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September 8, 1999

Mr. Theodore S. Sherr
Chief, Regulatory and International Safeguards Branch
U.S. Nuclear Regulatory Commission
Two White Flint North 8A33
Washington, D.C. 20555

Reference: Comments on the June, 1999 Draft Version of NUREG-1520 '*Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*': Chapter 9 – Environmental Protection

Dear Mr. Sherr:

The Nuclear Energy Institute (NEI)[1] and its industry members are undertaking detailed reviews of each chapter of the draft Standard Review Plan (SRP) released on June 2, 1999 as part of SECY-99-147. To provide effective guidance on implementation of 10 CFR 70, we believe the SRP should be concisely written and accurately reflect the 'risk-informed, performance-based' regulatory approach incorporated into the Part 70 rule revisions.

Accompanying this letter are NEI's comments on Chapter 9 ('*Environmental Protection*') of the draft SRP. The review is presented in two parts: (i) general comments on the sub-chapter, and (ii) specific language (or stylistic) improvements presented on a red-lined version of the draft SRP sub-chapter. In view of the number and complexity of NEI's proposed improvements, a second copy of SRP Chapter 9 has been prepared from which the red-lined text deletions have been removed. This version of draft SRP Chapter 9 will enable you to more clearly understand the improvements which NEI is recommending.

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

NEI is pleased that many improvements to the draft SRP developed in public meetings and workshops and proposed by industry have been incorporated into this latest draft of the SRP. The June, 1999 revision is markedly improved over earlier versions issued in 1998 and we compliment the staff for this accomplishment.

We look forward to working with you and your staff to make NUREG-1520 a clear and concise document that will facilitate implementation of the new provisions of 10 CFR Part 70. Please feel free to contact me should you have any questions concerning the proposed improvements in the attachment to this letter.

Sincerely,

Felix M. Killar, Jr.
Director, Material Licensees and Nuclear Insurance

c. Mr. Marvin S. Fertel
Dr. Carl J. Paperiello, Director NMSS

Ref: I:\Files\Part 70\SRP (June 1999 Version) Cover Letter10.msw

COMMENTS ON THE JUNE, 1999 DRAFT VERSION OF NUREG-1520
'*STANDARD REVIEW PLAN FOR THE REVIEW OF A LICENSE APPLICATION FOR A FUEL CYCLE FACILITY*'

CHAPTER 9: ENVIRONMENTAL PROTECTION

I. General Comments

The June, 1999 revision of draft SRP Chapter 9 contains very detailed and prescriptive requirements for evaluation of an applicant's Environmental Report and general environmental protection measures.

Draft SRP Chapter 9 can be significantly simplified by directing the reviewer to solely evaluate the applicant's proposed environmental protection measures. The detailed information in §9.6 on preparation of an Environmental Assessment (EA), Finding of No Significant Impact (FONSI) or Environmental Impact Statement (EIS), none of which become part of the applicant's license, should be deleted. The NRC staff prepares such documents and the guidance in doing so is not appropriate for inclusion in NUREG-1520. While 10 CFR 51.60(b)(1)(i) generally requires preparation of an Environmental Report for the possession and use of special nuclear material, the NRC Branch Chief may elect to invoke the categorical exclusion provision of 10 CFR 51.22(c)(xiii). This provision excuses facilities that manufacture or process special nuclear material from the requirement to submit an Environmental Report. NEI believes that staff assessment of an Environmental Report (if required) lies outside the scope of SRP Chapter 9 review. Guidance in evaluating an Environmental Report should be presented in a separate NRC document. NEI recommends that the guidance now contained in §9.4.3.1 (Environmental Report content) should be removed from SRP Chapter 9 and incorporated in a document that guides the staff in assessing an Environmental Report and using it subsequently in National Environmental Policy Act (NEPA) implementation.

The reviewer should not be expected to again evaluate the applicant's ISA (and ISA commitments), for such evaluation was performed previously as an SRP Chapter 3 task. NEI recommends that SRP Chapter 9 require a reviewer to address only the acceptability of the proposed environmental protection measures.

Draft SRP Chapter 9 does not correctly implement the NRC-OSHA Memorandum of Understanding (MOU). It repeatedly seeks non-radiological data while it should only be seeking information on the control and monitoring of radiological releases. For example, §9.3.2 and §9.4.2.3 seek information on "…*non-radiological releases to the environment*…" §9.4.2.2(A)(2) seeks information on "…*airborne effluents from all operations*…", whereas the MOU would limit such requests to "…*potentially radioactive airborne effluents*…." There are many instances where the applicant is requested to propose control and monitoring programs for all effluents (e.g. §9.4.2), whereas the NRC should only seek information on "… *radiological* effluent controls

and *radiological* effluent and environmental monitoring...." While an applicant must comply with applicable federal and state environmental laws and regulations (e.g. Federal Water Pollution Control Act), the applicant should not be required to present non-radiological information in support of proposed environmental protection measures. SRP Chapter 9 must be revised to be in accordance with 10 CFR 70.

NEI is concerned with the prescriptiveness of draft SRP Chapter 9. The Acceptance Criteria (§9.4.2), for example, require the applicant to provide a detailed description of monitoring measures, to identify all effluent discharge locations, to specify sample collection and analysis methods an frequencies, to outline laboratory QA/QC programs, etc. These detailed requirements are suitable as program evaluation criteria, but not as license evaluation criteria. Prescribing the minimum detectable concentration (MDC) to be 5%, or the 'action level' for a contaminant to be 10%, of the 10 CFR 20 Appendix B (Table 2) data, is unnecessarily prescriptive. Values for such parameters should only be established for a particular effluent once the relative risk of its discharge to the environment has been determined in the ISA. Two other examples of inappropriate over-prescriptiveness are the requirements for continuous air sampling in areas where SNM is not handled or processed (§9.4.2.2.(a)(2)) and the requirement to participate in round-robin programs to ensure accuracy in environmental measurements (§9.4.2.2.(B)(4)). In the case of the former, the results of the ISA will dictate where continuous air sampling may be required; in the case of the latter, management measures will establish what procedures are appropriate to ensure accuracy of a facility's analytical data. NEI recommends that the nine pages of detailed requirements be condensed into 1-2 pages of license commitments to various radiological safety programs

Draft SRP Chapter 9 specifies criteria in §9.4.2.3 for assessing the adequacy of an applicant's ISA. These criteria are repetitive of what was presented in SRP Chapter 3. A reviewer should not be expected to evaluate the ISA (again), nor, as is suggested in §9.5.2, to require submission to the NRC of the entire ISA. The reviewer should only be directed to consult the ISA Summary (SRP Chapter 3) as part of the evaluation of environmental protection measures, but not to have to review or approve it (again).

NEI suggests that an applicant only need address the '*Minimization of Contamination*' requirements of 10 CFR 20.1406 in SRP Chapter 9 rather than in both Chapters 9 and 10 in the draft SRP. The applicant's commitments to design and operate the facility in a manner to minimize environmental contamination and generation radioactive waste should be evaluated as a Chapter 9 'environmental protection measure.' The Waste Minimization provision referenced in §9.4.2.1(4) is stated incorrectly. 10 CFR 20.1406 requires new license applicants to outline a waste minimization program, but excludes current licensees seeking license renewals or amendments from this requirement. §9.4.2.1(4) incorrectly states that existing licensees must prepare a waste minimization program. The SRP must be revised to correctly reflect provisions of 10 CFR 20.1406.

NEI recommends that the content of SRP Chapter 9 be revised to parallel that of other SRP Chapters. For example, §9.5 ('Review Procedures') should contain separate sub-chapters on 'Acceptance Review' and 'Safety Evaluation.' Section 9.6 ('Evaluation Findings') should also contain recommended language for inclusion in the Safety Evaluation Report. In some other areas NEI has incorporated language contained in the Environmental Protection chapter of the AVLIS SRP (NUREG-1701).

Finally, to be consistent with the manner in which other chapters of the SRP have been revised, NEI has recast the substance of SRP Chapter 9 in terms of licensee ***commitments***. The reviewer should concentrate on an assessment of an applicant's commitments to design and implement environmental protection measures, and not on the details of how the measures will be implemented. The June 1998 draft SRP Chapter 9 fails by prescribing very detailed program requirements that may be suitable to an NRC Inspector for program evaluation criteria, but which are not appropriate as license evaluation criteria.

In summary, we believe SRP Chapter 9 could be significantly simplified if the scope were solely limited to evaluation of an applicant's commitments to design and implement environmental protection measures consistent with the results of the ISA. The reviewer should also determine if an Environmental Report should be submitted. By removing from the scope of Chapter 9 the review of the applicant's Environmental Report and NEPA implementation, the reviewer can focus attention on the more important safety-significant environmental protection measures.

II. Specific Comments

Specific comments are noted on the attached copy of draft SRP Chapter 9.

Ref: I\Files\Part 70\SRP (June 1999 Version) Sec 9.msw

9.0 ENVIRONMENTAL PROTECTION

9.1 PURPOSE OF REVIEW

The primary purpose of the ~~this~~ review is to determine with reasonable assurance that ~~whether~~ the applicant's proposed environmental protection measures ~~are~~ adequately ~~to~~ protect public health and the environment and comply with the regulatory requirements of ~~imposed by the Commission in~~ 10 CFR Parts 20, 51, and 70.

Environmental protection measures should be based upon the results of the Integrated Safety Analysis (ISA). The ISA, as summarized in the ISA Summary, was evaluated in SRP Chapter 3 ('*Integrated Safety Analysis (ISA) Commitments and ISA Summary*'). The ISA identified and evaluated the potential risk of accident sequences that could result in inadvertent releases of licensed material or hazardous chemicals produced from licensed material to the environment. Assessment of releases of other non-radiogenic contaminants from the facility lies outside the scope of the Chapter 9 evaluation, in accordance with provisions of the NRC-OSHA 1988 Memorandum of Understanding. The ISA also identified items relied on for safety to prevent such releases or to mitigate their environmental consequences and recommended management measures to ensure the availability and reliability of such items relied on for safety, when needed. Prior to assessing the applicant's environmental protection measures, the reviewer should first consult the ISA Summary (SRP Chapter 3) to gain familiarity with:

(1) accident sequences that could release to the environment licensed material or hazardous chemicals produced from licensed material
(2) specific items relied on for safety to prevent or mitigate such releases
(3) management measures recommended to ensure that items relied on for safety will be available and reliable when needed.

SRP Chapter 9 also provides guidance on the content of an applicant's Environmental Report. Generally at the beginning of the licensing review the appropriate NRC Branch Chief will determine if the proposed action qualifies for a categorical exclusion under 10 CFR 51.22(c)(14)(xiii). If a categorical exclusion is granted, the applicant does not need to submit an Environmental Report. Environmental Reports are used by the NRC to prepare either an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) pursuant to 10 CFR 51. Evaluation of the applicant's Environmental Report lies outside the scope of the SRP Chapter 9 review.

~~In addition, the staff will determine if the applicant submits an environmental report which is adequate for staff use in preparation of an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) pursuant to 10 CFR Part 51.~~

9.2 RESPONSIBILITY FOR REVIEW

Primary: Environmental Engineer/Scientist

Secondary: Licensing Project Manager

Supporting: Fuel Cycle Facility Inspector

Radiation Safety Reviewer
ISA Lead Reviewer

9.3 AREAS OF REVIEW

10 CFR 70.62(a) requires an applicant to establish and maintain a safety program that will adequately protect worker and public health and safety and the environment from the hazards of licensed material. The applicant's plant-wide safety program must, therefore, control and assess the level of radioactive releases (gaseous, liquid and solid) to the environment. In accordance with the NRC-OSHA 1988 Memorandum of Understanding, it must also consider environmental releases of radiogenic hazardous chemicals that are produced from licensed material. Such non-radiogenic chemical releases and their prevention and mitigation were already considered in SRP Chapter 6 and need not be considered again in SRP Chapter 9.

The environmental review will examine the control and monitoring of releases of licensed material to the environment and public in plant effluents. Included is assessment of the applicant's waste minimization program. If the applicant must submit an Environmental Report, SRP Chapter 9 provides guidance to the reviewer on what information should be contained in this document.

