis for determining whether to issue a Finding of No Significant Impact (FONSI) or to prepare an Environmental Impact Statement (EIS); (2) fulfill the

NRC's compliance with the National Environmental Policy Act when no EIS is necessary; and (3) facilitate preparation of an EIS when one is necessary. Should the NRC issue a FONSI, no EIS would be prepared and the license amendment would be granted.

This document serves to evaluate and document the impacts of the proposed action. Other activities on the site have previously been evaluated and documented in the 1999 Environmental Assessment (EA) for the Renewal of the NRC license for NFS (Ref. 3). The 1999 document is referenced when no significant changes have occurred. Besides the proposed licensing action, operations will continue to remain limited to those authorized by the license.

##### Proposed Action

The proposed action is to amend NRC Materials License SNM-124 to authorize the use of Derived Air Concentration (DAC) and the Annual Limit on Intake (ALI) values specified in International Commission on Radiation Protection Publication 68 (ICRP 68), entitled Dose Coefficients for Intake of Radionuclides by Worker (Ref. 2). The DAC/ALI values would be used to assign the effective dose to workers based on an aerosol particle size of 5 microns as specified in ICRP 68. The proposed DAC/ALI values are based on particle size studies, as currently described in Sections 3.2.5.1 and 12.13.5 of Materials License SNM-124 (Ref. 4).

##### Affected Environment

The affected environment for the proposed activity is the NFS site. A full description of the site and its characteristics is given in the 1999 Environmental Assessment (EA) for the Renewal of the NRC license for NFS (Ref. 3).

##### Effluent Releases and Monitoring

A full description of the effluent monitoring program at the site is provided in the 1999 Environmental Assessment for the Renewal of the NRC license for NFS (Ref. 3). Monitoring programs at the NFS facility comprise effluent monitoring of air and water and environmental monitoring of various media (air, soil, vegetation, and groundwater). This program provides a basis for evaluation of public health and safety impacts, for establishing compliance with environmental regulations, and for development of mitigation measures if necessary. The monitoring program is not expected to change as a result of the proposed action. The NRC has reviewed the

location of the environmental monitoring program sampling points, the frequency of sample collection, and the trends of the sampling program results in conjunction with the environmental pathway and exposure analysis and concluded that the monitoring program provides adequate protection of public health and safety.

#### *Environmental Impacts of Proposed Action*

##### Radiological Impacts

The basic limits on radiation exposures, as well as the minimum radiation protection practices required of any NRC licensee, are specified in 10 CFR part 20, "Standards for Protection Against Radiation" (Ref. 5). The models used in part 20 to regulate internal doses are those described in ICRP Publications 26 and 30, adopted by ICRP in 1977 and 1978, respectively (Ref. 6, 7). Much of the basic structure of these models was developed in 1966, although some of its components and parameters were altered somewhat between 1966 and their formal adoption by ICRP in 1978. In the same year that the Commission approved the final Part 20 rule (1991), ICRP published a major revision of its radiation protection recommendations, ICRP 60 (Ref. 8). In the several years following this revision, ICRP published a series of reports in which it described the components of an extensively updated and revised internal dosimetry model. Due to the restrictions in part 20, NRC licensees are not permitted to use the revised and updated internal dosimetry models, without requesting an exemption to the regulations.

Although the dose per unit intake calculated using the new models does not differ by more than a factor of about two from the values in Part 20 for most radionuclides, the differences are substantial for some, particularly for the isotopes of thorium, uranium, and some of the transuranic radionuclides. For example, for inhalation of insoluble thorium-232 ( $^{232}\text{Th}$ ), the dose per unit intake calculated using the revised ICRP lung model is a factor of about 15 times lower than that in part 20. Because protective measures are based on the hazard, and since the hazard is proportional to dose, part 20 requires significantly more protective measures when using  $^{232}\text{Th}$  than would be warranted based on the revised models. This is NFS's primary concern, and has requested that it be allowed to use DAC and ALI values based on the dose coefficients listed in ICRP 68. The staff concluded during the license renewal on July 2, 1999, that NFS, due to

adequate training and expertise, is qualified to utilize the ICRP Model's such as ICRP-68 in a manner equivalent to those values listed in 10 CFR 20.1201(d), *i.e.*, doses to less than NRC's regulatory limit of 5 rem, in its Radiation Safety Program. Therefore, NFS' request for an exemption under 10 CFR 20.2301 and 10 CFR 70.14(a) is acceptable, because it gives its workers equivalent radiological protection as required by 10 CFR part 20. Thus, the exemption is authorized by law and will not result in an undue hazard to life or property.

##### Nonradiological Impacts

The NRC determined that there are no nonradiological impacts associated with the proposed action.

##### Cumulative Impacts

The NRC determined that there are no cumulative impacts associated with the proposed action.

##### *Alternatives to the Proposed Action*

NRC considered one alternative to the proposed action which was to deny the amendment request. This alternative was rejected because the impacts of the proposed action on the health and safety of the workers, the public, and the environment were determined to be insignificant. In addition, the licensee will be able to save time and resources on implementing protective measures, upon approval of the proposed action.

##### *Agencies and Persons Contacted*

The NRC contacted the Director of Radiological Health at the Tennessee Department of Environment and Conservation (TDEC) concerning this request. There were no comments, concerns or objections from the state.

Because the proposed action is entirely within existing facilities, and does not involve new or increased effluents or accident scenarios, the NRC has concluded that there is no potential to affect endangered species or historic resources, and therefore consultation with the State Historic Preservation Society and the U.S. Fish and Wildlife Service was not performed.

### III. Finding of No Significant Impact

Based upon the environmental assessment, the staff concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the staff has determined that preparation of an environmental impact statement is not warranted.

### IV. Further Information

The following documents are related to the proposed action:

1. B.M. Moore, Nuclear Fuel Services, Inc., Letter to U.S. Nuclear Regulatory Commission, "License Amendment Request to Use ICRP 68 for ALI and DAC Determinations," January 23, 2003. (ADAMS Accession Number ML030290097).
2. International Commission on Radiological Protection, "Dose Coefficients for Intake of Radionuclides by Worker," Publication 68, Elsevier Science, 1995.
3. T. Cox, U.S. Nuclear Regulatory Commission, Letter to T.S. Baer, Nuclear Fuel Services, Inc., "Finding of No Significant Impact and Environmental Assessment," January 29, 1999.
4. U.S. Nuclear Regulatory Commission, Special Nuclear Material License SNM-124.
5. *U.S. Code of Federal Regulations*, "Standards for Protection Against Radiation," Part 20, Chapter 1, Title 10, Energy.
6. International Commission on Radiological Protection, "Recommendations of the International Commission on Radiological Protection," Publication 26, Elsevier Science, 1977.
7. International Commission on Radiological Protection, "Limits for the Intake of Radionuclides by Workers," Publication 30, Elsevier Science, 1978.

These references may be examined and/or copied for a fee at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The references with ADAMS accession numbers may also be viewed in the NRC's Electronic Public Document Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. Any questions with respect to this action should be referred to Ms. Mary Adams, Fuel Cycle Facilities Branch, Division of Fuel Cycle Safety and Safeguards, U.S. Nuclear Regulatory Commission, Mail Stop T-8 A33, Washington, DC 20555-0001. Telephone 301-415-7249.

Dated at Rockville, Maryland, this 7th day of July, 2003.

For the Nuclear Regulatory Commission.

**Susan M. Frant,**

*Chief, Fuel Cycle Facilities Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards.*

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