

Enclosure 2
Handouts
for
August 22, 2002, Meeting

**AGENDA
AUGUST 22, 2002, MEETING
WITH NUCLEAR ENERGY INSTITUTE (NEI)
T-3-B45 9:00 -11:30 AM**

9:00 a.m.	Introductory Comments	NRC / NEI
9:10 a.m.	Follow-up Items from July 16 Meeting · ESP-13: Seismic Demonstration Project	NEI/Applicants
9:20 a.m.	Topics for Next Meeting	NRC/NEI/Applicants
9:30 a.m.	ESP-1: ESP Application Template ESP-12: Severe Accident Mitigation Alternatives ESP-6: Bounding Plant Parameter Approach ESP-7: 10 CFR 52.17 Requirements · Regulatory Framework · Industry Methodology / Approach · NRC Review Process · Specific Issues	NRC/NEI/Applicants
11:10 a.m.	Public Comment	
11:20 a.m.	Summary	NRC/NEI/Applicants
11:30 a.m.	Adjourn	

TOPIC# ESP -1

TOPIC: ESP application templates

DESCRIPTION: The industry is proposing to use templates in preparing an ESP application. Presently, there are three templates being considered:

- Table of contents for the application – this template provides a generic table of contents. We envision this template as providing consistency in applications in that the NRC staff will know where to find certain information.
- Common analyses – We will identify technical analyses that must be performed. Although site-specific information may vary, the use of a generic analysis would result in a uniform approach and level of detail. The seismic probability assessment is an example. The seismic data would vary by site and region, but the analysis methodology, overall approach, and output form would be consistent. Another area could be the environmental report. Environmental data would vary by site and region, but the overall approach, methodology, style and level of detail would be consistent.
- Common technology descriptions—We will work to coordinate common descriptions of various reactor technologies. The descriptions would be utilized by several applicants to describe the designs being considered. The descriptions would be inserted in the “Description of the Proposed Facility” section of the ESP application’s Site Safety Analysis Report.

QUESTION(S) FOR DISCUSSION:

- Are generic analyses possible without ESP experience?

PRELIMINARY INDUSTRY DISCUSSION (if applicable)

Providing information in the manner described above enhances commonality and consistency in content, style, and level of detail. The approach will minimize the likelihood for additional questions based on apparent different approaches or methodologies, level of detail, etc. Such standardization will improve NRC review efficiency and support effective use of resources.

During 7/16/02 Meeting with the NRC staff a draft document entitled “Standard Table of Contents for Early Site Permit Applications” was distributed for comment. The staff agreed to provide comments on the draft Table of Contents (TOC) document.

NRC STAFF COMMENTS

The staff agrees that agreement on generic approaches can be reached between the NRC and the ESP applicants prior to the receipt of the ESP application. However, as discussed during the June 13, 2002 Meeting, the resolution of those ESP issues that will materially impact future ESP applications should be documented via letters to and from the Director of New Reactor Licensing Project Office, NRR. The purpose of the NRC and NEI/ESP Applicants meetings is to reach a common understanding of the issues and concerns associated with the early site permit process.

(8/16/02) A preliminary review of the draft TOC submitted during the July 16, 2002 Meeting indicates close agreement with existing regulatory guidance (e.g., NUREG-0800, NUREG-1555) applicable to the scope of the ESP review. Further staff feedback on this subject should be deferred until the NRC ESP Review Standard has been issued for interim use and public comment. Target date for issuance of the subject Review Standard is 12/02.

¹Topics for Discussion at the 8/22/02 Meeting ESP-12 Severe Accident Mitigation Alternatives (SAMAs)