~~There are two distinct components of the application that require an environmental review. These are (1) the environmental report and (2) the description of environmental protection measures. The review of environmental protection measures includes a review of the applicant's integrated safety analysis (ISA) summary. The following subsections identify the areas of review for each of these components. Greater detail on each component is provided in Section 9.4, which specifies the review acceptance criteria.~~

9.3.1 Environmental Report

[Comment: this information has been moved to the 'Regulatory Requirements' section of Chapter 9.]~~The regulatory requirements for the environmental report are contained in 10 CFR Part 51. These regulations were promulgated by the Commission to implement the National Environmental Policy Act (NEPA) of 1969, which requires an assessment of the environmental impacts for all major Federal actions. The NRC staff conducts an independent assessment for all licensing actions that may have a significant effect on the environment, based on the information provided by the applicant in the environmental report. This assessment is documented in an EA or EIS. Actions listed in 10 CFR Part 51.22(c) have been determined by the Commission to have insignificant environmental impacts and are categorically excluded from the requirement for an environmental assessment and an environmental report. However, the applicant may be required to submit information to the NRC to justify the applicability of the categorical exclusion.~~

Components of ~~The areas of review for~~ the ~~e~~Environmental R~~r~~eport should include description of the proposed action, a statement of its purposes, a description of the affected environment and discussion of the following: ~~correspond to the content specified in 10 CFR 51.45:~~

- Date of Application
- Environmental Considerations
  - →Description of the proposed action
  - →Purpose of the proposed action
  - →Description of the affected environment

→Discussion of considerations (including environmental impacts and alternatives to the proposed action)

- Analysis
- Status of Compliance
- Adverse Information

The environmental report may include or reference information submitted to the NRC for prior licensing actions.

9.3.2 Environmental Protection Measures

Establishment of a separate environmental protection safety program is not necessarily required by 10 CFR 70. However, the applicant must provide commitments to assess and control to within the standards specified in 10 CFR Parts 20 and 70 all releases of radioactive material to the environment. In addition to assessing an applicant's commitments to environmental protection, the reviewer should examine the proposed radiological effluent and environmental monitoring practices. Such practices should be consistent with the applicant's radiation protection program. The plant-wide safety program should be evaluated to ensure that management measures are specified to provide reasonable assurance that these activities meet license objectives. Evaluation of an applicant's commitments should be based upon an understanding of the facility processes (SRP Chapter 1.1) and potential accident sequences that could result in radiological releases (or releases of radiological hazardous chemicals produced from licensed material) as presented in the ISA Summary (SRP Chapter 3).

An applicant should provide commitments pertaining to environmental protection in the following areas:

(1) commitment to develop and implement environmental protection measures and to coordinate their execution with the facility's radiation protection program (SRP Chapter 4), emergency management program (SRP Chapter 8) and other facility safety programs
(2) commitment to assign responsibility for environmental protection management to suitably trained staff, to establish organizational relations amongst such individual positions and to commit sufficient resources and equipment to ensure effective development and implementation of the environmental protection measures
(3) commitment to train plant personnel in environmental protection measures
(4) commitment to establish ALARA (as low as reasonably achievable) radiological goals ("action levels") for effluent control that will satisfy the requirements of 10 CFR Parts 20 and 70
(5) commitment to design and implement effluent control systems, items relied on for safety and plant procedures to maintain public doses ALARA
(6) commitment to install and maintain items relied on for safety to achieve ALARA effluent goals for releases of licensed material (and radiogenic hazardous chemicals produced from licensed material)
(7) commitment to establish effluent monitoring systems that are based upon the results of the ISA and that will:
    (i) document the concentrations and physical and chemical characteristics of radionuclides (and radiogenic hazardous chemicals produced from licensed material) in effluents
    (ii) identify environmental media to be monitored and specify criteria to be used in locating monitoring points

(iii) outline sampling collection and analysis procedures
(iv) record, maintain and analyze such environmental data

(8) commitment to install and maintain items relied on for safety that pertain to releases of licensed material

(9) commitment to implement waste minimization practices in accordance with the requirements of 10 CFR 20.1406

(10) commitment to refer to the facility's corrective action program instances in which the "action levels" are exceeded and to document corrective actions that are implemented

(11) commitment to review environmental monitoring data, to report results to the NRC and to recommend operational changes to achieve ALARA goals

(12) commitment to periodically review and revise, when appropriate, environmental protection measures to reflect changes to the ISA or to items relied on for safety, environmental protection technologies, operational procedures or regulatory standards

(13) commitment to implement management measures to support the environmental protection program components

~~The regulatory requirements for environmental protection are contained in 10 CFR Parts 20, 51, and 70. The NRC staff environmental review is focused on that part of the applicant's plant-wide safety program that is established to control and assess the level of radioactive and nonradioactive~~ [Comment: the NRC assessment should not address non-radioactive releases except as they may be releases of hazardous chemicals produced from licensed material; such releases were considered in SRP Chapter 6.] ~~releases (gaseous, liquid, and solid) to the environment. Therefore, aspects of the applicant's radiation protection program for effluent control, as well as effluent and environmental monitoring practices, are reviewed. In addition, the plant wide safety program is reviewed to ensure that the management controls~~ [Comment: correct term should be 'management measures.']~~specified to ensure that these activities meet license objectives.~~

~~To receive authorization to possess a critical quantity of special nuclear material, as defined in 10 CFR 70.4, an applicant must also perform an ISA in accordance with 10 CFR 70.60(d)(1).~~ [Comment: correct citation is 10 CFR 70.62(c)]~~Guidance on the ISA is covered in Section 3.0 of this Standard Review Plan. The environmental safety review of the ISA summary will include a review of the identified potential accident sequences that result in radiological and nonradiological~~ [Comment: NRC consideration of non-radiological releases except for hazardous chemicals produced from licensed material is not required.] ~~releases to the environment, as well as the controls specified by the applicant to reduce the risk of these accidents.~~

~~Thus, environmental protection includes three main components: (1) the radiation protection program, (2) effluent and environmental monitoring, and (3) the ISA summary and other ISA documentation as needed. The areas of review include:~~

~~**9.3.2.1 Radiation Protection**~~

- ~~ALARA goals for effluent control~~
- ~~Procedures, engineering controls, and process controls to maintain public doses ALARA~~
- ~~ALARA reviews and reports to management~~
- ~~Waste minimization practices and for new operations, design plans for waste minimization~~

~~**9.3.2.2 Effluent and Environmental Monitoring**~~

[Comment: most of the following requirements are unnecessarily prescriptive. The requirements erroneously state (or imply) control and monitoring of non-radiological effluents.]

- ~~In-place filter testing procedures for air cleaning systems~~
- ~~Known or expected concentrations of radionuclides in effluents~~
- ~~Physical and chemical characteristics of radionuclides in discharges~~
- ~~Discharge locations~~
- ~~Environmental media to be monitored and the sample locations~~
- ~~Sampling collection and analysis procedures, including the minimum detectable concentrations of radionuclides~~
- ~~Action levels and actions to be taken when the levels are exceeded~~
- ~~Permits, including air discharge and National Pollutant Discharge and Elimination System permits~~
- ~~Leak detection systems for ponds, lagoons, and tanks~~
- ~~Pathways analysis methods to estimate public doses~~
- ~~Recording and reporting procedures~~
- ~~Solid waste handling and disposal programs~~

~~**9.3.2.3 Integrated Safety Analysis**~~

[Comment: the SRP directs a review of the ISA. A review of the ISA Summary, which will have identified those higher-risk accident sequences that could release licensed material to the environment, have already been evaluated by license application reviewers. The Chapter 9 reviewer should only be directed to 'consult and become familiar with' these sections of the ISA Summary rather than to evaluate or approve them.]

- ~~Accident sequences (and associated facility processes) which, if unmitigated, result in releases to the environment~~
- ~~Likelihood and environmental consequences of these accident sequences~~
- ~~Controls relied on to reduce the unmitigated risk from "high" risk to an acceptable level~~
- ~~Availability and reliability of controls~~

9.4 ACCEPTANCE CRITERIA

[Comment: for consistency with other SRP chapters, separate sections on '*Regulatory Requirements*' and '*Regulatory Guidance*' should be included in Chapter 9.]

9.4.1 Regulatory Requirements

10 CFR Part 20 Subparts D and F reference effluent control and treatment measures necessary to meet the dose constraints for members of the public, Subpart F specifies survey requirements, Subpart K addresses waste disposal requirements, Subpart L addresses record-keeping requirements and Subpart M outlines reporting requirements

10 CFR Part 70.22(a)(7) specifies the requirement for a licensee to install measuring and monitoring instrumentation to protect health and minimize danger to life and property and for the disposal of radioactive effluents and wastes.

10 CFR 70.59 outlines the radiological effluent monitoring reporting requirements for a Part 70 licensee.

10 CFR 51.60 requires preparation by the applicant of an Environmental Report, subject to the categorical exclusion of 10 CFR 51.22(c)(14)(xiii), which relieves fuel fabrication facilities from this requirement.

9.4.2 Regulatory Guidance

Regulatory guidance for environmental protection is contained in:

1. NRC Regulatory Guide 4.16, "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants."

2. NRC Regulatory Guide 4.20, "Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other than Power Reactors."

3. NRC Regulatory Guide 8.37, "ALARA Levels for Effluents from Materials Facilities."

4. NRC Information Notice 94-07, "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20," January 28, 1994

5. NRC Information Notice 94-23, "Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program," March 1994

9.4.3 Regulatory Acceptance Criteria

Acceptance criteria for the Eenvironmental Rreport and for the environmental protection measures are described in Sections 9.4.3.1 and 9.4.3.2, respectively. The applicant may elect to incorporate by reference some or all of the requested information into the Environmental Report from other SRP chapters (e.g. from the Facility and Process Description (SRP Chapter 1.1), ISA Summary (SRP Chapter 3), Radiation Protection (SRC Chapter 4) or Chemical Process Safety (SRP Chapter 6)). Either approach is acceptable so long as an adequate summary is provided and the information is adequately cross-referenced.

9.4.3.1 Environmental Report (or Categorical Exclusion Information)

The reviewer should find the applicant's Environmental Report acceptable if it provides reasonable assurance that the following acceptance criteria are adequately addressed and satisfied. ~~acceptance criteria for the environmental report are discussed in Section 9.4.1.1. For licensing actions which meet the requirements for a categorical exclusion as defined in 10 CFR 51.22(c), an environmental report is not required. However, if the action involves an amendment to licenses for fuel cycle plants, radioactive waste disposal sites, and other materials licenses~~

~~identified in 10 CFR 51.60(b)(1) that involve changes in process operations or equipment, the applicant must justify that the action will not result in significant effects on the environment. The acceptance criteria for this demonstration are given in Section 9.4.1.2.~~

~~9.4.1.1 Environmental Report~~

A. Date of Application

~~The date of an application for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, conversion of uranium hexafluoride, or for the conduct of any other activity, which the NRC has determined pursuant to 10 CFR 51 Subpart A will significantly affect the quality of the environment, is acceptable if the~~ The Part 70 license application should be ~~is~~ submitted at least 9 months before the commencement of construction, as required by 10 CFR Part 70.21(f).

B. Environmental Considerations

An adequate E~~e~~nvironmental R~~r~~eport addresses the requirements of 10 CFR 51.45(b), as described below.

1. Description of the proposed action

The summary of the proposed action includes a brief description of the significant characteristics of the proposed facility, including the major site features and the major plant design and operating parameters. The description includes a complete discussion about how special nuclear material will be processed at the facility. If future construction is proposed, the description includes a proposed project schedule showing the dates for initiation of site preparation, plant construction, and operation.

2. Purpose of the proposed action

The statement of purpose demonstrates a need for the proposed project. This demonstration provides at least the following information: (a) the quantities of special nuclear material used for domestic benefit, (b) a projection of national and foreign requirements for the services, and (c) alternate ~~alternative~~ sources of supply for the proposed facility's services. If delay of the proposed project would have effects on the nation's energy program or on the applicant's business (such as loss of contracts, jobs, or future business), these effects are discussed.

3. Description of the affected environment

The description of the affected environment includes:

a. Site location (including longitude and latitude) and facility layout
b. Regional demography and land use
c. Socioeconomic information**,** including low-income and minority populations within a 50 mile radius
d. Regional historic, archaeological, architectural, scenic, cultural, and natural landmarks

e. Local meteorology and air quality
f. Local surface water and groundwater hydrology
g. Regional geology and seismology
h. Local terrestrial and aquatic ecology

To the extent possible, this information reflects observations and measurements made over a period of years, especially for conditions that are expected to vary seasonally (e.g., precipitation, wind speed and direction, and groundwater levels).

