

**AGENDA**  
**EARLY SITE PERMIT (ESP) MEETING WITH NUCLEAR ENERGY INSTITUTE (NEI)**  
**ROOM T-10-A1**  
**JANUARY 29, 2003**

9:00 a.m.	Introductory Comments	NRC / NEI
9:05 a.m.	Follow-up Items from December 5, 2002 Meeting	NRC / NEI
9:10 a.m.	Industry Comments on RS-002, Draft ESP Review Standard	NEI/ ESP Applicants
9:40 a.m.	ESP-4: NRC nominal review timeline <i>ESP-18x: Alternative Sources Review under 10 CFR 52.18</i> ESP-8: Use of a bounding approach for providing fuel cycle and transportation information required by NEPA (Tables S-3 & S-4) ESP-16: Guidance for ESP approval of emergency plans	NRC/NEI ESP Applicants
	Break	
	Status/Plans for balance of generic ESP issues Topics for next meeting	
11:45 a.m.	Opportunity for public comment	
11:55 a.m.	Summary	
12:00 Noon	Lunch	
1:00 p.m.	[Continued Morning Item Discussions As Necessary]	
	Break	
4:50 p.m.	Opportunity for public comment	
5:00 p.m.	Adjourn	

NOTE: Topics in *italics* are either new topics or topics substantially revised in scope.

## **Industry Responses to NRC Questions on ESP Applications Using the Plant Parameter Envelope (PPE) Approach**

1. Is the ESP applicant going to provide the information described in NEI-01-02 (September 28, 2001) in the Environmental Report (ER)? If so, how would the PPE approach be interleaved with the balance of the information (in addition to the site characteristics) needed to address the content of application requirements?

Response: The ESP applicants will provide the Environmental Report (ER) information consistent with the guidance of NUREG-1555 as identified in the draft ESP application Table of Contents previously provided to the NRC Staff in a public meeting on July 16, 2002. The ER will also reflect consideration of the forthcoming ESP Review Standard, which is expected to adapt/update existing ESRP guidance for purposes of reviewing ESP applications. NEI-01-02 will be updated in 2003 to reflect the outcome of ongoing interactions on generic ESP topics, including ESP application form and content (ESP-1). The PPE approach will be interleaved as necessary to act as a surrogate for undetermined design details so that the necessary safety and environmental site-related evaluations may be completed.

2. For certain impact analyses, an ESP applicant could propose a range of values or request review of 2 or more options instead of proposing the PPE values. Example: The applicant could propose to use either mechanical draft cooling towers or natural draft cooling towers in its application. Is there any intention to apply this approach in the ER and in what areas?

Response: This is a possible (highly probable) approach that is being considered since this approach would provide for the widest range of possible plant designs on an approved site.

- a. When there are multiple options available for providing a given service (e.g., cooling water), it is likely that those options would be considered and evaluated for environmental impact. In general, it will be advantageous for the applicant to evaluate multiple options re: type and magnitude of environmental impact to maximize the flexibility at the COL stage while retaining use of impact established at the ESP stage review.
- b. In most cases, the application will evaluate the environmental impact for a group of design alternatives that are feasible for the selected site. Appropriate sections of NUREG 1555 would be used to guide this evaluation. The environmental impact evaluation would identify the type of impact and estimate (as considered appropriate) its magnitude. If this evaluation concludes that each of the alternatives are environmentally equivalent, then no preferred alternative would be identified nor would a benefit-cost assessment be made (consistent with NUREG 1555, Section 9.4.1). If an environmentally preferable alternative is identified, then the benefit-cost assessment would be performed.
- c. This approach effectively establishes the type and magnitude of impact for a given service, such as cooling water blowdown. Thus, a different or new cooling water alternative at COL may be considered environmental acceptable as long as the alternative's impact is bounded by the levels established in the ESP review.

3. NEI indicated that it is going to submit the bases for PPE values; will this be shared publicly or will just the staff be provided with access to this information? If the values proposed by an ESP applicant are not bounded by the NEI proposed values, is the applicant going to describe the bases for the difference?

Response: See related ESP-6 Resolution letter submitted December 20, 2002.

4. What type of surrogate values and in what areas does the ESP applicant intend to use surrogates to provide sufficient information to perform environmental analyses? As examples, surrogates could be used for determining the source term for design basis or severe accident considerations, release quantities (in Curies) of radionuclides for normal operation evaluation, or employee data for the socioeconomic evaluation.

Response: Surrogate values will be provided wherever necessary to perform the required environmental analyses, primarily for plant design parameters in the PPE assumptions, including such items as release source terms for both DBAs and normal operation. Assumptions such as employee data or socioeconomic projections may also be necessary, just as they would be even if the applicant chooses a specific design. Such assumptions (whether PPE or other) will be based primarily on industry experience and past practice, vendor information, and any available guidance. As with any information in a license application, the applicant is responsible for its accuracy and completeness (ref. §50.9).

5. The staff raised concerns during previous meetings regarding whether the ABWR source term is a bounding surrogate for all plants that NEI has proposed to be included in the PPE. Does NEI still intend to use this source term as the bounding surrogate, or has it chosen to use a different surrogate or approach to address this matter? How does NEI intend to address the differences between LWR and non-LWR reactor source terms in the surrogate it selects? What insights does NEI have to offer to reconcile the staff concerns?

Response: The ABWR will be included, along with others, to determine the bounding surrogate release activity for environmental evaluations using the revised approach identified in our presentation on December 5, 2002. The surrogate is intended to reflect the best available information to bound the release activities for both the LWR and non-LWR reactors. As with any other bounding evaluation, the COL applicant will be required to demonstrate that the design of the chosen facility falls within the parameters specified in the early site permit (ref. §52.79).

6. How will the ESP applicant supplement the PPE values in the ER in order to assess known effects of specific design features on the environment? For example, how will the ESP applicant address scouring, dredging, turbidity, and silt buildup without a design of the intake and discharge structures? Or how will the ESP applicant estimate the impacts of an elevated vapor plume or drift deposition rates without knowing the design of the cooling tower?