- According to ESP -12 you state that "... in SECY-02-077, the type of facility may not be known at the ESP stage, and therefore, the structures, systems and components (SSCs) of the particular facility design are not known". However, SECY-02-077 states that "The proposed rule would amend § 52.17(a)(1) to state that the early site permit application should specify the range of facilities that the applicant is requesting the site to qualified for (e.g., one, two, or three pressurized-water reactors) and the applicable site parameters for each nuclear reactor. This new language is consistent with the language in the current Appendix Q. The Commission assumes that an applicant for an early site permit does not know what type of nuclear plant it will build at the site. Therefore, the application must specify the postulated site parameters for the range of reactor types, the number of reactors, etc., to increase the likelihood that the site will be qualified for the actual plant or plants that the applicant decides to build."
 - * Please explain how the decision not to specify type at the time of the ESP filing implies that the type(s) of reactor(s) should not be addressed or evaluated in the ESP application as intended in 10 CFR 52.17/ 10 CFR 52.18?
 - * The Commission intended both the design certification and early site permit processes to make it possible for the resolution of important licensing issues before a construction permit. Given that different potential ESP applicants may possess different business objectives (e.g., municipal utility that intends to build a LWR facility) why should the staff preclude the disposition of NUREG-1555, Environmental Report Standard Review Plan, Section 7.3 entitled "Severe Accident Mitigation Alternatives" on a generic basis?
 - ESP-12 states that "This inability to address design issues was recognized as early as SECY-91-0041 which indicated that the environmental report for an ESP need not include full analysis of environmental impacts of severe accident." However, SECY-91-0041, Early Site Permit Readiness, states that

The EIS will address the effects of land and water use, the effects of the cooling system, and radiological effects of normal operation and of postulated accidents. In accordance with the 1980 Commission Statement of Interim Policy on Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969 (45 FR 40101), the EIS will also include considerations of the environmental
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effects attributable to severe core damage accidents. The staff's analysis will evaluate population data and other information for the candidate site in light of that used in level 3 probabilistic risk analyses (PRAs) performed for reference nuclear power plants. Studies such as those documented in NUREG-1150, "Severe Accident Risks: An Assessment for five U. S. Nuclear Power Plants" (June 1989) could be used for such comparisons, thus providing assurance that the environmental impact of the severe accident would be sufficiently characterized (nature and magnitude of environmental effects) for use in an EIS at the ESP stage. As with the design basis accident evaluation scheme described previously, the staff would perform a *confirmatory analysis* (emphasis added) at the COL stage. The staff has determined that Severe Accident Mitigation Design Alternatives (SAMDA) should be addressed as part of the design certification process.

The above citation indicates that the staff intended to evaluate the environmental impact of the severe accidents in the ESP stage and to confirm that ESP analysis in the COL stage. The staff would also address SAMDA in the design certification process.

- ESP-12 states that "Sections 52.17 and 52.18 also recognize that environmental review will not cover all issues that will be required for a combined operating license (COL). One example called out in the regulations is the "need for power" under the benefits section of the proposed action" and "...52.79(a)(1) for a COL recognizes previous reviews may not have covered all environmental issues." On the first point, the need for power is a specific exclusion from the scope of the EIS review. On the second point, 52.79(a)(1) states that "In general, if the application references an early site permit, the application need not contain information or analyses submitted to the Commission in connection with the early site permit, but must contain...information...to resolve any other significant environmental issue not considered in any previous proceeding on the site or the design. For example, NUREG-1555, Environmental Report Standard Review Plan, specifies as part of developing the environmental impact statement for the COL that the ESP information be updated to consider any significant changes since the issuance of the ESP.

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NRC/ NEI Meeting
On Early Site Permit (ESP) Applications



PLANT PARAMETER ENVELOPE
APPROACH FEEDBACK

Presented By

Ronaldo V. Jenkins

Early Site Permit Program Manager, NRLPO, NRR

August 22, 2002



Purpose / Success

- **PURPOSE:**
To inform industry of the challenges and opportunities associated with the Plant Parameter Envelope (PPE) approaches for early site permit (ESP) applications and to discuss options for successful issue resolution.
- **SUCCESS:**
Clear communication of the staff's concerns regarding the PPE concept.

2



Background

- ESP review areas:
 - Environmental Impact Statement
 - Site Safety Review
 - Site Emergency Planning
- The PPE approach involves the specification of bounding site parameters as a surrogate for the facility information requested in 10 CFR 52.17.

3



Background (Cont'd)

- In 1992-3 timeframe, Nuclear Utility Management and Research Council (NUMARC) proposed the use of a PPE approach in an ESP Application for a Light Water Reactor (LWR) facility.
- In July of 2002, Nuclear Energy Institute (NEI) proposed the use of a PPE approach in an ESP Application for an unspecified type (e.g., LWR, Gas-Cooled) of facility.