4. Discussion of considerations

The discussion of considerations includes (a) the impact of the proposed action on the environment, (b) any ~~the~~ adverse environmental effects of the proposed action and alternatives to the proposed action, (c) the relationship between short-term uses and long-term productivity, and (d) irreversible or irretrievable commitments of resources. The discussion of these points is acceptable if it includes the following considerations:

a. Impact of the proposed action on the environment

- Effects of site preparation and construction on land use and water use
- Effects of plant operation on the human population (including consideration of occupational and public radiation exposure) and important biota
- Any irreversible commitments of resources because of site preparation and plant construction and operation, such as destruction of wildlife habitat, removal of land from agricultural use, and diversion of electrical power
- Plans and policies regarding decommissioning and dismantling at the end of the plant's useful life
- Environmental effects of the transportation of radioactive materials to and from the site
- Environmental effects of accidents
- Impacts on air and water quality
- Impacts on cultural and historic resources

This section of the environmental report discusses the impacts on the environment in proportion to their significance. In addition, accident analyses provided in the report are consistent with the applicant's ISA.

b. Adverse environmental effects

The information submitted describes any adverse environmental effects that cannot be avoided should the proposal be implemented. This description is presented in quantitative terms to the maximum extent possible. This discussion makes clear which of these effects are unavoidable and subject to later amelioration and which are unavoidable and irreversible. The description includes specific measures that the applicant could take or plan to take to mitigate adverse effects.

c. Alternatives to the proposed action

The discussion of alternatives to the proposed action is sufficiently complete to aid NRC in developing and exploring, pursuant to Section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent practicable, the environmental impacts of the proposal and the alternatives are presented in comparative form.

The discussion of alternatives includes siting alternatives and design alternatives. Comparable levels of information on each site need not be presented as long as the applicant presents sufficient information to facilitate a fair and reasonable comparison. The following factors are considered when comparing alternative sites:

- Physical characteristics of the area, including demographic, geological, hydrological, meteorological, and seismological conditions of the site and surrounding area
- Location of power sources and transmission lines
- Location of the major product market
- Location of raw materials, components, and sources of supply
- Availability of air, rail, roads, and water for transport of raw materials and supplies, finished products, and solid wastes
- Commitment of natural resources for site preparation and plant construction, including but not limited to the destruction or diminution of wildlife habitats, flora, woodlands, and marshlands
- Commitment of capital for site preparation and plant construction
- Cost of operation, including consideration of labor supply, prevailing wage rates, and other recurring or nonrecurring costs
- Availability of municipal services and facilities or, conversely, the cost of providing services such as water and sewage treatment
- Requirements for relocating homes and families
- Existing and projected land use and economic status of the community (e.g., urban, industrial, stable)

d. Relationship between short-term uses and long-term productivity

The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity is discussed. Short-term uses are considered to be those that occur during the active life of the facility. Long-term productivity represents the use of the environment beyond decommissioning of the facility.

e. Irreversible or irretrievable commitments of resources

Any irreversible environmental commitments and irretrievable material resources that would be involved in the proposed action are discussed.

C. Analysis of Environmental Effects of Proposed Action and Alternatives

An adequate Eenvironmental Rreport analyzes the environmental effects of the proposed action and alternatives. In accordance with 10 CFR 51.45(c), the analysis considers and

balances the environmental effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental effects, as well as the environmental, economic, social, and other benefits of the proposed action.

This analysis quantifies, to the fullest extent practicable, the various factors considered. If the application involves renewal or amendment of a current license, environmental impacts are quantified using radiological environmental monitoring data collected by the licensee. To the extent that there are important qualitative considerations or factors that cannot be quantified, the analysis discusses those considerations and factors in qualitative terms. The analysis contains sufficient data to aid the staff in its development of an independent analysis.

D. Status of Compliance

As required by 10 CFR 51.45(d), the applicant should list all Federal permits, licenses, approvals, and other entitlements, which must be obtained in connection with the proposed action. The list is acceptable if it is complete and current as of the application date.

In addition, 10 CFR 51.45(d) requires that the Eenvironmental Rreport include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection. The discussion is acceptable if it includes a discussion of whether each alternative will comply with such applicable environmental quality standards and requirements. The discussion include's, but is not limited to, the following federal laws:

- The National Historic Preservation Act of 1966
- The Fish and Wildlife Coordination Act of 1966
- The Wild and Scenic Rivers Act of 1968
- The Endangered Species Act Amendments of 1978
- The Coastal Zone Management and Improvement Act of 1990

E. Adverse Information

In accordance with 10 CFR 51.45(e), the preceding discussions and analyses are acceptable if they include information that is adverse to the proposed actions as well as information supporting the proposed action.

F.9.4.1.2 Categorical Exclusion

An Eenvironmental Rreport is not required for actions identified in 10 CFR 51.60(b)(1) that involve an amendment to licenses for fuel cycle plants, radioactive waste disposal sites, and other materials licenses, which are not expected to result in significant environmental impacts. The health and safety and environmental impacts of any major However, since these amendments involve changes in process operations or equipment will have been evaluated by means of the Facility Change Mechanism of 10 CFR 70.72, including the ISA, the applicant needs to justify that the changes will not result in significant environmental effects. [Comment: the function of the 10

CFR 70.72 change mechanism should not be discounted. All safety significant changes will evaluated by means of the ISA. It is highly unlikely that a process change would be permitted if it resulted in an appreciably greater, adverse impact on the environment.]

The information provided by the applicant to justify the categorical exclusion determination is acceptable if it demonstrates the following as specified in 10 CFR 51.22(c)(11):

- There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite
- There is no significant increase in individual or cumulative occupational radiation exposure
- There is no significant construction impact
- There is no significant increase in the potential for or consequences from radiological accidents

9.4.3.2 Environmental Protection Measures

The reviewer should find the applicant's environmental protection commitments and measures acceptable if they provide reasonable assurance that the following acceptance criteria are adequately addressed and satisfied. If the measures provide for effluent control as part of the radiation safety program (SRP Chapter 4) and for radiological effluent and environmental monitoring in accordance with NRC technical and managerial provisions for continuing assurance, they should be acceptable. Environmental measures should be designed to address all routine plant operations, anticipated events and impacts from credible accident sequences evaluated in the ISA.

An applicant's environmental protection commitments should address the following:

(1) Environmental Protection Measures: the applicant commits to develop and implement environmental protection measures that provide for radiological effluent control and radiological effluent and environmental monitoring. These measures, which should affirm the applicant's commitment to reduce unnecessary radiological exposures to members of the public and releases to the environment, should be consistent with the facility's Radiation Protection Program (SRP Chapter 4) and other facility safety programs.
(2) Organization and Administration: the applicant commits to assign responsibility for environmental protection to qualified facility personnel and to identify the authority and responsibility for each. The applicant commits to establish organizational relations amongst the individual positions and to facilitate the interaction of environmental protection personnel with other facility personnel who are responsible for other plant safety programs (e.g. radiation protection, emergency response). The applicant also commits to provide sufficient resources to enable the environmental protection activities to be properly executed.
(3) Training: the applicant commits to provide appropriate training to plant personnel involved in environmental protection whose level of knowledge is important to maintain protection of public health and the environment
(4) Radiological ALARA Goals: the applicant commits to maintain public radiological doses ALARA in accordance with 10 CFR 20.1101. The applicant also commits to establish "action level" concentrations for specific radionuclides in different environmental media that, if exceeded in a release of licensed material, will prompt investigative and corrective actions. "Action levels"

will be selected to ensure that exposures to the public will not exceed the 10 CFR 20, Subpart B dose limits. The applicant may, if desired, incrementally grade such "action levels" to correlate releases of licensed material with their impacts on the environment or public. Radiological ALARA goals for plant emissions may be based upon:

(i) the effluent concentration data contained in 10 CFR 20.Appendix B, Table 2, Columns 1 and 2 and Table 3 (or variations to the Appendix B values made in accordance with 10 CFR 20.1302(c)),
(ii) the external dose limits in 10 CFR 20.1302(b)(2)(ii),
(iii) the dose limits for members of the public if the applicant proposes to demonstrate compliance with 10 CFR 20.1301 through a calculation of the Total Effective Dose Equivalent (TEDE) to the individual likely to receive the highest dose, or
(iv) applicable discharge standards or permit conditions imposed by local, state or federal regulatory agencies on plant effluents

10 CFR 20.1101 requires the applicant to control air emissions of radioactive material to the environment (excluding ^{222}Ra and its decay products) such that an individual member of the public likely to receive the highest dose will not be expected to receive an annual TEDE in excess of 10 mrem (0.1mSv) from these emissions. In SRP Chapter 6 ('*Chemical Process Safety*') the applicant committed to control emissions of hazardous chemicals produced from licensed material and to establish appropriate ALARA goals for air emissions. An applicant's approach for setting ALARA goals should be acceptable if it is consistent with guidance presented in Regulatory Guide 4.20 and if the applicant's description of the approach provides sufficient detail to demonstrate specific application of the guidance to proposed routine and non-routine operations including anticipated events.

(5) Effluent Control Systems: the applicant commits to design and implement environmental controls to provide reasonable assurance that concentrations of licensed material in airborne and liquid effluents will not exceed the limits in 10 CFR 20, Appendix B, Table 2 or those established in accordance with 10 CFR 20.1302(c). In addition to the items relied on for safety identified in the ISA Summary, the applicant commits to develop and implement procedures and to use engineering and process controls to achieve ALARA goals for the radiological content of effluents.

(6) Effluent Monitoring Systems: the applicant commits to conduct environmental monitoring to characterize and assess impacts to the environment from potential releases of licensed material (and radiogenic hazardous chemicals produced from licensed material). Specific commitments related to the effluent monitoring systems include:

(i) commitment to install, operate and maintain monitoring systems for plant effluents identified in the ISA Summary to potentially contain radioactive contamination. Radiological effluent monitoring systems should be designed to document the concentrations, quantities, physical characteristics and chemical characteristics of radionuclides released to an unrestricted area or sewage system.
(ii) commitment to use the results of the ISA to identify the environmental media to be monitored (e.g. air, surface water, sediments), to design the sampling programs (e.g. sampling frequency), to determine the analyses to be performed on each medium sample and to develop criteria to select effluent monitoring stations.

(iii) commitment to use monitoring systems to detect leakage of radioactive liquids from ponds, lagoons and tanks and to detect and protect against any unplanned releases to groundwater, surface water or soil.

(iv) commitment to use instrumentation, sample collection procedures and analytical procedures that are appropriate for the effluent medium and radionuclide being sampled and that are consistent with accepted industry protocols and standards.

(v) commitment to employ appropriate quality assurance/quality control procedures to support validation of the analytical data and to use acceptable data analysis methods to evaluate and report the environmental sampling results

(vi) commitment to record and maintain the environmental monitoring data

(vii) commitment to establish procedures for the handling, storage and monitoring of radioactive solid waste.

(7) Items Relied on For Safety: the applicant commits to install and maintain items relied on for safety identified in the ISA Summary to protect against accident sequences that could result in releases of licensed material to the environment. Items relied on for safety were identified in the ISA Summary to satisfy the performance requirements of 10 CFR 70.61 and to achieve ALARA effluent goals for releases of license material (and radiogenic hazardous chemicals produced from licensed material)

(8) Waste Minimization Practices: the applicant commits to implement waste minimization practices in accordance with the requirements of 10 CFR 20.1406 and the guidance contained in NRC Information Notice 94-23 ('*Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program*'). 10 CFR 20.1406 requires an applicant for a new facility to describe how facility design procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste. Applicants for amendment or renewal of existing licenses must commit to minimize and control waste generation during operations as part of the radiation protection program in accordance with 10 CFR 20.1101. The applicant should describe approaches to waste minimization, commit to undertaking periodic waste minimization assessments and explain how waste minimization opportunities will be identified and how waste minimization recommendations will be evaluated and implemented.

(9) Corrective Action Program: the applicant commits to refer to the facility's corrective action program any instance in which an action level is exceeded and to implement prompt, appropriate corrective action to ensure against its recurrence. In accordance with the result of the ISA, an applicant may grade corrective actions so that a more serious, adverse impact to the environment or the public would prompt a more comprehensive and/or rapid corrective action.