Response: See response to item 4. Additionally, in general, the design, construction, operation, performance, and impact of structures and systems used for cooling water intake, discharge, and towers are relatively well known and established. It is believed that sufficient information is and will be available for use in the environmental evaluation once the controlling parameters are established in the PPE. Using the appropriate PPE bounding

value, other relevant parameters and characteristics can be developed (based on the controlling PPE value) to support the evaluation of environmental impact for the various design options being considered. For example, if the PPE establishes a bounding blowdown rate of 20,000 gpm, then that value can be used to assess the impact of using several options, such as free outfalls, shoreline jets, or submerged offshore jets. While the designs would be not established at the ESP stage, the applicants will use currently existing knowledge regarding discharge system equipment arrangements, piping configurations, performance, modeling, and impact, scaled appropriately per the PPE value of 20,000 gpm, to assess the types and magnitude of environmental impact at the proposed site (informed by the guidance of NUREG 1555, Section 9.4.2).

7. Matters considered in the socioeconomic impact evaluation include estimated tax or cost revenue information, the projected time frame of operation, capital and O&M expenditures, and effects of generating efficiency. In addition, the evaluation for determining whether another site is obviously superior to the proposed site is a two-part test based on whether there is an environmentally preferable site, and if so, determining whether another site is superior based on a comparison of the estimated costs (environmental, economic, and time). How will the ESP applicant address these matters in conjunction with the PPE values in the ER to provide an estimate of this information for the socioeconomic impact evaluation?

Response: See response to item 4.

8. How will the ESP applicant supplement the PPE values in the ER in order to assess key consequence and impacts assessments, such as construction impacts, release of chlorine and biocides, etc.?

Response: See responses to items 4 and 6.

9. The staff has expressed concerns that the alternatives considerations and mitigation of environmental impacts may be complicated by use of the PPE approach. Is NEI aware of any precedents for this type of approach used in other regulatory arenas where detailed information is not available to support consequence or impact analyses, or consideration of mitigation strategies or alternatives? If so, how have applicants or those preparing NEPA documents dealt with the limited scope of approvals? For example, deferral of final approval to a later stage in the process?

Response: A review for precedents is underway. Any identified precedents will be separately provided.

10. Does the suite of parameters envisioned for the PPE constitute the full set of information to describe the major structures, systems, and components necessary for the assessments on the part of the applicant or will each applicant have to supplement the PPE to complete the assessment?

Response: The suite of parameters envisioned for the PPE is intended to constitute the full set of bounding plant parameters necessary to support submittal of a complete application and support the required NRC evaluations. Additional information may be necessary to supplement the PPE values as discussed in response to item 4 above.

The PPE represents bounding values for certain aspects of plant design. PPEs are typically quantitative values and include units of measurement, for example, 30 ft., 1000 MWe, 100,000 gpm, etc. Because the development of the PPE worksheets and the ESP applications they support is not yet complete, the possibility exists that the PPE's may need to be supplemented by additional information. Some of that information could be technology-specific. Any such additional information, if necessary, would be clearly identified as to its origin.

In addition, applicants will likely find it necessary to supplement some evaluations that utilize the various PPE values by providing additional narrative text. The supplemental information would take the form of descriptions of underlying assumptions, conditions, or other information about the site or facility necessary to provide a thorough and comprehensive discussion of the issue.

### **Questions on Any ESP Application**

1. Discuss the ESP applicant's concerns regarding acquisition of transmission line corridor information if the applicant does not own corridors. Is the information available, but just difficult to obtain from the owner?

Response: Acquisition of transmission line corridor information for new facilities is a challenge faced by electric utilities in the course of doing business. Most utilities have the resources and processes in place to identify, evaluate and procure the necessary information regarding transmission line corridors to support potential sites for new generating capacity.

Some ESP applicants, however, may have concerns regarding acquisition of such information if the applicant is not also the owner of the transmission lines. Some information is available and some may be held back by the owner for commercial reasons. It is possible that the majority of information on existing corridors related to design, construction, operation, maintenance, and land leaseholds would not be shared by the owner with ESP applicants. This is primarily due to FERC imposed regulations regarding competition. This being the case, the ESP applicant would have to theorize as to the feasibility of the use and possible modification of existing corridors in assessing environmental impacts of transmission lines in the ESP.

2. How and when does the ESP applicant intend to engage the local, State, and Federal permitting authorities regarding future needs for permits?

Response: An ESP applicant, as part of its application, could request authorization to perform "limited work activities" following issuance of the ESP by inclusion of a redress plan in the application. [Note: See following question for a more thorough description of the process for obtaining such approval and the scope of those "limited work activities."] Such an action could result in the subsequent need to engage certain local, state, or federal permitting agencies if the permit-holder decided to conduct such activities.

Applications for required federal, state, and local permits to support "limited work activities" would be made in a timely manner, varying with each specific permitting authority. Typically, such permitting activities occur following a decision by the Early Site Permit holder to begin

site modifications. Existing utilities and energy companies-- the most likely source of future ESP applicants--have long-engaged with the affected local, state, and federal permitting agencies and are well-acquainted with the timing and processes of those interactions. Thus, the ESP applicant will engage permitting authorities with enough lead-time so as to commence the associated activity on a specified project timeline and obtain the required permits in accordance with the applicable requirements of the permitting authority.

3. What is the extent of permission that may be sought for the conduct of work under a limited work authorization? For example, would ESP applicants seek to construct transmission lines (principally for a greenfield site) under a LWA-1 and, if so, what would a meaningful redress plan include?

Response: If any early site permit (ESP) contains a site redress plan, the NRC's ESP regulations (ref. §52.25(a)) authorize the permit holder to perform the activities at the site allowed by 10 CFR 50.10(e)(1) without first obtaining the separate authorization required by that section. This option can be exercised provided that the final environmental impact statement (EIS) prepared for the permit has concluded that the activities will not result in any adverse environmental impact that cannot be redressed. 10 CFR 50.10(e)(1) is a provision allowing a type of limited work authorization (LWA) commonly referred to as an LWA-1, and allows the following activities:

- Preparation of the site for construction of the facility (including such activities as clearing, grading, construction of temporary access roads and borrow areas);
- Installation of temporary construction support facilities (including such items as warehouse and shop facilities, utilities, concrete mixing plants, docking and unloading facilities, and construction support buildings);
- Excavation for facility structures;
- Construction of service facilities (including such facilities as roadways, paving, railroad spurs, fencing, exterior utility and lighting systems, transmission lines, and sanitary sewerage treatment facilities); and
- The construction of systems, structures and components which do not prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public.