4



Staff Concerns Regarding Industry PPE Approaches

- Information provided to date is conceptual and abstract in nature. Specific application or case studies using PPE are needed in order to test the bounds of the required staff review effort.
- For staff environmental review the surrogate facility information needs to result in a realistic and realizable construct for staff evaluation.

5

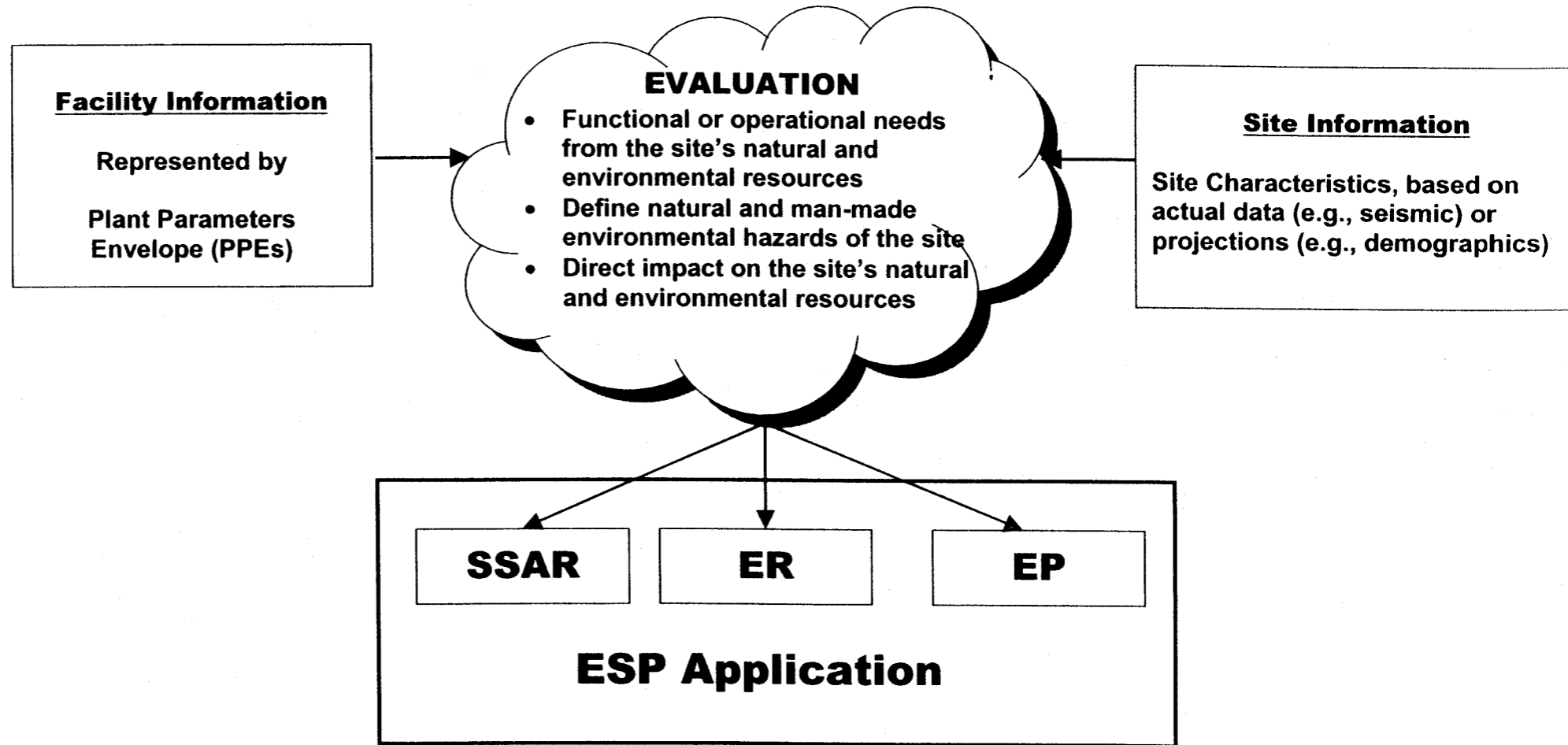


Staff Concerns (Cont'd)

- ESP-6 and ESP-7 proposes to defer disposition of ESP review items until the COL stage. Any future COL Action Items dilutes the value of the ESP.