(10) Reporting and Notification: the applicant commits to review the environmental monitoring data to determine whether operational changes are needed to achieve ALARA effluent goals, to evaluate designs for system modifications and to report the results to senior plant management along with recommendations for changes in the facility and its procedures that are necessary to achieve ALARA goals. The applicant also commits to implement reporting and notification procedures in accordance with 10 CFR 20.2203 to notify the NRC when a release of radioactive material exceeds the 10 CFR 20.1101(d) limits. The applicant also commits to prepare and submit to the NRC in accordance with 10 CFR 70.59 semi-annual reports on the quantity of each principal radionuclide released to unrestricted areas in gaseous and liquid effluents and other information that the NRC may require to enable

estimation of the maximum potential annual radiation doses to the public resulting from radiogenic effluent releases

(11) Reviews and Revisions: the applicant commits to periodically review and revise, when appropriate, the content and implementation of the facility's environmental protection measures. The applicant commits to ensure that the facility's environmental protection measures will reflect any revisions or updates to the facility's ISA, any changes to items relied on for safety designed to prevent or mitigate releases of licensed material (or radiogenic hazardous chemicals produced from licensed material) to the environment and any changes to operational procedures, regulatory standards or environmental protection technologies and methodologies.

(12) Management Measures: the applicant commits to implement management measures to ensure that the measuring and monitoring instrumentation is calibrated and maintained in accordance with the manufacturer's recommendations, that staff involved in execution of the environmental measures are trained and qualified and that items relied on for safety (pertaining to prevention and mitigation of releases of licensed material) are available and reliable when required.

~~An applicant's proposed actions for environmental protection are acceptable if they provide for qualified and trained staff, effluent control, and effluent and environmental monitoring in accordance with NRC requirements. Using the acceptance criteria provided in Chapter 11 of this Standard Review Plan, the NRC staff will review the training and qualifications for plant personnel associated with environmental protection as described in the license application. This will include the training and qualification of managers, supervisors, technical staff, operators, technicians, maintenance personnel whose level of knowledge is important to maintain protection of public health and the environment. Managers and staff will be expected to have levels of education and experience commensurate with the responsibilities of their positions.~~

~~The acceptance criteria for the radiation protection program, and effluent and environmental monitoring, are given in Sections 9.4.2.1, 9.4.2.2, and 9.4.2.3, respectively.~~

~~9.4.2.1 Radiation Protection~~

~~In accordance with 10 CFR 20 Subpart B, each licensee must implement a radiation protection program, which is discussed in detail in Chapter 4 of this Standard Review Plan. The environmental review of the radiation protection program focuses on the applicant's methods to maintain public doses ALARA in accordance with 10 CFR 20.1101. NRC guidance on compliance with these regulations can be found in Regulatory Guide 8.37, "ALARA Levels for Effluents from Materials Facilities," July 1993.~~

~~Specifically, 10 CFR 20.1101(d) requires the applicant to establish a constraint on air emissions of radioactive material to the environment, excluding Radon-222 and its decay products, such that the individual member of the public likely to receive the highest dose will not be expected to receive a TEDE in excess of 10 mrem (0.1 mSv) per year from these emissions. The applicant must have procedures to report when this dose constraint is exceeded to the NRC in accordance with 10 CFR 20.2203 and take prompt appropriate corrective action to ensure against recurrence. NRC guidance on compliance with this regulation can be found in Regulatory Guide 4.20, "Constraint on Releases of Airborne~~

~~Radioactive Materials to the Environment for Licensees Other Than Power Reactors," December 1996.~~

~~The environmental review of the radiation protection program also focusses on the applicant's waste minimization practices. Applicant's for new licenses are required to comply with 10 CFR 20.1406, which states that the applicant must describe how facility design procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste. Applicant's requesting amendment or renewal of existing licenses must minimize and control waste generation during operations as part of the radiation protection program in accordance with 10 CFR 20.1101 [62 FR 39082].~~

~~Guidance for waste minimization programs can be found in NRC Information Notice No. 94-23: "Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program," March 25, 1994. More information on compliance with the decommissioning aspects of the waste minimization regulations can be found in Chapter 10.0 of this Standard Review Plan.~~ [Comment: last sentence is incorrect. This material has been deleted from Chapter 10.]

~~The proposed radiation protection program is acceptable if it satisfies the following criteria:~~

~~1. ALARA Goals for Effluent Control~~

~~ALARA goals are set at a modest fraction (10% to 20%) of the values in Appendix B, Table 2, Columns 1 and 2 and Table 3 and the external exposure limit in 20.1302(b)(2)(ii), or the dose limit for members of the public, if the applicant proposes to demonstrate compliance with 10 CFR 20.1301 through a calculation of the total effective dose equivalent (TEDE) to the individual likely to receive the highest dose.~~

~~An applicant's constraint approach is acceptable if it is consistent with guidance found in Regulatory Guide 4.20 and the applicant's description of the constraint approach provides sufficient detail to demonstrate specific application of the guidance to proposed operations.~~

~~2. Procedures, Engineering Controls, and Process Controls~~

~~The applicant uses procedures, engineering controls, and process controls to achieve ALARA goals for effluent minimization. Common control practices include filtration, encapsulation, adsorption, containment, recycling, leakage reduction, and the storage of materials for radioactive decay. Practices for large, diffuse sources such as contaminated soils or surfaces include covers, wetting during operations, and the application of stabilizers. The applicant demonstrates a commitment to reducing unnecessary exposure to members of the public and releases to the environment.~~

~~Engineering options which do not result in a substantial reduction in collective dose and require unreasonable costs are not required. Reasonableness can be based on~~

a qualitative or quantitative cost/benefit analysis. Quantitative analyses may use a $2000 per person-cSv (man-rem) value, as discussed in NUREG-1530, "Reassessment of the NRC's Dollar per Person-Rem Conversion Factor Policy."

3. ALARA Reviews and Reports to Management

The applicant commits to annual review of the content and implementation of the radiation protection program, which includes the ALARA effluent control program. This review includes analysis of trends in release concentrations, environmental monitoring data, and radionuclide usage, determines whether operational changes are needed to achieve the ALARA effluent goals, and evaluates all designs for system installations or modifications. The applicant also includes a commitment to report the results to senior

management along with recommendations for changes in facilities or procedures that are necessary to achieve ALARA goals.

4. Waste minimization

Applications for new licenses are acceptable if they contain a description of how facility design procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, and minimize, to the extent practicable, the generation of radioactive waste. Waste minimizations programs proposed by applicants for both new and existing licenses [Comment: incorrect citation from 10 CFR 20.1406]are acceptable if the programs include:

- top management support
- methods to characterize waste generation, including types and amounts, and waste management costs, including costs of regulatory compliance, paperwork, transportation, treatment, storage, disposal, etc.
- periodic waste minimization assessments to identify waste minimization opportunities and solicit employee or external recommendations
- provisions for technology transfer to seek and exchange technical information on waste minimization
- methods for implementation and evaluation of waste minimization recommendations

9.4.2.2 Effluent and Environmental Controls and Monitoring

The following regulations require effluent control and effluent and environmental monitoring measures for applicants requesting use of special nuclear material:

10 CFR Part 20

The applicant must establish effluent control and treatment measures in order to meet the dose limits and dose constraints for members of the public specified in 10 CFR Part 20, Subparts D and F. The applicant must also comply with the survey requirements of 10 CFR 20 Subpart F, the waste disposal requirements of Subpart K, the records requirements of Subpart L, and the reporting requirements of Subpart M.

10 CFR Part 51

~~The applicant must establish effluent and environmental monitoring systems to provide the information required by 10 CFR 51.60(a). 10 CFR 51.60(a) states that the environmental report or supplement to the environmental report submitted to support renewal or amendment of a license must include documentation of significant environmental changes, including changes resulting from operational experience or a change in operations.~~

~~10 CFR Part 70~~

~~In accordance with 10 CFR 70.22(a)(7) and 70.23(a)(3), the applicant must demonstrate that proposed facilities and equipment, including measuring and monitoring instruments and devices for the disposal of radioactive effluents and wastes, are adequate to protect public health and the environment. In addition, pursuant to 10 CFR 70.65(d),~~ [Comment: 10 CFR 70.65(d) no longer exists.] ~~each application for a license to posses a critical mass of special nuclear material must contain a description of the environmental monitoring measures established by the applicant to assess the impact of licensed activities in accordance with 10 CFR Part 20.~~

~~Guidance documents on implementing these regulations includes the following publications:~~

- ~~ANSI N13.1-1982, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities"~~
- ~~ANSI N42.18-1980, "Specification and Performance of On-site Instrumentation for Continuously Monitoring Radioactive Effluents"~~
- ~~NCRP Report No. 123, "Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground," January 1996~~
- ~~NRC Information Notice 94-07, "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20," January 28, 1994~~
- ~~NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) Effluent Streams and the Environment"~~
- ~~NRC Regulatory Guide 4.16, "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants"~~

~~A. Effluent Control and Monitoring~~

~~The applicant's effluent monitoring is acceptable if it meets the following criteria:~~

~~1. The known or expected concentrations of radioactive materials in airborne and liquid effluents are below the limits in 10 CFR Part 20, Appendix B, Table 2 or below site specific limits established in accordance with 20.1302(c) and are ALARA.~~

2. All liquid and airborne effluent discharge locations are identified and monitored.

Airborne effluents from all operations associated with the plant, including areas not used for processing special nuclear material such as laboratories, experimental areas, storage areas, and fuel element assembly areas, are continuously sampled. [Comment: previous sentence is wrong by totally ignoring the role the ISA now plays in the safety basis of the plant!] For liquid effluents, representative samples are taken at each release point for the determination of concentrations and quantities of radionuclides released to an unrestricted area, including discharges to sewage systems. For continuous releases, samples are continuously collected at each release point. For batch releases, a representative sample of each batch is collected. If periodic sampling is used in lieu of continual sampling, the applicant shows that the samples are representative of actual releases.

Effluents are sampled unless the applicant has established, by periodic sampling or other means, that radioactivity in the effluent is insignificant and will remain so. In such cases, the effluent is sampled at least quarterly [Comment: why quarterly? Is there ISA justification? This clause implies that sampling at a frequency less than quarterly would be inappropriate.]to confirm that effluents are not significant. Radionuclide analyses are performed more frequently than usual whenever a process change or other circumstance might cause a significant variation in the radionuclide composition. For the purposes of this Standard Review Plan, an effluent is significant if the concentration averaged over a calendar quarter is equal to 10% or more of the appropriate concentration listed in Table 2 of Appendix B to 10 CFR Part 20.[Comment: last sentence is unnecessarily prescriptive. Delete.]

4. Radionuclide specific analyses are performed on selected composited samples unless (1) the gross alpha and gross beta activities are so low that individual radionuclides could not be present in concentrations greater than 10 percent of the concentrations specified in Table 2 or 3 of Appendix B to 10 CFR Part 20, or (2) the radionuclide composition of the sample is known through operational data, such as the composition of the feed material. Monitoring reports in which estimates of quantities of individual radionuclides are based on methods other than direct measurement include an explanation and justification of how the results were obtained.

Examples of cases in which operational data may not be adequate for the determination of radionuclide concentration are (1) plants processing uranium in which extraction, ammonium diuranate precipitation, ion exchange, or other separation processes could result in concentration of thorium isotopes (principally Th-234); (2) plants in which uranium of varying enrichments is processed; and (3) plants processing plutonium in which significant variation in the Pu-238/Pu-239 ratio among batches and the continuous in-growth of Am-241 would preclude the use of feed material data to determine the radionuclide composition of effluents.