Applicants may seek the full extent of permission for activities allowed under §50.10(e)(1). The construction of transmission lines is one of the activities explicitly permitted under these regulations, provided that the ESP contains a site redress plan and the final EIS for the ESP has concluded that the activities will not result in any adverse environmental impact that cannot be redressed. Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B), ALAB-380, 5 N.R.C. 572 (1977), holds that off-site activities such as construction of transmission lines are properly authorized under an LWA-1.

The redress plan that would be submitted as part of an ESP application to allow such activities must "demonstrate that there is reasonable assurance that redress carried out under the plan will achieve an environmentally stable and aesthetically acceptable site suitable for whatever

non-nuclear use may conform with local zoning laws" (ref. §52.17(c)). Typically, such a plan would call for excavated areas to be filled in and graded, disturbed areas to be vegetated to prevent erosion, and temporary construction facilities to be removed. As held in the Clinch River proceeding, a redress plan is not required to restore the site to its original condition, but may instead stabilize a site in a condition suitable for a future industrial use (including for example non-nuclear generation), and may be subject to modification if an alternative use presents itself prior to the completion of the redress activities. United States Department of Energy (Clinch River Breeder Reactor Plant), LBP-85-7, 21 N.R.C. 507 (1985). See also Public Service Co. of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), LBP-86-14A, 23 N.R.C. 565 (1986). The standards in the ESP regulations at §52.17(c) are modeled after the redress requirements in the Clinch River case, above, thus codifying the acceptability of this approach. 54 Fed. Reg. 15,372, 15,379 (1989).

PRE-MEETING BRIEFING TRANSMITTALS

FROM

NEI (R.BELL) TO NRC (R. JENKINS)

**From:** "BELL, Russ" <rjb@nei.org>  
**To:** "Ronaldo Jenkins (rvj@nrc.gov)" <rvj@nrc.gov>  
**Date:** 1/16/03 4:15PM  
**Subject:** RS-002 comments for Jan. 29

The ESPTF has the following preliminary comments on RS-002 for discussion on Jan. 29. NEI will provide complete, detailed comments on the RS by the March 31 due date. Please provide your feedback on the following:

1. The 12/26/02 e-mail message announcing availability of RS-002 indicated that the staff plans to develop and issue a final RS-002 by the end of 2003. We believe that it will be important for key aspects of the reviewer guidance be revised and in-place to support expected submittal in June 2003 of the initial ESP applications. Our generic discussions have been prioritized with this need in mind. We recommend that revision of RS-002 based on resolution of generic issues and March 31 stakeholder comments be similarly prioritized such that guidance in key areas, eg, use of the PPE approach and related issues, is available to NRC reviewers in the June time frame.
2. The 1/7/03 follow-up message on RS-002 addressed the delay in release for comment of Section 15.0 on accident analyses and Section 13.6 on security. With preparation ESP applications entering a critical phase, we would like to emphasize the importance of completing and releasing the additional sections as quickly as possible. To the extent Sections 15.0 and 13.6 are not released by Jan. 29, please update us when we meet as to the expected release date(s).
3. Draft Rev. 3 of the SRP (April 1996) provided for the use of a standard 300 mph maximum tornado wind speed (per SECY 93-0087). SRP 2.3.1 indicates design basis tornado parameters should be based on Regulatory Guide 1.76. Does this imply that the 300 mph is not an acceptable standard in lieu of the RG 1.76 guidance? Note that all designs currently under consideration by the ESP applicants (including certified designs) are based on this 300 mph criterion.
4. We recognize and appreciate the effort on the part of the staff to avoid guidance calling for review of design information pertaining to safety-related SSCs, consistent with the focus of ESP on approval of sites, not designs. However, Sections 2.4.1, 2.4.12, 2.5.4 and 2.5.5 of RS-002 continue to call for design-related information that will not be available and is not required for ESP, including "description and elevations of SR structures...", "discussion of "hydrodynamic effects of groundwater on SR structures and components," "geologic maps and photographs of the excavations for the facilities," "criteria and design methods for SR facility stability," "design analyses" for "adequate margins of safety," etc. Please discuss the basis for retaining design review-related guidance in these sections.
5. We continue to be concerned about the significant amount of design-related review guidance contained in NUREG-1555 (ESRP) and the potential for confusion and delay if NRC reviewers are not provided additional guidance clarifying the non-applicability of such guidance with respect to review ESP ERs. We identified several specific concerns with current ESRP guidance in our input to you of 11/19/02. Please comment on the steps the staff plans to take, such as the use of additional clarifying notes in the far right column of the table in Attachment 3, to avoid unnecessary confusion and delay regarding review of ESP ERs.

**From:** "BELL, Russ" <rjb@nei.org>  
**To:** "Ronaldo Jenkins (rvj@nrc.gov)" <rvj@nrc.gov>  
**Date:** 1/16/03 5:05PM  
**Subject:** Alt. site-related discussion on Jan. 29

As we discussed yesterday, we would like to add an item to our Jan. 29 agenda related to the interpretation of Section 52.18.

Under Part 50 licensing and current guidance, the consideration of need for power and alternative energy sources has been closely related to the consideration of alternative sites. Under Part 52, evaluation of need for power is explicitly precluded for ESP. While the need for ESP applicants to evaluate alternative sources is not explicitly precluded in Section 52.18, we believe strongly that consideration of alternative sources for ESP makes no sense, is not intended by Part 52 and should not be required.

Section 52.18 states that the EIS "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." In addition to need for power, we believe the benefits of the proposed action that are not required to be addressed in ESP applications include the relative benefits of nuclear power vs. alternative sources. We believe that 52.18 can and should be interpreted in this manner, such that ESP applications are not required to address either need for power or alternative sources.