6

The PPE Approach



ESP/Part 52 Terminology

	<u>ESP</u>	<u>DC</u>	<u>COL</u>
Site is specified	Site Characteristics (Actual)	N/A	Site Characteristics (Actual)
Site is not specified	N/A	Site Parameters (Postulated)	N/A
Design is specified	Design Characteristics (Actual)	Design Characteristics (Actual)	Design Characteristics (Actual)
Design is not specified	Design Parameters (Postulated)	N/A	N/A

Working Definitions for ESP/Part 52 Terms

1. "Site parameters"

The postulated physical, environmental and demographic features of an as-yet unidentified site. These are the site-related parameters that vendors have assumed in completing a reactor design. They establish the physical, environmental and demographic characteristics that a site must "deliver" if it is to be suitable for the vendor's reactor or reactors.

2. "Design parameters"

The postulated features of the reactor or reactors that could be built. These features describe design information that is necessary to prepare an ESP application. At COL, these will be compared with "**design characteristics**" of the selected design to determine whether significant new safety or environmental issues exist.

3. "Site characteristics"

The real physical, environmental and demographic features of the proposed facility location. These values are established through data collection and/or analysis and are reported in the applicant's ESP application. They are developed in accordance with NRC requirements and guidance and form the basis for future comparison (at the COL stage) with "**design characteristics**" of the selected design to verify that the site is suitable for that design.

4. "Design characteristics"

The real features of a reactor or reactors. At COL, design characteristics are assessed to ensure they fall within the **site characteristics** and **design parameters** approved in the ESP.

5. "Plant parameters envelope" (PPE)

The set of postulated design parameters that bound the characteristics of a reactor or reactors that might later be deployed at a site.

Revised August 21, 2002

[ELECTRICITY PRODUCTION COMPANY]
DOCKET NO. 52-[###]
[FUTURE NUCLEAR POWER SITE]
EARLY SITE PERMIT

Early Site Permit No. ESP-[001]

{Based on old construction permit wording and current Part 52 regulations}

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for an early site permit filed by [Electricity Production Company] (the Applicant) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in Title 10, Chapter I, Code of Federal Regulations (10 CFR), and all required notifications to other agencies or bodies have been duly made;

{Based on §52.24}
 - B. The Applicant has sufficiently identified and assessed the site characteristics pertinent to the protection of the health and safety of the public and assessment of environmental impacts for the [Future Nuclear Power Site] (the site);
 - C. The Applicant has defined a sufficient set of ~~postulated~~ design parameters for purposes of assessing the safety and environmental impacts of a future nuclear facility or facilities having characteristics that fall within the set of design parameters defined in the application;

{Based on §52.17}
 - D. On the basis of the foregoing, there is reasonable assurance that, taking into consideration the site criteria contained in 10 CFR Part 100, "Reactor Site Criteria," a reactor, or reactors, having characteristics that fall within the ~~postulated~~ site characteristics and design parameters in the application can be constructed and operated without undue risk to the health and safety of the public;

{Based on §§52.21, 52.18, and 52.17(a)(1)}

- E. The issuance of this early site permit will not be inimical to the common defense and security or to the health and safety of the public; and

{Standard permit and license wording per §103 of the Act}

- F. There is no significant impediment to the development of any emergency plan;

alternatively include, (Option 1)

and major features of the emergency plans submitted by the Applicant are acceptable;

alternatively include, (Option 2)

and the emergency plans submitted by the Applicant provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

{Based on §§52.18 and 52.17(b)(1) and (2)}

- G. After considering the environmental review of the site, including effects of construction and operation of a reactor, or reactors, which have characteristics that fall within the postulated site characteristics and design parameters and the evaluation of alternative sites*, the issuance of this early site permit is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and all applicable requirements have been satisfied.