Radionuclide analyses are performed more frequently than usual under three circumstances: (1) at the beginning of the monitoring program until a predictable radionuclide composition in effluents is established; (2) whenever there is a

~~significant unexplained increase in gross radioactivity in effluents; or (3) whenever a process change or other circumstance might cause a significant variation in the radionuclide composition.~~

5. ~~The sample collection and analysis methods and frequencies are appropriate for the effluent medium and the radionuclide(s) being sampled. Sampling methods ensure that representative samples are obtained by use of appropriate sampling equipment and sample collection and storage procedures. Monitoring instruments are calibrated at least annually, or more frequently if suggested by the manufacturer.~~

6. ~~The proposed action levels and actions to be taken if the levels are exceeded are appropriate. The action levels are incremental, such that each increasing action level results in a more aggressive action to assure and control effluents. A slightly higher than normal concentration of a radionuclide in effluent triggers an investigation into the cause of the increase. An action level is specified that will result in the shutdown of an operation if this level is exceeded. These action levels are selected based on the likelihood that a measured increase in concentration could indicate potential violation of the effluent limits.~~

7. ~~The minimum detectable concentration (MDC) for sample analyses is not more than 5 percent of the concentration limits listed in Table 2 of Appendix B to 10 CFR Part 20. If the actual concentrations of radionuclides in samples are known to be higher than 5 percent of the 10 CFR Part 20 limits, the analysis methods need only be adequate to measure the actual concentration. However, in such cases, the MDC is low enough to accommodate fluctuations in the concentrations of the effluent and the uncertainty of the MDC.~~

8. ~~The laboratory quality control procedures are adequate to support the validity of the analytical results. These QC procedures include the use of established standards such as those provided by the National Institute of Standards and Technology (NIST), as well as standard analytical procedures, such as those established by the National Environmental Laboratory Accreditation Conference.~~

9. ~~The descriptions of applicable Federal and/or State standards for discharges and any permits issued by local, State, or Federal governments for gaseous and liquid effluents are complete and accurate.~~

10. ~~If the applicant proposes to adjust the effluent concentrations in Appendix B to 10 CFR 20 in accordance with 20.1302(c) to take into account the actual physical and chemical characteristics of the effluents, the information related to aerosol size distributions, solubility, density, radioactive decay equilibrium, and chemical form is complete and accurate for the radioactive materials to justify the derivation and application of the alternative concentration limits.~~

11. ~~The systems for the detection of leakage from ponds, lagoons, and tanks are adequate to detect and assure against any unplanned releases to groundwater, surface water, or soil.~~

12. Releases to sewer systems are controlled and maintained to meet the requirements of 10 CFR 20.2003, including (i) the material is water soluble; (ii) known or expected discharges meet the effluent limits of 10 CFR 20 Appendix B, Table 3; and (iii) the known or expected total quantity of radioactive material released into the sewer system in a year does not exceed 5 Ci (185 GBq) of ^{3}H, 1 Ci (37 GBq) of ^{14}C, and 1 Ci (37 GBq) of all other radioactive materials combined. Solubility is determined in accordance with the procedure described in NRC Information Notice 94-07.

13. Reporting procedures comply with the requirements of 10 CFR 70.59 and the guidance specified in Regulatory Guide 4.16. Reports of the concentrations of principal radionuclides released to unrestricted areas in liquid and gaseous effluents are provided and include the MDC for the analysis and the error for each data point.

14. If the licensee proposes to demonstrate compliance with 10 CFR 20.1301 through a calculation of the total effective dose equivalent (TEDE) to the individual likely to receive the highest dose in accordance with 20.1302(b)(1), calculation of the TEDE by pathways analyses uses appropriate models and codes and assumptions that accurately represent the facility, the site, and the surrounding area; assumptions are reasonable; input data is accurate; all applicable pathways are considered; and the results are interpreted correctly. [Comment: should be worded consistently with new rule language "*…member of the public outside the controlled area…*"]

    NCRP Report No. 123, "Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground," January 1996, provides acceptable methods for calculating the dose from radioactive effluents. Computer codes are acceptable tools for pathways analysis if the applicant is able to demonstrate that the code has undergone validation and verification to demonstrate the validity of estimates developed using the code for established input sets. Dose conversion factors used in the pathways analyses are acceptable if they are based on the methodology described in ICRP 30, "Limits for Intakes of Radionuclides by Workers" as reflected in Federal Guidance Report 11.

15. The applicant's procedures and facilities for solid waste handling, storage and monitoring result in safe storage of the material and timely disposition.

B. Environmental Monitoring

The scope of the applicant's environmental monitoring is acceptable if it is commensurate with the scope of activities at the facility and the expected impacts of operations as identified in the environmental report and meets the following criteria:

1. Background and baseline concentrations of radionuclides in environmental media have been established through sampling and analysis.
2. Monitoring includes sampling and analyses for monitoring of air, surface water, groundwater, soil, sediments, and vegetation, as appropriate.

3. The description of monitoring identifies adequate and appropriate sampling locations and frequencies for each environmental medium, the frequency of sampling, and the analyses to be performed on each medium.

4. Monitoring procedures employ acceptable analytical methods and instrumentation to be used. The applicant commits to a program of instrument maintenance and calibration appropriate to the instrumentation, as well as participation in round-robin measurement comparisons if the applicant proposes use of its own analytical laboratory for analysis of environmental samples.[Comment: far too prescriptive by specifying participation in round robin assessments.]

5. Appropriate action levels and actions to be taken if the levels are exceeded are specified for each environmental medium and radionuclide. Action levels are selected based upon a pathways analysis that demonstrates that below those concentrations, doses to the public will be below the limits in 10 CFR Part 20, Subpart B, and are ALARA. The action levels specify the concentrations at which an investigation would be performed and levels at which process operations would be shut down.

6. MDCs are specified for sample analyses, and are at least as low as those selected for effluent monitoring in air and water. MDCs for sediment, soil, and vegetation are selected based upon the action levels to ensure sampling and analytical methods are sensitive and reliable enough to support application of the action levels.

7. Data analysis methods and criteria to be used for evaluating and reporting the environmental sampling results are appropriate and will indicate when an action level is being approached in time to take corrective actions.

8. The description of the status of all licenses, permits, and other approvals of plant operations required by Federal, State and local authorities is complete and accurate.

9) Environmental monitoring is adequate to assess impacts to the environment from potential radioactive and nonradioactive releases as identified in the ISA.

9.4.2.3 Integrated Safety Analysis

In accordance with 10 CFR 70.60, applicant's requesting a critical mass of special nuclear material are required to perform an ISA. The applicant's treatment of environmental protection in the ISA is acceptable if it fulfills the following criteria:

- The ISA provides a complete list of accident sequences which result in radiological and nonradiological releases to the environment.

- The ISA provides a reasonable estimate for the likelihood and consequences of each accident sequence identified.

- Adequate controls are identified for each accident sequence of environmental significance. The controls (engineering or administrative) will prevent of mitigate potential accidents to an acceptable level.

- ~~Adequate levels of assurance are afforded to the controls to ensure that items relied on for safety will satisfactorily perform their safety functions. This may be accomplished through configuration management, training, and maintenance activities.~~

- ~~The ISA uses acceptable methods for estimating environmental effects from accident sequences.~~

9.5 REVIEW PROCEDURES

[Comment: SRP §9.5 should be structured similarly to other SRP chapters.]

9.5.1 Acceptance Review

The primary reviewer should evaluate the application to determine that it addresses the "Areas of Review" discussed in Section 9.3. If significant deficiencies are identified, the applicant should be requested to submit additional material before the start of the safety evaluation. [Comment: §9.5.1 has been rewritten to be consistent with other SRP chapters.] ~~staff will review the environmental report and the environmental protection measures to verify that each meets the acceptance criteria in Section 9.4. If the applicant has not provided sufficient information to make these determinations, then a request for additional information (RAI) should be made in coordination with the facility project manager. The format for an RAI is specified in Chapter 4 of the Fuel Cycle Licensing Branch "Materials Licensing Procedures Manual." Additional review procedures are provided in Sections 9.5.1 - 9.5.3.~~

9.5.2 Safety Evaluation

After determining that the application is acceptable for review in accordance with Section 9.5.1, the primary reviewer should perform a safety evaluation against the acceptance criteria described in Section 9.4. Assessment of renewal or amendment applications should be coordinated with the facility's NRC inspector responsible for environmental protection and should include review of inspection reports and semi-annual effluent reports submitted in accordance with 10 CFR 70.59 to assure licensee performance in environmental protection. Any concerns identified by the inspector should be addressed and resolved by the applicant. If, during the course of the safety evaluation, the primary reviewer determines the need for additional information, the primary reviewer should coordinate a request for additional information with the licensing project manager.

The primary reviewer should consult the applicant's Radiation Protection Program (SRP Chapter 4) to ensure commitments are included to maintain public doses ALARA. The applicant's environmental protection measures should reaffirm this ALARA commitment for the radioactive content of plant emissions. The applicant's ISA Summary (SRP Chapter 3) should also be consulted to identify accident sequences that could result in releases to the environment or to unrestricted areas of licensed material (or radiogenic hazardous chemicals produced from licensed material) and to ensure that the applicant's environmental monitoring program adequately addresses potential environmental and public impacts.

When the safety evaluation is complete, the primary reviewer, with assistance from other reviewers, should prepare the environmental protection input for the Safety Evaluation Report (SER) as described in Section 9.6 using the acceptance criteria from Section 9.4.

~~**9.5.1 Environmental Report**~~

~~Review of the environmental report or information presented to support a categorical exclusion includes review of occupational exposure information. This review should be coordinated with the radiation safety reviewer to assess the adequacy of the information provided by the applicant.~~

~~**9.5.2 Environmental Protection**~~

~~For renewal and amendment applications, review of environmental protection by the environmental specialist will include coordination with the fuel cycle facility inspector responsible for environmental protection. Any comments or concerns that the inspector identifies will be addressed and resolved, and the Safety Evaluation Report (SER) (described in Section 9.6.1) for the licensing action will contain a statement indicating if the inspection staff has any objections to approval of the proposed licensing action. In addition, the review of applications will include review of inspection reports and semi-annual effluent reports submitted in accordance with 10 CFR 70.59 to assure licensee performance in environmental protection.~~

~~As part of the environmental protection review, the environmental specialist will review the ISA summary and other ISA documents as needed. All accident sequences identified in the ISA that can have significant environmental consequences will be reviewed to determine that the list of potential accidents is complete and properly identified. This review will be coordinated with the ISA reviewer.~~

~~Evaluation of the ISA summary requires coordination with other technical reviewers. The environmental review of the controls will be coordinated with the reviewers for the specific assurance functions, such as training and maintenance. These assurance functions are usually reviewed by the Project Manager for the facility.~~

~~Finally, review of the complete ISA findings and conclusions may require examination of detailed supporting documents that have not been submitted for the public record and are instead located at the facility. The reviewer should decide, as a result of these reviews, what supporting documents need to be forwarded to the NRC for inclusion in the public record of the application. As a general rule, material that directly supports a licensing decision of reasonable assurance of safety should be a matter of public record. Whether the material is placed in the public record or only available at the facility, the reviewer will clearly cite in the SER what materials were examined, and what descriptions and commitments were considered and relied upon or the basis for the staff's safety decision.~~

9.6 EVALUATION FINDINGS

The staff reviewers should verify that the information submitted by the applicant is in accordance with 10 CFR Parts 20, 51 and 70 and that it is consistent with the guidance in NUREG-1520 as it applies to environmental protection. The primary reviewer should document the bases for determining the adequacy of the application with respect to environmental protection and should recommend additional license conditions in areas where the license application is inadequate. The primary reviewer should also describe the applicant's approach to ensuring the availability and reliability of items relied on for safety and associated management measures required for

environmental protection. ~~Documentation of the evaluation findings for the environmental protection review is contained in two types of products. A Safety Evaluation Report (SER) documents the review of the environmental protection program and the ISA summary or related documents. The EA or EIS documents the staff's independent assessment of the environmental impacts of the proposed action.~~

~~9.6.1 Safety Evaluation Report~~

~~In the SER, the staff will document the findings of the adequacy of the application, will describe the bases for the findings, and will recommend additional license conditions in areas where the license application is not adequate. The documentation will include the bases for the conclusions, including a discussion of the areas of review and how the information demonstrates that the acceptance criteria have been met.~~

Often, environmental protection is reviewed and evaluated in conjunction with the environmental report, and the environmental protection function is summarized in the EA or EIS. However, the EA or EIS does not become part of the license. Issues identified during the review should be discussed briefly in the SER, and any recommended license conditions based on the analysis in the EA or EIS should be added to the license.

If an EA and EIS were prepared for the licensing action, the date the documents were issued should be reported in the environmental safety section of the SER. If the EA resulted in a FONSI, the FONSI's publication date in the Federal Register should be included in the SER. If an EIS is prepared, the SER would include the Federal Register publication date for the Record of Decision. When applicable, the SER also documents the determination that an action meets a categorical exclusion.

The staff can documents their findings as follows:

> *The staff has evaluated … [insert a summary statement of what was evaluated] The applicant has committed to adequate environmental protection measures including environmental and effluent monitoring and controls, as part of the radiation protection program and as part of the provision for installation of items relied on for safety and the provision for continuing assurance. The NRC concludes with reasonable assurance that the applicant's conformance to the application and license conditions is adequate to protect public health and the environmental and to comply with the regulatory requirements imposed by the Commission in 10 CFR Parts 20, 51 and 70. The bases for these conclusions are:*
>
> *[Insert the bases for the conclusion, including any recommended license conditions.]*

~~9.6.2 Environmental Assessment, Finding of No Significant Impact, Environmental Impact Statement~~

[Comment: NEI recommends deletion of §9.6.2 as its contents – preparation of EAs, FONSIs and EISs – are neither prepared by the applicant nor included in the applicant's license. The staff should have separate internal guidance documents to assist in its preparation of these

documents, if they are required. For simplicity and clarity of the SRP, this information should be deleted.]