Requiring a review of alternate sources makes no sense in the context of and ESP applications for the same reasons it makes no sense to evaluate need for power, and we believe that logic and sound policy dictates that neither evaluation be required for ESP.

We note that RS-002 indicates ESRP 9.2 (Energy Alternatives) as applicable for ESP. Thus for purposes of our Jan. 29 agenda, we could discuss this item as part of our RS-002 comments, or you could identify a separate agenda item related to ESP-18a, Alternative Site Reviews for ESP.

**From:** "BELL, Russ" <rjb@nei.org>  
**To:** "Ronaldo Jenkins (rvj@nrc.gov)" <rvj@nrc.gov>  
**Date:** 1/16/03 2:21 PM  
**Subject:** ESP- 8 materials for Jan. 29

On Jan. 29, we plan to use the attached slides to summarize our preliminary assessment of Tables S3 and S4 and solicit NRC staff feedback. The introduction below summarizes the methodology and approach we are using. Bob Nitschke of INEEL, our lead investigator for this activity, will lead this discussion on Jan. 29. We look forward to discussing this material with the staff.

The ESP lead applicants plan to demonstrate that Tables S3 and S4 provide an acceptable basis for estimating fuel cycle and transportation environmental impacts. The methodology being used will determine the requirements for materials and transportation operations associated with the new reactor technologies being evaluated by the ESP applicants and compare these fuel cycle requirements [on an equivalent energy production basis] with the assumptions used to develop Tables S3 and S4.

Annual fuel cycle requirements [e.g., uranium ore and SWU] are the determining factor for estimating environmental impacts. Many fuel cycle parameters [e.g., fuel enrichment percentage, fuel burnup, reactor power level] do not have any direct impact on environmental impacts. For example, a fuel cycle with higher enrichment fuel [% U235] will generally require less enriched uranium mass [kg U235] per year. The important factor for determining environmental impacts would be the SWU/year required and not the enrichment in percent U235. The analysis presented will use the individual fuel cycle parameters to determine the annual requirements that drive environmental impacts and compare these to the assumptions used to develop Tables S3 and S4.

Where an annual requirement [e.g., SWU/year, shipments/year] exceeds the values assumed to develop Tables S3 and S4, an evaluation will be performed to determine whether this difference is significant and to evaluate whether improvements in technology [e.g., lower energy use to produce each SWU] or improved fuel cycle/transportation practices would offset the potential environmental impacts shown in Tables S3 and S4 for any identified increase in annual fuel cycle requirements.

The methodology for evaluating transportation impacts will compare the numbers, types and modes of transportation for each of the fuel cycle technologies to the reference LWR used to develop Table S4. Existing NRC and DOT transportation and packaging regulations will be relied upon to provide assurance that these future radioactive material shipments meet safety and environmental requirements, regardless of fuel form.



# **ESP-8, Tables S-3 & S-4**

Fuel Cycle and Transportation Evaluation  
of New Reactor Technologies

January 29, 2003

**NEI**



# ESP-8 Task History

- September 25<sup>th</sup> - presented an approach to Tables S-3 & S-4
- Gathered background information, vendor data, other supporting materials
- December 5<sup>th</sup> - presented refined methodology
- January 29<sup>th</sup> – discussion of preliminary findings

# Key Points of the Methodology

- As in the WASH reports, use conservative but reasonable assumptions
- Compare ESP fuel cycle and transportation requirements with those assumed to calculate the environmental impacts shown in Tables S-3 & S-4
- Evaluate any potential increases in fuel cycle requirements [e.g., enrichment]
- Demonstrate that Tables S3 & S4 are suitable for determining the expected fuel cycle environmental impacts in ESP applications

# General Observations

- Stricter environmental regulations are in effect for all operations
- Mining and milling operations are considerably different
- UF<sub>6</sub> conversion similar
- Enrichment process potentially much different

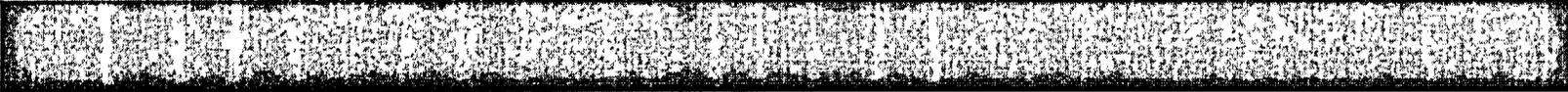


# General Observations (cont.)

- Fuel fabrication similar for light water reactors, different for gas-cooled reactors
- Low-level waste generation from operations much less
- Transportation regulations similar
- Recent evaluations still support conclusion that transportation impacts are minimal

# Preliminary Fuel Cycle Results

- Generally the new reactor technologies require less uranium ore, yellowcake, and  $UF_6$  so the mining, milling, and conversion impacts should be bounded
- Slightly higher SWU in some cases, up to 20% in one case, but due to changes in enrichment technology, stricter environmental regulations and method of electrical generation the fuel cycle environmental impacts shown in Table S3 are still appropriate for the ESP applications



# Preliminary Fuel Cycle Results (cont.)

- Annual fuel loading exceeded in one case but the planned number of shipments is 2 fewer than the reference LWR so the impacts are expected to be bounded
- Much less LLW from operations so radwaste impacts would be bounded
- Still evaluating D&D and gas-cooled fuel fabrication



# Preliminary Transportation Results

- Thermal power exceeded in one case; potential impacts addressed as part of the overall fuel cycle
- Fuel form, cladding different in two cases; potential impacts addressed as part of the packaging requirements
- Enrichment and burnup exceeded in one case; potential impacts addressed as part of the packaging requirements



# Preliminary Transportation Results (cont.)

- Initial core loading shipments exceeded in two cases; potential impacts bounded since the total number of shipments (initial and annual reload) are less than the reference LWR
- Fuel inventory is greater in some cases; potential impacts addressed as part of the packaging requirements



# ESP-8 Summary

- Preliminary results indicate that fuel cycle and transportation impacts for a range of new reactor technologies are consistent with Tables S3 and S4
- Preparing to send ESP-8 resolution letter
- NRC staff feedback desired on industry-proposed approach

## ESP-16

**Title:** Guidance for Emergency Planning at the ESP Stage

### **Background:**

Pursuant to §52.17(b)(1) the ESP application must “identify physical characteristics unique to the proposed site, such as egress limitations from the area surrounding the site, that could pose a significant impediment to the development of emergency plans.” Further, pursuant to § 52.17(b)(2), the ESP “application may also either” (1) “propose major features” of the emergency plans pursuant to §52.17(b)(2)(i), or (2) propose “complete and integrated emergency plans” for review and approval by the NRC pursuant to §52.17(b)(2)(ii).