{Based on §§52.18 and 52.17(a)(2)}

**reflects current 52.17(a)(2) requirement; Petition for Rulemaking PRM-52-2 is pending as discussed in cover letter*

2. Based on the foregoing findings regarding the site, pursuant to Section 103 of the Act, and 10 CFR Part 52, Subpart A, "Early Site Permits," [and pursuant to the Atomic Safety and Licensing Board's Initial Decision, dated [month, day, year],] the Commission hereby issues Early Site Permit No. ESP-[001] to [Electricity Production Company] for the site in [Town, County, State].

3. This permit shall be subject to all applicable provisions of the Act, and rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the conditions, terms, and limitations specified or incorporated below:

A. [Electricity Production Company] is authorized to perform activities at the site allowed by 10 CFR 50.10(e)(1) as described in its application; [alternative: No authority to perform activities at the site allowed by 10 CFR 50.10(e)(1) is granted; and

{Based on §52.25}

B. References to this early site permit shall be deemed to include the site characteristics and ~~postulated~~ design parameters identified in the permit application.

{Based on §52.24 – Reflects proposed language in May 8, 2002, redline draft proposed rule}

4. Except as provided in 10 CFR 52.25(b) and 52.27 (b) and (c), this permit expires on [20 years after issuance];

{Based on §§ 52.25(b) and 52.27(a)}

5. This permit is effective as of its date of issuance and shall expire as set forth in paragraph 4.

FOR THE NUCLEAR REGULATORY COMMISSION

Director, Division
Office of Nuclear Reactor Regulation

Date of Issuance: [Month day, year]

ESP-1 ESP Application Template, Including Common Table of Contents

- Format
 - Safety Assessment (NUREG-0800)
 - Environmental Report (NUREG-1555)
 - Emergency Planning (NUREG-0654)
 - Additional Information (10CFR52.17)

ESP-1 ESP Application Template, Including Common Table of Contents

- Discussion Topics
 - Completeness of TOC
 - Location of “radiological consequence” analysis and evaluation referred to by 52.17
 - Review standard references
 - EP “significant impediment” identification

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ESP-12: Severe Accident Mitigation
Alternatives (SAMAs)

**Nuclear Energy Institute
Early Site Permit Task Force**

**Presentation to the
U. S. Nuclear Regulatory
Commission**

Issue

- 10 CFR 52.17(a)(2) requires, in part, that an ESP application contain a complete Environmental Report as required by 10 CFR 51.45 and 51.50
- NUREG-1555, Section 7.3, identifies the review of SAMAs as applicable to Early Site Permits
- SAMA requires consideration of design and facility processes dependent on reactor type
- How can applicant and NRC analyze and evaluate when the facility and SSCs are not known?

Background

Requirements:

- No specific regulation requires SAMA
- Some recognize that environmental review of ESP will not be all encompassing
 - 52.17, 52.18, 52.79(a)(1), 51.45(c)

Guidance:

- SECY-91-041 recognizes some issues, including SAMAs, as beyond ESP
- SECY-02-077 recognizes licensee may not know reactor type for ESP

Approach

- Reactor type may not yet be determined at ESP stage, but must be at COL stage

- SAMAs can, and should, be evaluated as design issue at COL stage
 - COL should reference any design certification SAMA

ESP-12

TOPIC: NEPA consideration of Severe Accident Mitigation Alternatives (SAMAs) for purposes of Part 52 ESPs.

DESCRIPTION:

Consideration of design and process alternatives for mitigation of severe accidents is problematic in the ESP context when the applicant has not decided on the reactor type.

QUESTIONS FOR DISCUSSION:

1. NRC: How do the applicants plan to satisfy the NEPA requirement in your forthcoming ESP applications for other than the light-water reactor designs?

INDUSTRY APPROACH:

SAMA considerations cannot be addressed at Early Site Permit (ESP) stage since design and processes are not yet identified. SAMA considerations are only practicable for design evaluations such as in standard design certification or combined operation license applications. Therefore, as discussed below, SAMA consideration will be accomplished as part of the COL application and review.