Before taking a licensing action, including issuance, renewal, or amendment, the appropriate NRC Branch Chief will determine whether the proposed action qualifies for a categorical exclusion under 10 CFR 51.22 or whether an EA or EIS should be prepared:

- An EA will be prepared if the action meets the criteria in 10 CFR Part 51.21. On completion of the EA, the NRC determines whether to prepare an EIS or a FONSI.
- An EIS will be prepared if the action meets the criteria in 10 CFR Part 51.20. An EA is not necessary if it is determined that an EIS will be prepared.
- A categorical exclusion will suffice if the action meets the criteria for categorical exclusions as defined in 10 CFR Part 51.22(c). (An action that qualifies for a categorical exclusion is usually identified at the start of the licensing review, and an ER is not required.)

Requirements for the preparation of an EIS, EA, or FONSI are described in detail in 10 CFR Part 51. Documents prepared in accordance with NEPA will follow pertinent NMSS procedures, including consultation with states (Policy & Procedures Letter 1-48), evaluation of environmental justice (Policy & Procedures Letter 1-50), and Chapter 6 of the NRC Division of Fuel Cycle Safety and Safeguards, Fuel Cycle Licensing Branch Manual. Sections 9.6.2.1 and 9.6.2.2 contain an overview of the regulatory requirements for an EA, FONSI, EIS and Record of Decision specified in 10 CFR Part 51. However, this discussion is not intended to be all-inclusive.

9.6.2.1. Environmental Assessment (EA)

The staff will prepare an EA that identifies the proposed action and includes the following, in accordance with 10 CFR 51.30:

1. A brief discussion of:

   a. The need for the proposed action
   b. Alternatives to the proposed action as required by Section 102(2)(E) of NEPA
   c. The environmental impacts of the proposed action and alternatives, as appropriate
   d. As required by NMSS Policy and Procedures letter 1-50, April 21, 1995, disproportionately high and adverse human health or environmental effects on low income and minority populations

2. A list of agencies and persons consulted and identification of sources used. During preparation of an EA, the staff will consult with affected States on environmental issues and will document such contact in the EA. This documentation will include the following information identified in NMSS Policy and Procedures Letter 1-48, January 1995:

   a. The name of each State, agency (including contacted individual's name), or person consulted
   b. date of consultation(s)

c. purpose for the consultation
d. brief summary of the views or comments expressed by the consulted party and the staff's resolution
e. reference to publicly available documents containing additional information, if applicable

Much of the information used to prepare the EA is provided by the applicant in the environmental report. However, the staff will perform independent analyses of the environmental impacts of the proposed action and will discuss the conclusions of these analyses in the EA. The EA should focus on the impacts of the proposed action and should be no more than 15 pages, unless necessary to explain any complicated environmental issues associated with the proposed action.

On completion of the EA, the appropriate NRC Branch Chief will determine whether to prepare an EIS or a FONSI on the proposed action. As discussed in Section 9.6.2.2 and provided in 10 CFR 51.33, a determination to prepare a draft FONSI may be made. As provided in 10 CFR 51.25, an EA is not necessary if it is determined that an EIS will be prepared.

9.6.2.2. Finding of No Significant Impact (FONSI)

When the staff makes a final finding that there are no significant environmental impacts for the proposed action, a final FONSI will be published in the Federal Register. The Commission will not take the proposed action, including license issuance, renewal, or amendment, until after the FONSI has been published. Requirements for the preparation of a FONSI for materials licensing actions are contained in 10 CFR 51.32-51.35. A FONSI will include the following:

a. Identification of the proposed action
b. Statement that the Commission has determined not to prepare an EIS for the proposed action
c. Brief presentation of the reasons why the proposed action will not have a significant impact on the quality of the human environment
d. The EA or a summary of the EA
e. A note of any other related environmental documents
f. A statement that the finding and any related environmental documents are available for public inspection and where the documents may be inspected

NRC may make a determination to prepare and issue a draft FONSI for public review and comment before making a final determination whether to prepare an EIS or a final FONSI on the proposed action. A draft FONSI may be prepared if a FONSI appears warranted, but the proposed action is similar to one that normally requires an EIS or is without precedent.

The draft FONSI will be identified as a "draft" and will contain the information specified above for a final FONSI. The draft FONSI will be accompanied by or will include a request for comments on the proposed action and the draft findings within 30 days, or a longer period as may be specified in the notice of the draft findings. This draft FONSI will be

published in the Federal Register, distributed as provided in 10 CFR 51.74(a), and made available in accordance with 10 CFR 51.123.

When a draft FONSI is issued, a final determination to prepare an EIS or final FONSI will not be made until the last day of the public comment period has expired.

9.6.2.3 Environmental Impact Statement (EIS)

When the appropriate NRC Branch Chief determines that an EIS will be prepared for the licensing action, a Notice of Intent to prepare an EIS will be published in the Federal Register in accordance with 10 CFR 51.27, and a scoping process will be conducted in accordance with 10 CFR 51.28 and 51.29. The scoping process may include a public scoping meeting.

A draft EIS is prepared as soon as practicable after publication of the Notice of Intent and completion of the scoping process. The general requirements, the requirements on content, and the requirements on supplements to a Draft EIS are found in 10 CFR 51.70-51.72. Public comments will be solicited on the draft in accordance with 10 CFR 51.73, and the draft will be distributed according to 10 CFR 51.74. After receipt and consideration of comments, the staff will prepare a Final EIS in accordance with 10 CFR 51.90 and 51.91, which will be distributed in accordance with 10 CFR 51.93.

The scoping process for the EIS will begin after the notice of intent is published. The purposes of the process are set forth in 10 CFR 51.29(a). At the conclusion of the scoping process, the staff will prepare a concise summary of the determinations and conclusions reached during the scoping process, including the significant issues identified, and will send a copy of the summary to each participant in the scoping process. This summary will be signed by an NRC staff director. At any time before issuance of the draft EIS, the staff may revise the determinations if substantial changes are made in the proposed action, or if significant new circumstances or information arises that bears on the proposed action or its impacts.

3. Draft Environmental Impact Statement

General requirements for the preparation of a Draft EIS are contained in 10 CFR 51.70-51.74. The draft must include the following:

a. An analysis of major points of view concerning the proposed action and alternatives including significant problems and objections raised by other Federal, State, and local agencies, by any affected Indian tribes, and other interested persons
b. A Discussion of the status of compliance with all Federal, State, and local permits, licenses, approvals, and other entitlements obtained in implementing the proposed action
c. An analysis which considers and weighs the environmental effects of the proposed action and alternatives
d. A preliminary recommendation by the NRC staff concerning the proposed action

4. Final Environmental Impact Statement

~~The format of the final EIS is set forth in Section 1(a) of Appendix A to 10 CFR Part 51, and the content is specified in 10 CFR 51.91. The final EIS must include any comments on the draft EIS or on any supplement to the draft, which may include modification of alternatives, development of new alternatives, and modification of analyses. All substantive comments received on the draft will be attached to the final EIS and any relevant responsible opposing view not adequately discussed in the draft will be presented. The final EIS will include:~~

~~a. A summary of the final EIS~~
~~b. A discussion of the purpose and need for the proposed action~~
~~c. A discussion of alternatives including the proposed action~~
~~d. A description of the affected environment~~
~~e. A discussion of the environmental consequences and mitigating actions~~
~~f. A list of preparers~~
~~g. Final recommendation on the action to be taken~~

~~**9.6.2.4 Record of Decision**~~

~~A Record of Decision (ROD) will be published after preparation of the final EIS and may be integrated into any other record prepared by the NRC in connection with the action. Requirements for the preparation of a ROD for materials licensing actions are contained in 10 CFR 51.102- 51.103. A ROD will include the following:~~

~~a. A statement of the decision~~
~~b. Identification of the alternatives considered~~
~~c. Identification of the environmentally preferable alternative~~
~~d. Discussion of the preferences among the alternatives, based on economic and technical considerations, the NRC's statutory mission, and any essential considerations of national policy, which were balanced by the NRC in making the decision~~
~~e. Statement of whether the NRC has taken all practical measures within its jurisdiction to avoid or minimize environmental harm, and if not, to explain why those measures were not adopted~~
~~f. Summary of any license conditions and monitoring programs adopted in connection with mitigation measures~~

9.7 REFERENCES

American National Standards Institute, N13.1-1982, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities".

American National Standards Institute, N42.18-1980, "Specification and Performance of On-site Instrumentation for Continuously Monitoring Radioactive Effluents".

National Council on Radiation Protection and Measurements, NCRP Report No. 123 I & II, *"Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground,"* January 1996.

NRC Information Notice No. 94-23: "Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program," March 25, 1994.

NRC Information Notice 94-07, "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20," January 28, 1994.

U.S. Nuclear Regulatory Commission, NMSS/FCSS/Fuel Cycle Licensing Branch, Rev. 5, *"Materials Licensing Procedures Manual,"* September 1996.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Rev. 2, *"Quality Assurance for Radiological Monitoring Programs (Normal Operations)-Effluent Streams and the Environment,"* February 1979.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.16, Rev. 2, *"Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants,"* December 1985.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.20, *"Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other Than Power Reactors,"* December 1996.

U.S. Nuclear Regulatory Commission, Regulatory Guide 8.37, *"ALARA Levels for Effluents from Materials Facilities"*, July 1993.

PROPOSED REVISION OF SRP (NUREG-1520) CHAPTER 9
INCORPORATING RECOMMENDATIONS
OF THE
NUCLEAR ENERGY INSTITUTE
(SEPTEMBER, 1999)

9.0 ENVIRONMENTAL PROTECTION

9.1 PURPOSE OF REVIEW

The primary purpose of the review is to determine with reasonable assurance that the applicant's proposed environmental protection measures adequately protect public health and the environment and comply with the regulatory requirements of 10 CFR Parts 20, 51, and 70.

Environmental protection measures should be based upon the results of the Integrated Safety Analysis (ISA). The ISA, as summarized in the ISA Summary, was evaluated in SRP Chapter 3 ('*Integrated Safety Analysis (ISA) Commitments and ISA Summary*'). The ISA identified and evaluated the potential risk of accident sequences that could result in inadvertent releases of licensed material or hazardous chemicals produced from licensed material to the environment. Assessment of releases of other non-radiogenic contaminants from the facility lies outside the scope of the Chapter 9 evaluation, in accordance with provisions of the NRC-OSHA 1988 Memorandum of Understanding. The ISA also identified items relied on for safety to prevent such releases or to mitigate their environmental consequences and recommended management measures to ensure the availability and reliability of such items relied on for safety, when needed. Prior to assessing the applicant's environmental protection measures, the reviewer should first consult the ISA Summary (SRP Chapter 3) to gain familiarity with:

(4) accident sequences that could release to the environment licensed material or hazardous chemicals produced from licensed material
(5) specific items relied on for safety to prevent or mitigate such releases
(6) management measures recommended to ensure that items relied on for safety will be available and reliable when needed.

SRP Chapter 9 also provides guidance on the content of an applicant's Environmental Report. Generally at the beginning of the licensing review the appropriate NRC Branch Chief will determine if the proposed action qualifies for a categorical exclusion under 10 CFR 51.22(c)(14)(xiii). If a categorical exclusion is granted, the applicant does not need to submit an Environmental Report. Environmental Reports are used by the NRC to prepare either an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) pursuant to 10 CFR 51. Evaluation of the applicant's Environmental Report lies outside the scope of the SRP Chapter 9 review.

9.2 RESPONSIBILITY FOR REVIEW

Primary: Environmental Engineer/Scientist

Secondary: Licensing Project Manager

Supporting: Fuel Cycle Facility Inspector
Radiation Safety Reviewer
ISA Lead Reviewer

9.3 AREAS OF REVIEW

10 CFR 70.62(a) requires an applicant to establish and maintain a safety program that will adequately protect worker and public health and safety and the environment from the hazards of licensed material. The applicant's plant-wide safety program must, therefore, control and assess the level of radioactive releases (gaseous, liquid and solid) to the environment. In accordance with the NRC-OSHA 1988 Memorandum of Understanding, it must also consider environmental releases of radiogenic hazardous chemicals that are produced from licensed material. Such non-radiogenic chemical releases and their prevention and mitigation were already considered in SRP Chapter 6 and need not be considered again in SRP Chapter 9.

The environmental review will examine the control and monitoring of releases of licensed material to the environment and public in plant effluents. Included is assessment of the applicant's waste minimization program. If the applicant must submit an Environmental Report, SRP Chapter 9 provides guidance to the reviewer on what information should be contained in this document.