### **Industry Approach:**

- The ESP applicant will provide the information identified in §52.17(b)(1), i.e., physical site characteristics that could pose a significant impediment to the development of emergency plans, through the evacuation time estimate (ETE) methods recommended in NUREG-0654, Rev 1, Supp 2. A description of the ETE methods and results will be provided in the application. The ETE and related discussion will identify physical characteristics or combination of physical characteristics of the site, if any, that could pose impediments to the development of emergency plans. The additional guidance on performing an ETE provided in NUREG-0654, Rev 1, Appendix 4, and in NUREG/CR-4831 will be considered.
- The ESP applicant will provide the required information identified in §52.17(b)(3), i.e., a description of contacts and arrangements made with local, state, and federal governmental agencies with emergency planning responsibilities, in the application.
- The ESP applicant who chooses one of the optional approaches identified in §52.17(b)(2) will provide the necessary additional information in the application. If the applicant elects to propose major features of the emergency plans in accordance with §52.17(b)(2)(i), the information will be prepared considering the guidance of NUREG-0654, Revision 1, Supplement 2.
  - If the proposed site is one with a pre-existing nuclear facility and associated existing state and local emergency plans, the ESP application will reference the information contained in these existing plans. Major features proposed in the ESP application that differ significantly from those identified in the pre-existing emergency plans will be discussed in the application, including the size of the emergency planning zones.
  - If the site does not have a pre-existing nuclear facility and associated emergency plans, the necessary discussion of the major features of the emergency plans will be provided.

In either case, major features information may consist of state and local prepared emergency planning information, applicant prepared information, or combination thereof, depending on the level of state and local governmental agency participation at the ESP stage.

- If the ESP applicant chooses to propose complete and integrated emergency plans in accordance with §52.17(b)(2)(ii), the application will provide the information required by 10 CFR § 50.47 and Appendix E (using the regulatory guidance found primarily in Revision 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," and the latest revision of Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors").

**NRC Staff Position:**

Draft review standard guidance provided in RS-002, Section 13.3. For discussion January 29.

**QUESTIONS FOR DISCUSSION:**

1. Please confirm the expectation that under the "major features" approach, if an ESP applicant does not propose major features corresponding to all 14 ESP-applicable planning standards and evaluation criteria, the NRC will review and make findings (in consultation with FEMA) on those major features of emergency plans that are proposed in the ESP application.
2. What are the status of and plans for NRC interactions with FEMA with respect to the forthcoming ESP applications?

Status of Generic ESP Interactions

<p>ESP Topic Higher priority topics shaded</p>	<p>Initial Discussion</p>	<p>Next Discussion</p>	<p>NEI Letter</p>	<p>NRC Response</p>	<p>Potential Snr. Mgmt Issue</p>	<p>ESP Schedule Impact if not Resolved by</p>	<p>Status/Remarks</p>	<p>Target Date for NEI Letter</p>
<p>1. ESP application form &amp; content</p>	<p>8/22</p>	<p>1/29</p>					<ul style="list-style-type: none"> <li>• Draft ESP Review Std (RS-002) issued; comments due by 3/31</li> <li>• Preliminary industry comments on RS-002 to be discussed on 1/29</li> <li>• Clarifications provided on location of specific information within ESPAs</li> </ul>	<p>March?</p>
<p>2. ESP inspection guidance</p>	<p>4/24</p>	<p>?</p>					<ul style="list-style-type: none"> <li>• IMC-2501 to be conformed to resolution of ESP-3 (QA)</li> <li>• ESP inspection procedures to be completed to support June submittals</li> </ul>	<p>March?</p>
<p>2a. Pre-application interactions (voluntary nature, plans for local public mtgs &amp; review fee structure)</p>	<p>4/24</p>		<p>11/26</p>	<p>1/10</p>			<p>Resolved</p>	
<p>3. QA requirements for ESP information</p>	<p>5/28</p>		<p>12/20</p>			<p>2/1/03</p>	<p>Resolution Pending</p>	
<p>4. Nominal NRC review timeline</p>	<p>10/17</p>	<p>1/29</p>					<ul style="list-style-type: none"> <li>• Industry timeline provided to NRC on 4/1/02</li> <li>• NRC to discuss ESP review timeline on 1/29, including consideration of competing agency priorities and impacts of concurrent applications</li> <li>• Note ESP review process description in RS-002</li> </ul>	<p>March</p>
<p>5. Mechanism for documenting resolution of ESP issues</p>	<p>5/28</p>		<p>9/10</p>	<p>11/5</p>			<p>Resolved</p>	
<p>6. Use of plant parameters envelope (PPE) approach</p>	<p>7/16</p>		<p>12/20</p>			<p>2/1/03</p>	<p>Resolution Pending</p>	
<p>7. Guidance for satisfying §52.17(a)(1) requirements</p>	<p>7/16</p>		<p>12/20</p>			<p>2/1/03</p>	<p>Resolution Pending</p>	