Pertinent NEPA and NRC requirements:

- The National Environmental Policy Act (NEPA) requires:

Sec. 102 [42 USC § 4332]. The Congress authorizes and directs that, to the fullest extent possible: (1) ... and (2) all agencies of the Federal Government shall – (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -- (iii) alternatives to the proposed action....

- NRC regulations in 10CFR Part 51 implement Section 102(2) of NEPA. In addition for an Early Site Permit (ESP), §52.17(a)(2) requires:

A complete environmental report as required by 10 CFR 51.45 and 51.50 must be included in the application, provided, however, that such environmental report must focus on the environmental effects of construction and operation of a reactor, or reactors, which have characteristics that fall within the postulated site parameters, and provided further that the report need not include an assessment of the benefits (for example, need for power) of the proposed action, but must include an evaluation of alternative sites to determine whether there is any obviously superior alternative to the site proposed.

- §51.50 is entitled, "Environmental report – construction permit stage," and requires:

Each applicant for a permit to construct a production or utilization facility covered by §51.20 shall submit with its application the number of copies, as specified in §51.55, of a separate

document, entitled "Applicant's Environmental Report -- Construction Permit Stage," which shall contain the information specified in §§51.45, 51.51 and 51.52. Each environmental report shall identify procedures for reporting and keeping records of environmental data, and any conditions and monitoring requirements for protecting the non-aquatic environment, proposed for possible inclusion in the license as environmental conditions in accordance with §50.36b of this chapter.

Sections 51.45, 51.51 and 51.52 do not specifically identify SAMA consideration as a requirement. §51.45(b)(3) does require consideration of "alternatives to the proposed action," but §51.45(c) also indicates that "the analyses for environmental reports shall, **to the fullest extent practicable**, quantify the various factors considered. To the extent that there are important qualitative considerations or factors that cannot be quantified, those considerations or factors shall be discussed in qualitative terms. The environmental report should contain sufficient data to aid the Commission in its development of an independent analysis." §§51.51 and 51.52 discuss fuel cycle and transportation effects (i.e., Tables S-3 and S-4) and do not discuss SAMAs.

As indicated in SECY-02-0077, the type of facility may not be known at the ESP stage, and therefore, the structures, systems, and components (SSCs) of the particular facility design are not known. Thus, certain bounding assumptions must be made regarding the facility, and its supporting SSCs. However, the purpose of these bounding assumptions is only to show site suitability, not to address any specific reactor design. It is not practicable to quantify, at the ESP stage, or discuss in any manner, design or process alternatives when neither specific design nor specific processes are proposed for construction. Thus, "no discussion" of SAMA meets the §§51.45 and 51.50 requirements, and therefore §52.17(a)(2).

This same logic is appropriate for complying with the guidance provided to the NRC within NUREG-1555, Environmental Report Standard Review Plan, Section 7.3 entitled "Severe Accident Mitigation Alternatives," which specifically identifies the review plan section as applicable to ESP application reviews. The review procedures within this SRP specifically identify the review of the applicants "design alternatives and procedural modifications" which may not be known at the ESP stage. Additionally, the SRP acceptance criteria are based on...

- U.S. Court of Appeals decision in Limerick Ecology Action v. NRC 869 F.2d 719 (3rd Cir. 1989) with respect to the requirement that the NRC include consideration of certain SAMAs in environmental impact reviews performed under Section 102(2)(c) of NEPA **as part of operating license applications**, and
- 50.34(f)(1)(i) required (construction permit) probabilistic risk assessment with aim to improve reliability of core and containment heat removal **systems**.

Again, there is a presumption that the systems are identified. But as indicated above, such discussion is not practicable at the ESP stage.

This inability to address design issues was recognized as early as SECY-91-0041 which indicated that the environmental report for an ESP need not include full analysis of environmental impacts of severe accidents.

Sections 52.17 and 52.18 also recognize that environmental review will not cover all issues that will be required for a combined operating license (COL). One example called out in the regulations is the "need for power" under the benefits section of the proposed action. Additionally, 52.79(a)(1) for a COL recognizes previous reviews may not have covered all environmental issues. Thus sufficient regulation exists to assure SAMAs will be addressed at the design and process review stage.

NRC STAFF POSITION:

(later).

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