9.3.1 Environmental Report

Components of the Environmental Report should include description of the proposed action, a statement of its purposes, a description of the affected environment and discussion of the following:

- Date of Application
- Environmental Considerations
  - →Description of the proposed action
  - →Purpose of the proposed action
  - →Description of the affected environment
  - →Discussion of considerations (including environmental impacts and alternatives to the proposed action)
- Analysis
- Status of Compliance
- Adverse Information

The environmental report may include or reference information submitted to the NRC for prior licensing actions.

9.3.2 Environmental Protection Measures

Establishment of a separate environmental protection safety program is not necessarily required by 10 CFR 70. However, the applicant must provide commitments to assess and control to within the standards specified in 10 CFR Parts 20 and 70 all releases of radioactive material to the environment. In addition to assessing an applicant's commitments to environmental protection, the reviewer should examine the proposed radiological effluent and environmental monitoring practices. Such practices should be consistent with the applicant's radiation protection program.

The plant-wide safety program should be evaluated to ensure that management measures are specified to provide reasonable assurance that these activities meet license objectives. Evaluation of an applicant's commitments should be based upon an understanding of the facility processes (SRP Chapter 1.1) and potential accident sequences that could result in radiological releases (or releases of radiological hazardous chemicals produced from licensed material) as presented in the ISA Summary (SRP Chapter 3).

An applicant should provide commitments pertaining to environmental protection in the following areas:

(14) commitment to develop and implement environmental protection measures and to coordinate their execution with the facility's radiation protection program (SRP Chapter 4), emergency management program (SRP Chapter 8) and other facility safety programs
(15) commitment to assign responsibility for environmental protection management to suitably trained staff, to establish organizational relations amongst such individual positions and to commit sufficient resources and equipment to ensure effective development and implementation of the environmental protection measures
(16) commitment to train plant personnel in environmental protection measures
(17) commitment to establish ALARA (as low as reasonably achievable) radiological goals ("action levels") for effluent control that will satisfy the requirements of 10 CFR Parts 20 and 70
(18) commitment to design and implement effluent control systems, items relied on for safety and plant procedures to maintain public doses ALARA
(19) commitment to install and maintain items relied on for safety to achieve ALARA effluent goals for releases of licensed material (and radiogenic hazardous chemicals produced from licensed material)
(20) commitment to establish effluent monitoring systems that are based upon the results of the ISA and that will:
    (v) document the concentrations and physical and chemical characteristics of radionuclides (and radiogenic hazardous chemicals produced from licensed material) in effluents
    (vi) identify environmental media to be monitored and specify criteria to be used in locating monitoring points
    (vii) outline sampling collection and analysis procedures
    (viii) record, maintain and analyze such environmental data
(21) commitment to install and maintain items relied on for safety that pertain to releases of licensed material
(22) commitment to implement waste minimization practices in accordance with the requirements of 10 CFR 20.1406
(23) commitment to refer to the facility's corrective action program instances in which the "action levels" are exceeded and to document corrective actions that are implemented
(24) commitment to review environmental monitoring data, to report results to the NRC and to recommend operational changes to achieve ALARA goals
(25) commitment to periodically review and revise, when appropriate, environmental protection measures to reflect changes to the ISA or to items relied on for safety, environmental protection technologies, operational procedures or regulatory standards
(26) commitment to implement management measures to support the environmental protection program components

9.4 ACCEPTANCE CRITERIA

9.4.1 Regulatory Requirements

10 CFR Part 20 Subparts D and F reference effluent control and treatment measures necessary to meet the dose constraints for members of the public, Subpart F specifies survey requirements, Subpart K addresses waste disposal requirements, Subpart L addresses record-keeping requirements and Subpart M outlines reporting requirements

10 CFR Part 70.22(a)(7) specifies the requirement for a licensee to install measuring and monitoring instrumentation to protect health and minimize danger to life and property and for the disposal of radioactive effluents and wastes.

10 CFR 70.59 outlines the radiological effluent monitoring reporting requirements for a Part 70 licensee.

10 CFR 51.60 requires preparation by the applicant of an Environmental Report, subject to the categorical exclusion of 10 CFR 51.22(c)(14)(xiii), which relieves fuel fabrication facilities from this requirement.

9.4.2 Regulatory Guidance

Regulatory guidance for environmental protection is contained in:

6. NRC Regulatory Guide 4.16, “Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants.”

7. NRC Regulatory Guide 4.20, “Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other than Power Reactors.”

8. NRC Regulatory Guide 8.37, “ALARA Levels for Effluents from Materials Facilities.”

9. NRC Information Notice 94-07, “Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20,” January 28, 1994

10. NRC Information Notice 94-23, “Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program,” March 1994

9.4.3 Regulatory Acceptance Criteria

Acceptance criteria for the Environmental Report and for the environmental protection measures are described in Sections 9.4.3.1 and 9.4.3.2, respectively. The applicant may elect to incorporate by reference some or all of the requested information into the Environmental Report from other SRP chapters (e.g. from the Facility and Process Description (SRP Chapter 1.1), ISA Summary (SRP Chapter 3), Radiation Protection (SRC Chapter 4) or Chemical Process Safety (SRP Chapter 6)). Either approach is acceptable so long as an adequate summary is provided and the information is adequately cross-referenced.

9.4.3.1 Environmental Report (or Categorical Exclusion Information)

The reviewer should find the applicant's Environmental Report acceptable if it provides reasonable assurance that the following acceptance criteria are adequately addressed and satisfied.

A. Date of Application

The Part 70 license application should be submitted at least 9 months before the commencement of construction, as required by 10 CFR Part 70.21(f).

B. Environmental Considerations

An adequate Environmental Report addresses the requirements of 10 CFR 51.45(b), as described below.

1. Description of the proposed action

The summary of the proposed action includes a brief description of the significant characteristics of the proposed facility, including the major site features and the major plant design and operating parameters. The description includes a complete discussion about how special nuclear material will be processed at the facility. If future construction is proposed, the description includes a proposed project schedule showing the dates for initiation of site preparation, plant construction, and operation.

2. Purpose of the proposed action

The statement of purpose demonstrates a need for the proposed project. This demonstration provides at least the following information: (a) the quantities of special nuclear material used for domestic benefit, (b) a projection of national and foreign requirements for the services, and (c) alternate sources of supply for the proposed facility's services. If delay of the proposed project would have effects on the nation's energy program or on the applicant's business (such as loss of contracts, jobs, or future business), these effects are discussed.

3. Description of the affected environment

The description of the affected environment includes:

a. Site location (including longitude and latitude) and facility layout
b. Regional demography and land use
c. Socioeconomic information**,** including low-income and minority populations within a 50 mile radius
d. Regional historic, archaeological, architectural, scenic, cultural, and natural landmarks
e. Local meteorology and air quality
f. Local surface water and groundwater hydrology
g. Regional geology and seismology
h. Local terrestrial and aquatic ecology

To the extent possible, this information reflects observations and measurements made over a period of years, especially for conditions that are expected to vary seasonally (e.g., precipitation, wind speed and direction, and groundwater levels).

4. Discussion of considerations

The discussion of considerations includes (a) the impact of the proposed action on the environment, (b) any adverse environmental effects of the proposed action and alternatives to the proposed action, (c) the relationship between short-term uses and long-term productivity, and (d) irreversible or irretrievable commitments of resources. The discussion of these points is acceptable if it includes the following considerations:

a. Impact of the proposed action on the environment

- Effects of site preparation and construction on land use and water use
- Effects of plant operation on the human population (including consideration of occupational and public radiation exposure) and important biota
- Any irreversible commitments of resources because of site preparation and plant construction and operation, such as destruction of wildlife habitat, removal of land from agricultural use, and diversion of electrical power
- Plans and policies regarding decommissioning and dismantling at the end of the plant's useful life
- Environmental effects of the transportation of radioactive materials to and from the site
- Environmental effects of accidents
- Impacts on air and water quality
- Impacts on cultural and historic resources

This section of the environmental report discusses the impacts on the environment in proportion to their significance. In addition, accident analyses provided in the report are consistent with the applicant’s ISA.

b. Adverse environmental effects

The information submitted describes any adverse environmental effects that cannot be avoided should the proposal be implemented. This description is presented in quantitative terms to the maximum extent possible. This discussion makes clear which of these effects are unavoidable and subject to later amelioration and which are unavoidable and irreversible. The description includes specific measures that the applicant could take or plan to take to mitigate adverse effects.

c. Alternatives to the proposed action

The discussion of alternatives to the proposed action is sufficiently complete to aid NRC in developing and exploring, pursuant to Section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent

practicable, the environmental impacts of the proposal and the alternatives are presented in comparative form.

The discussion of alternatives includes siting alternatives and design alternatives. Comparable levels of information on each site need not be presented as long as the applicant presents sufficient information to facilitate a fair and reasonable comparison. The following factors are considered when comparing alternative sites:

- Physical characteristics of the area, including demographic, geological, hydrological, meteorological, and seismological conditions of the site and surrounding area
- Location of power sources and transmission lines
- Location of the major product market
- Location of raw materials, components, and sources of supply
- Availability of air, rail, roads, and water for transport of raw materials and supplies, finished products, and solid wastes
- Commitment of natural resources for site preparation and plant construction, including but not limited to the destruction or diminution of wildlife habitats, flora, woodlands, and marshlands
- Commitment of capital for site preparation and plant construction
- Cost of operation, including consideration of labor supply, prevailing wage rates, and other recurring or nonrecurring costs
- Availability of municipal services and facilities or, conversely, the cost of providing services such as water and sewage treatment
- Requirements for relocating homes and families
- Existing and projected land use and economic status of the community (e.g., urban, industrial, stable)

d. Relationship between short-term uses and long-term productivity

The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity is discussed. Short-term uses are considered to be those that occur during the active life of the facility. Long-term productivity represents the use of the environment beyond decommissioning of the facility.

e. Irreversible or irretrievable commitments of resources

Any irreversible environmental commitments and irretrievable material resources that would be involved in the proposed action are discussed.

C. Analysis of Environmental Effects of Proposed Action and Alternatives

An adequate Environmental Report analyzes the environmental effects of the proposed action and alternatives. In accordance with 10 CFR 51.45(c), the analysis considers and balances the environmental effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental effects, as well as the environmental, economic, social, and other benefits of the proposed action.

This analysis quantifies, to the fullest extent practicable, the various factors considered. If the application involves renewal or amendment of a current license, environmental impacts are quantified using radiological environmental monitoring data collected by the licensee. To the extent that there are important qualitative considerations or factors that cannot be quantified, the analysis discusses those considerations and factors in qualitative terms. The analysis contains sufficient data to aid the staff in its development of an independent analysis.

D. Status of Compliance

As required by 10 CFR 51.45(d), the applicant should list all Federal permits, licenses, approvals, and other entitlements, which must be obtained in connection with the proposed action. The list is acceptable if it is complete and current as of the application date.

In addition, 10 CFR 51.45(d) requires that the Environmental Report include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection. The discussion is acceptable if it includes a discussion of whether each alternative will comply with such applicable environmental quality standards and requirements. The discussion include's, but is not limited to, the following federal laws:

- The National Historic Preservation Act of 1966
- The Fish and Wildlife Coordination Act of 1966
- The Wild and Scenic Rivers Act of 1968
- The Endangered Species Act Amendments of 1978
- The Coastal Zone Management and Improvement Act of 1990

E. Adverse Information

In accordance with 10 CFR 51.45(e), the preceding discussions and analyses are acceptable if they include information that is adverse to the proposed actions as well as information supporting the proposed action.

F. Categorical Exclusion

An Environmental Report is not required for actions identified in 10 CFR 51.60(b)(1) that involve an amendment to licenses for fuel cycle plants, radioactive waste disposal sites, and other materials licenses, which are not expected to result in significant environmental impacts. The health and safety and environmental impacts of any major changes in process operations or equipment will have been evaluated by means of the Facility Change Mechanism of 10 CFR 70.72, including the ISA.
The information provided by the applicant to justify the categorical exclusion determination is acceptable if it demonstrates the following as specified in 10 CFR 51.22(c)(11):

- There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite

- There is no significant increase in individual or cumulative occupational radiation exposure
- There is no significant construction impact
- There is no significant increase in the potential for or consequences from radiological accidents

9.4.3.2 Environmental Protection Measures

The reviewer should find the applicant's environmental protection commitments and measures acceptable if they provide reasonable assurance that the following acceptance criteria are adequately addressed and satisfied. If the measures provide for effluent control as part of the radiation safety program (SRP Chapter 4) and for radiological effluent and environmental monitoring in accordance with NRC technical and managerial provisions for continuing assurance, they should be acceptable. Environmental measures should be designed to address all routine plant operations, anticipated events and impacts from credible accident sequences evaluated in the ISA.