January 8, 2003

<p>ESP Topic Higher priority topics shaded</p>	<p>Initial Discussion</p>	<p>Next Discussion</p>	<p>NEI Letter</p>	<p>NRC Response</p>	<p>Potential Snr. Mgmt Issue</p>	<p>ESP Schedule Impact if not Resolved by</p>	<p>Status/Remarks</p>	<p>Target Date for NEI Letter</p>
<p>8. Fuel cycle and transportation impacts (Tables S-3 &amp; S-4)</p>	<p>9/25</p>	<p>1/29</p>				<p>3/1/03</p>	<ul style="list-style-type: none"> <li>Preliminary industry assessment of current Tables S3 and S4 to be discussed w/NRC on Jan. 29</li> </ul>	<p><i>mi</i> Feb.</p>
<p>9. Criteria for assuring control of the site by the ESP holder</p>		<p>3/5</p>					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Mar. 5</li> </ul>	<p>March</p>
<p>10. Use of License Renewal GEIS for ESP</p>	<p>9/25</p>		<p>.</p>				<p>Resolution Pending</p>	<p>Jan.</p>
<p>11. Criteria for determining ESP duration (10-20 years)</p>	<p>12/5</p>		<p>12/20</p>				<p>Resolution Pending</p>	<p style="background-color: #cccccc;"></p>
<p>12. Guidance for evaluating severe accident mitigation alternatives under NEPA</p>	<p>8/22</p>		<p>12/20</p>			<p>2/1/03</p>	<p>Resolution Pending</p>	<p style="background-color: #cccccc;"></p>
<p>13. Guidance for ESP seismic evaluations</p>	<p>6/13</p>	<p>?</p>					<ul style="list-style-type: none"> <li>Applicants proceeding as described on Oct. 16</li> <li>Absent need for follow-up meeting, industry prepared to send ESP-13 resolution letter</li> </ul>	<p>?</p>
<p>14. Applicability of Federal requirements concerning environmental justice</p>		<p>-</p>					<ul style="list-style-type: none"> <li>Dec. 20 NEI letter to Commission</li> <li>No ESP-specific discussion of EJ necessary</li> </ul>	<p>?</p>
<p>15. Appropriate level of detail for site redress plans</p>	<p>9/25</p>		<p>11/26</p>	<p>1/16</p>			<p>Resolved</p>	<p style="background-color: #cccccc;"></p>
<p>16. Guidance for ESP approval of emergency plans</p>		<p>1/29</p>					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Jan. 29</li> </ul>	<p>Feb.</p>
<p>17. Petition to eliminate duplicative NRC review of valid existing site/facility information</p>		<p>-</p>					<ul style="list-style-type: none"> <li>Commission action pending on petition PRM-52-1</li> <li>No ESP-specific discussion necessary</li> </ul>	<p>?</p>

January 8, 2003

ESP Topic Higher priority topics shaded	Initial Discussion	Next Discussion	NEI Letter	NRC Response	Potential Snr. Mgmt Issue	ESP Schedule Impact if not Resolved by	Status/Remarks	Target Date for NEI Letter
18. Petition to eliminate reviews for alternate sites, sources and need for power		-					<ul style="list-style-type: none"> <li>Supplemental industry comments on PRM-52-2 provided Dec. 18</li> <li>Staff recommendation pending</li> <li>No ESP-specific discussion necessary</li> </ul>	?
18a Alternative site reviews	12/5		12/20			3/1/03	Resolution Pending	
19. Addressing effects of potential new units at an existing site		3/5					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Mar. 5</li> </ul>	Mar. or April
20. Practical use of existing site/facility information	9/25		11/26	12/18			Resolved	
21. Understanding the interface of ESP with the COL process.		3/5					<ul style="list-style-type: none"> <li>Purpose is clarity of expectations regarding reference to an ESP by a COL applicant</li> <li>Analogous to "COL Items" identified as part of the design certifications</li> </ul>	Mar. or April
22. Form and content of an ESP	8/22	3/5				2/1/03	<ul style="list-style-type: none"> <li>NEI Aug. 21 draft under consideration by NRC</li> <li>Included as enclosure with Dec. 20 ESP-6 letter</li> </ul>	?

For discussion Jan. 29	For discussion March 5	No ESP-specific discussion necessary
<ul style="list-style-type: none"> <li>ESP-1 (RS-002)</li> </ul>	<ul style="list-style-type: none"> <li>ESP-1 (follow-up)</li> </ul>	<ul style="list-style-type: none"> <li>ESP-14</li> </ul>
<ul style="list-style-type: none"> <li>ESP-4</li> </ul>	<ul style="list-style-type: none"> <li>ESP-4 (follow-up)</li> </ul>	<ul style="list-style-type: none"> <li>ESP-17</li> </ul>
<ul style="list-style-type: none"> <li>ESP- 8</li> </ul>	<ul style="list-style-type: none"> <li>ESP-9</li> </ul>	<ul style="list-style-type: none"> <li>ESP-18</li> </ul>
<ul style="list-style-type: none"> <li>ESP-16</li> </ul>	<ul style="list-style-type: none"> <li>ESP-19</li> </ul>	
	<ul style="list-style-type: none"> <li>ESP-21</li> </ul>	
	<ul style="list-style-type: none"> <li>ESP-22</li> </ul>	

ESP-4: NRC Nominal Review Timeline  
(NRLPO - S. Koenick)

Handout includes:

- 1) Draft ESP Review Schedule, dated January 29, 2003
- 2) NEI proposed ESP Review Schedule (figure presented during April 24, 2002, public meeting)

## Draft ESP Review Schedule

<b>Milestone</b>	<b>Target Date*</b>	<b>Timeline**</b>
Receive Early Site Permit Application	07/01/03	0
Press Release describing FRN	07/30/03	29
FRN published for receipt & acceptability review	07/31/03	30
Press Release describing FRN	08/28/03	59
FRN published describing acc./rejection	08/29/03	60
FRN published for mandatory hearing	08/29/03	60
FRN published for Intent/Env Scoping mtg	09/19/03	75
Deadline for Filing Petitions for Intervention	09/29/03	90
Environmental Scoping Meeting	10/17/03	105
Scoping Period Ends	11/18/03	135
Environmental RAs Issued to Applicant	01/15/04	195
Safety RAs issued by NRLPO	01/26/04	210
Environmental RAs Responses Submitted to NRC	03/25/04	270
Responses to Safety RAs issued by applicant	04/12/04	285
1st Inspection Complete	07/09/04	375
Draft EIS to EPA, Issue Notice of Availability	07/29/04	388
SER w/OI issued by NRLPO	09/08/04	435
Public Meeting to Discuss Draft EIS	09/16/04	440
ACRS Subcommittee of SER OI	09/29/04	455
ACRS Full committee of SER OI	10/08/04	465
End of Draft EIS Comment Period	10/19/04	470
ACRS Intermin Letter	10/25/04	480
Responses to SER OI issued by the applicant	11/22/04	510
2nd Inspection Complete	12/03/04	525
Optional Final Inspection complete	02/04/05	585
SER issued by NRLPO	03/22/05	630
Final EIS issued to EPA/Issue Notice of Availability	03/22/05	630
ACRS Subcommittee of SER	04/19/05	660
Regional Administrator's Letter	04/21/05	660
ACRS of full committee of SER	05/05/05	675
ACRS Letter	05/19/05	690
SER issued as NUREG	05/31/05	700
ASLB Initial Decision	10/13/05	840
Commission Paper W/Staff Recommendations	11/17/05	870
Commission Decision	03/24/06	990

\*Based on a June 30, 2003 application submittal date

\*\*Elapsed calendar days

Administrative Review

Applicant submits ERP

NRC completeness review

NRC publishes notice of application receipt/availability

NRC Staff Submits Review

NRC publishes notice of hearing on application

NRC issues final RAIs on site safety/ERP issues

Applicant issues final response to RAIs

NRC issues SER with open items

Applicant responds to open items

NRC issues supplemental SER

ACRS review and letter to Commission

NRC Environmental Review

NRC publishes notice of intent to prepare EIS and conduct scoping

Environmental scoping meeting

Environmental scoping period ends and NRC issues scoping summary

NRC staff issues final RAIs on application

Applicant issues final response to RAIs

Draft EIS issued for comment

NRC staff issues final EIS

Legend

Indicates NRC staff schedules for equivalent license renewal activity. Durations are based on schedules from the NRC review. NRC staff actual performance has exceeded or bettered the estimated schedule shown above.

Indicates EOP target milestone for activity.

## ESP Review Standard – Industry Input for Consideration – 11/19/02

The attached input is provided as a follow-up to the NRC discussion on Oct. 16 regarding staff development of an ESP Review Standard and in response to the NRC staff request for input during the Nov. 5 senior management meeting.

We performed a preliminary assessment of the SRP and ESRP sections identified as applicable for ESP in the NRC table provided on Oct. 16 titled, “Comparison Between Preliminary Determination of NRC Guidance Applicable to Review of ESP Applications and NEI Standard Table of Contents....” The attachment identifies a number of comments regarding the applicability of ESP and ESRP guidance identified in the NRC table as applicable to ESP applications.

ESP applicants have been referring to the SRP and ESRP in the drafting of their ESP applications. This experience and the compilation of the attached comments indicates the large amount of work that needs to be done to adapt the existing reviewer guidance to ESP purposes. We are particularly concerned at the disconnect between the ESRP and the Part 52/ESP context and our understanding that the staff does not plan to provide specific mark-ups of existing ESRP guidance to support NRC staff reviews of ESP applications.

For our December 5 public meeting, please provide your feedback on the nature and breadth of the attached comments. While responses to every comment are not expected, we would appreciate specific NRC staff feedback on SRP comments 8-13 and the concern identified above with respect to the ESRP.

We look forward to the forthcoming opportunity to provide further input on the ESP Review Standard to be issued for trial use and comment next month.

The attached input is organized as follows:

- Items 1-13, Comments on the NRC selection of applicable SRP sections of NUREG-0800 per NRC’s 10/16/02 table
- Items 14-25, Examples of SRP criteria of NUREG-0800 that may need revision to accommodate use of plant parameter envelopes and other concerns
- Item 26, Comments on the NRC selection of applicable ESRP sections of NUREG-1555 per NRC’s 10/16/02 table
- Item 27-32, Examples of ESRP criteria of NUREG-1555 that may need revision to accommodate use of plant parameter envelopes and other concerns

Industry Comments on  
Preliminary NRC Identification of SRP & ESRP Applicability to ESP

Comments on the NRC selection of applicable SRP sections of NUREG-0800 per NRC handout of 20021017.

1. When considering appropriate review and acceptance criteria (as identified in the SRPs) for an ESP, it is important to remember the purpose of an ESP and its associated findings. The ESP findings are twofold, a) the site characteristics have been appropriately identified, and b) the environmental consequences of a reactor built as identified in the application will be acceptable. There is no finding related to the acceptability of the design of structures, systems, and components (SSCs). Thus, any review or acceptance criteria based on review of SSCs is not pertinent since the SSC design is not approved via an ESP. Acceptance criteria for design reviews will be appropriate under Part 52, Subpart B or Subpart C evaluations.
2. ESPTF generally agrees with: Chapter 2 (sans section 2.4.14). However, some specific comments will be provided in a later section of this document.
3. The NRC staff has indicated SRP 3.4.1, Flood Protection, will be utilized. The "Areas of Review" section of this SRP identifies only reviews of "facility design and equipment arrangements." Such a review is to determine the acceptability of the design and does not include any associated site characteristic reviews, nor any associated environmental impact reviews. Thus, it is not clear how the Staff intends to utilize this SRP.
4. The NRC staff has indicated SRP 3.5.1.4, Missiles Generated by Natural Phenomena, will be utilized. The "Areas of Review" section of this SRP indicates the "assessment of possible hazards due to missiles generated by the design basis tornado, flood, and any other natural phenomena identified in Section 3.5 of the safety analysis report (SAR) is reviewed and evaluated ... to assure that appropriate design basis missiles have been chosen and properly characterized, and to assure that the effects caused by these missiles are acceptable." The ESP applications may be able to consider the portions of this guidance that are related to appropriate design basis missile choice and characterization in SSAR section 2.2.3. However, the evaluation of the effects of such missiles, including RG 1.117 consideration, is to determine the acceptability of the design and does not include any associated site characteristic reviews not evaluated in Chapter 2, nor any associated environmental impact reviews.