An applicant's environmental protection commitments should address the following:

(5) Environmental Protection Measures: the applicant commits to develop and implement environmental protection measures that provide for radiological effluent control and radiological effluent and environmental monitoring. These measures, which should affirm the applicant's commitment to reduce unnecessary radiological exposures to members of the public and releases to the environment, should be consistent with the facility's Radiation Protection Program (SRP Chapter 4) and other facility safety programs.
(6) Organization and Administration: the applicant commits to assign responsibility for environmental protection to qualified facility personnel and to identify the authority and responsibility for each. The applicant commits to establish organizational relations amongst the individual positions and to facilitate the interaction of environmental protection personnel with other facility personnel who are responsible for other plant safety programs (e.g. radiation protection, emergency response). The applicant also commits to provide sufficient resources to enable the environmental protection activities to be properly executed.
(7) Training: the applicant commits to provide appropriate training to plant personnel involved in environmental protection whose level of knowledge is important to maintain protection of public health and the environment
(8) Radiological ALARA Goals: the applicant commits to maintain public radiological doses ALARA in accordance with 10 CFR 20.1101. The applicant also commits to establish "action level" concentrations for specific radionuclides in different environmental media that, if exceeded in a release of licensed material, will prompt investigative and corrective actions. "Action levels" will be selected to ensure that exposures to the public will not exceed the 10 CFR 20, Subpart B dose limits. The applicant may, if desired, incrementally grade such "action levels" to correlate releases of licensed material with their impacts on the environment or public. Radiological ALARA goals for plant emissions may be based upon:

    (v) the effluent concentration data contained in 10 CFR 20.Appendix B, Table 2, Columns 1 and 2 and Table 3 (or variations to the Appendix B values made in accordance with 10 CFR 20.1302(c)),
    (vi) the external dose limits in 10 CFR 20.1302(b)(2)(ii),

(vii) the dose limits for members of the public if the applicant proposes to demonstrate compliance with 10 CFR 20.1301 through a calculation of the Total Effective Dose Equivalent (TEDE) to the individual likely to receive the highest dose, or

(viii) applicable discharge standards or permit conditions imposed by local, state or federal regulatory agencies on plant effluents

10 CFR 20.1101 requires the applicant to control air emissions of radioactive material to the environment (excluding ^{222}Ra and its decay products) such that an individual member of the public likely to receive the highest dose will not be expected to receive an annual TEDE in excess of 10 mrem (0.1mSv) from these emissions. In SRP Chapter 6 ('*Chemical Process Safety*') the applicant committed to control emissions of hazardous chemicals produced from licensed material and to establish appropriate ALARA goals for air emissions. An applicant's approach for setting ALARA goals should be acceptable if it is consistent with guidance presented in Regulatory Guide 4.20 and if the applicant's description of the approach provides sufficient detail to demonstrate specific application of the guidance to proposed routine and non-routine operations including anticipated events.

(5) Effluent Control Systems: the applicant commits to design and implement environmental controls to provide reasonable assurance that concentrations of licensed material in airborne and liquid effluents will not exceed the limits in 10 CFR 20, Appendix B, Table 2 or those established in accordance with 10 CFR 20.1302(c). In addition to the items relied on for safety identified in the ISA Summary, the applicant commits to develop and implement procedures and to use engineering and process controls to achieve ALARA goals for the radiological content of effluents.

(6) Effluent Monitoring Systems: the applicant commits to conduct environmental monitoring to characterize and assess impacts to the environment from potential releases of licensed material (and radiogenic hazardous chemicals produced from licensed material). Specific commitments related to the effluent monitoring systems include:

(viii) commitment to install, operate and maintain monitoring systems for plant effluents identified in the ISA Summary to potentially contain radioactive contamination. Radiological effluent monitoring systems should be designed to document the concentrations, quantities, physical characteristics and chemical characteristics of radionuclides released to an unrestricted area or sewage system.

(ix) commitment to use the results of the ISA to identify the environmental media to be monitored (e.g. air, surface water, sediments), to design the sampling programs (e.g. sampling frequency), to determine the analyses to be performed on each medium sample and to develop criteria to select effluent monitoring stations.

(x) commitment to use monitoring systems to detect leakage of radioactive liquids from ponds, lagoons and tanks and to detect and protect against any unplanned releases to groundwater, surface water or soil.

(xi) commitment to use instrumentation, sample collection procedures and analytical procedures that are appropriate for the effluent medium and radionuclide being sampled and that are consistent with accepted industry protocols and standards.

(xii) commitment to employ appropriate quality assurance/quality control procedures to support validation of the analytical data and to use acceptable data analysis methods to evaluate and report the environmental sampling results

(xiii) commitment to record and maintain the environmental monitoring data

(xiv) commitment to establish procedures for the handling, storage and monitoring of radioactive solid waste.

(7) Items Relied on For Safety: the applicant commits to install and maintain items relied on for safety identified in the ISA Summary to protect against accident sequences that could result in releases of licensed material to the environment. Items relied on for safety were identified in the ISA Summary to satisfy the performance requirements of 10 CFR 70.61 and to achieve ALARA effluent goals for releases of license material (and radiogenic hazardous chemicals produced from licensed material)

(8) Waste Minimization Practices: the applicant commits to implement waste minimization practices in accordance with the requirements of 10 CFR 20.1406 and the guidance contained in NRC Information Notice 94-23 ('*Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program*'). 10 CFR 20.1406 requires an applicant for a new facility to describe how facility design procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste. Applicants for amendment or renewal of existing licenses must commit to minimize and control waste generation during operations as part of the radiation protection program in accordance with 10 CFR 20.1101. The applicant should describe approaches to waste minimization, commit to undertaking periodic waste minimization assessments and explain how waste minimization opportunities will be identified and how waste minimization recommendations will be evaluated and implemented.

(9) Corrective Action Program: the applicant commits to refer to the facility's corrective action program any instance in which an action level is exceeded and to implement prompt, appropriate corrective action to ensure against its recurrence. In accordance with the result of the ISA, an applicant may grade corrective actions so that a more serious, adverse impact to the environment or the public would prompt a more comprehensive and/or rapid corrective action.

(10) Reporting and Notification: the applicant commits to review the environmental monitoring data to determine whether operational changes are needed to achieve ALARA effluent goals, to evaluate designs for system modifications and to report the results to senior plant management along with recommendations for changes in the facility and its procedures that are necessary to achieve ALARA goals. The applicant also commits to implement reporting and notification procedures in accordance with 10 CFR 20.2203 to notify the NRC when a release of radioactive material exceeds the 10 CFR 20.1101(d) limits. The applicant also commits to prepare and submit to the NRC in accordance with 10 CFR 70.59 semi-annual reports on the quantity of each principal radionuclide released to unrestricted areas in gaseous and liquid effluents and other information that the NRC may require to enable estimation of the maximum potential annual radiation doses to the public resulting from radiogenic effluent releases

(11) Reviews and Revisions: the applicant commits to periodically review and revise, when appropriate, the content and implementation of the facility's environmental protection measures. The applicant commits to ensure that the facility's environmental protection measures will reflect any revisions or updates to the facility's ISA, any changes to items relied on for safety designed to prevent or mitigate releases of licensed material (or radiogenic hazardous chemicals produced from licensed material) to the environment and any changes to

operational procedures, regulatory standards or environmental protection technologies and methodologies.

(12) Management Measures: the applicant commits to implement management measures to ensure that the measuring and monitoring instrumentation is calibrated and maintained in accordance with the manufacturer's recommendations, that staff involved in execution of the environmental measures are trained and qualified and that items relied on for safety (pertaining to prevention and mitigation of releases of licensed material) are available and reliable when required.

9.5 REVIEW PROCEDURES

9.5.1 Acceptance Review

The primary reviewer should evaluate the application to determine that it addresses the "Areas of Review" discussed in Section 9.3. If significant deficiencies are identified, the applicant should be requested to submit additional material before the start of the safety evaluation.

9.5.2 Safety Evaluation

After determining that the application is acceptable for review in accordance with Section 9.5.1, the primary reviewer should perform a safety evaluation against the acceptance criteria described in Section 9.4. Assessment of renewal or amendment applications should be coordinated with the facility's NRC inspector responsible for environmental protection and should include review of inspection reports and semi-annual effluent reports submitted in accordance with 10 CFR 70.59 to assure licensee performance in environmental protection. Any concerns identified by the inspector should be addressed and resolved by the applicant. If, during the course of the safety evaluation, the primary reviewer determines the need for additional information, the primary reviewer should coordinate a request for additional information with the licensing project manager.

The primary reviewer should consult the applicant's Radiation Protection Program (SRP Chapter 4) to ensure commitments are included to maintain public doses ALARA. The applicant's environmental protection measures should reaffirm this ALARA commitment for the radioactive content of plant emissions. The applicant's ISA Summary (SRP Chapter 3) should also be consulted to identify accident sequences that could result in releases to the environment or to unrestricted areas of licensed material (or radiogenic hazardous chemicals produced from licensed material) and to ensure that the applicant's environmental monitoring program adequately addresses potential environmental and public impacts.

When the safety evaluation is complete, the primary reviewer, with assistance from other reviewers, should prepare the environmental protection input for the Safety Evaluation Report (SER) as described in Section 9.6 using the acceptance criteria from Section 9.4.

9.6 EVALUATION FINDINGS

The staff reviewers should verify that the information submitted by the applicant is in accordance with 10 CFR Parts 20, 51 and 70 and that it is consistent with the guidance in NUREG-1520 as it applies to environmental protection. The primary reviewer should document the bases for

determining the adequacy of the application with respect to environmental protection and should recommend additional license conditions in areas where the license application is inadequate. The primary reviewer should also describe the applicant's approach to ensuring the availability and reliability of items relied on for safety and associated management measures required for environmental protection.

Often, environmental protection is reviewed and evaluated in conjunction with the environmental report, and the environmental protection function is summarized in the EA or EIS. However, the EA or EIS does not become part of the license. Issues identified during the review should be discussed briefly in the SER, and any recommended license conditions based on the analysis in the EA or EIS should be added to the license.

If an EA and EIS were prepared for the licensing action, the date the documents were issued should be reported in the environmental safety section of the SER. If the EA resulted in a FONSI, the FONSI's publication date in the Federal Register should be included in the SER. If an EIS is prepared, the SER would include the Federal Register publication date for the Record of Decision. When applicable, the SER also documents the determination that an action meets a categorical exclusion.

The staff can documents their findings as follows:

> *The staff has evaluated … [insert a summary statement of what was evaluated] The applicant has committed to adequate environmental protection measures including environmental and effluent monitoring and controls, as part of the radiation protection program and as part of the provision for installation of items relied on for safety and the provision for continuing assurance. The NRC concludes with reasonable assurance that the applicant's conformance to the application and license conditions is adequate to protect public health and the environmental and to comply with the regulatory requirements imposed by the Commission in 10 CFR Parts 20, 51 and 70. The bases for these conclusions are:*
>
> *[Insert the bases for the conclusion, including any recommended license conditions.]*

9.7 REFERENCES

American National Standards Institute, N13.1-1982, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities".

American National Standards Institute, N42.18-1980, "Specification and Performance of On-site Instrumentation for Continuously Monitoring Radioactive Effluents".

National Council on Radiation Protection and Measurements, NCRP Report No. 123 I & II, *"Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground,"* January 1996.

NRC Information Notice No. 94-23: "Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program," March 25, 1994.

NRC Information Notice 94-07, "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20," January 28, 1994.

U.S. Nuclear Regulatory Commission, NMSS/FCSS/Fuel Cycle Licensing Branch, Rev. 5, *"Materials Licensing Procedures Manual,"* September 1996.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Rev. 2, *"Quality Assurance for Radiological Monitoring Programs (Normal Operations)-Effluent Streams and the Environment,"* February 1979.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.16, Rev. 2, *"Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants,"* December 1985.

U.S. Nuclear Regulatory Commission, Regulatory Guide 4.20, *"Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other Than Power Reactors,"* December 1996.

U.S. Nuclear Regulatory Commission, Regulatory Guide 8.37, *"ALARA Levels for Effluents from Materials Facilities"*, July 1993.