Thus, Section III of SRP 3.5.1.4 should contain a statement similar to the following: For early site permit reviews under 10 CFR Part 52, the procedures above should be modified to verify that the design basis missiles generated by natural phenomena are appropriately identified consistent with the acceptance criteria defined for the evaluation of potential accidents from external sources in SRP 2.2.3. The evaluation of the effect of these missiles is not required since the final design is not approved in the ESP application.

Also, Section IV of SRP 3.5.1.4 should contain a statement similar to the following:

For early site permit reviews, the reviewer verifies that sufficient site related information has been provided and the review and calculations support conclusions of the following type, to be included in the staff's safety evaluation report: "The design basis missiles generated by natural phenomena are appropriately identified such that they can be considered in the design of structures, systems, and components (SSC) important to safety. The basis for acceptance in the staff review is the conformance of the applicants' design criteria for the protection from the effects of natural phenomena to the Commission's regulations as set forth in the General Design Criteria, and to applicable Regulatory Guides and National Standards. The staff concludes that the identification of possible hazards due to missiles generated by the design basis tornado, flood, and other natural phenomena is acceptable and conforms to the requirements of General Design Criterion 2 and General Design Criterion 4 as they relate to tornado-generated missiles. This conclusion is based on the applicant having met the requirements of General Design Criteria 2 and 4 by: (a) meeting Regulatory Guide 1.76 Positions C-1 or C-2 (or if the positions of Regulatory Guide 1.76 are not fully applied, a maximum tornado wind speed of at least 482 km/hr (300 mph) is utilized).

5. The NRC staff has indicated SRP 3.5.1.5, Site Proximity Missiles (Except Aircraft), will be utilized. The "Areas of Review" section of this SRP indicates the "The staff reviews... to determine whether any missiles... have the potential for adversely affecting structures, systems, and components (SSC) important to safety" and "the staff reviews the plant design to determine whether the plant is adequately protected against the effects of the postulated missiles." Such a review is to determine the acceptability of the design and does not include any associated site characteristic reviews not evaluated in Chapter 2, nor any associated environmental impact reviews. Thus, it is not clear how the Staff intends to utilize this SRP.
6. The NRC staff has indicated SRP 3.5.1.6, Aircraft Hazards, will be utilized. The "Areas of Review" section of this SRP indicates the "assessment of aircraft hazards" is "to assure that the risks due to aircraft hazards are sufficiently low" and that for this evaluation, "probabilistic considerations may be used to demonstrate that aircraft hazards need not be a design basis concern." However, if probabilistic considerations are not sufficient, the SRP indicates that "design basis aircraft identification is made and the applicant's plant design is evaluated to assure that it is protected against the potential effects of aircraft impacts and fires." The ESP applications may be able to consider the portions of this guidance that are related to probabilistic considerations and to appropriate design basis aircraft identification in SSAR section 2.2.3. However, the evaluation of the effects of such aircraft hazards on plant design is an evaluation of the acceptability of the design and does not include any associated site characteristic reviews not evaluated in Chapter 2, nor any associated environmental impact reviews.

Thus, Section III of SRP 3.5.1.6 should contain a statement similar to the following: For early site permit reviews under 10 CFR Part 52, the procedures above should be modified to verify that the probabilistic considerations are appropriately determined, and if necessary, the design basis aircraft hazards are appropriately identified consistent with

the information identified in Sections 2.2.1-2.2.2 of the SAR. The evaluation of the effect of these aircraft hazards may be deferred to COL if the design details are not available in the ESP application.

This may be a clearer statement than the guidance proposed in Draft Rev. 3 (1996) which read: "Requirements and procedures governing issuance of early site permits for approval of proposed sites for nuclear power facilities are specified in 10 CFR Part 52. Applications for such a permit should include a description of the aircraft hazards for the site. For review of this type of application, such reviews should follow the procedures outlined above.

Also, Section IV of SRP 3.5.1.6 should contain a statement similar to the following: For early site permit reviews under 10 CFR Part 52 where SRP Section 2.2.3 criteria are not met, the reviewer verifies that sufficient site related information has been provided and the review and calculations support conclusions of the following type, to be included in the staff's safety evaluation report: "The staff concludes the aircraft hazards are appropriately identified such that they can be considered in the design of structures, systems, and components (SSC) important to safety. The staff concludes that the identification of possible hazards due to aircraft is acceptable and conforms to the requirements of General Design Criterion 3 and General Design Criterion 4 as they relate to aircraft hazards.

7. The NRC staff has indicated SRP 9.2.5, Ultimate Heat Sink, will be utilized. Some of this SRP may be appropriate for the review of site characteristics. The ESP applications may be able to consider the portions of this guidance that are related to adequacy of water supply in SSAR section 2.4.11. However, the portions of the SRP related to determining the acceptability of the design are not appropriate. The design acceptability portion will be appropriate acceptance criteria for design reviews under Part 52, Subpart B or Subpart C.
8. The NRC staff has indicated SRP 12.1, Assuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable, will be utilized. The "Areas of Review" section of this SRP identifies "areas of the applicant's safety analysis report (SAR) are reviewed as they relate to assuring that occupational radiation exposures (ORE) will be as low as is reasonably achievable (ALARA)." As there will be no radiation sources licensed under an ESP, there will be no ORE associated with the ESP. Any ORE associated with licensed materials at nearby facilities will be under the radiation protection programs associated with the nearby facility for which the material is licensed. (Note that an ESP applicant may not be affiliated with the nearby facility and as such may have no control of the ALARA program.) Chapter 12, Radiation Protection, generally has acceptance criteria of 10 CFR Part 19 and Part 20. The scope of Part 19 indicates it is applicable to "all persons who receive, possess, use, or transfer material licensed by the Nuclear Regulatory Commission pursuant to the regulations in parts 30 through 36, 39, 40, 60, 61, 63, 70, or part 72 of this chapter, including persons licensed to operate a production or utilization facility under part 50 of this chapter, persons licensed to possess power reactor spent fuel in an independent spent fuel storage installation (ISFSI) pursuant to part 72 of this

chapter, and in accordance with 10 CFR 76.60 to persons required to obtain a certificate of compliance or an approved compliance plan under part 76 of this chapter." The scope of Part 20 indicates it is applicable to "to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility under Parts 30 through 36, 39, 40, 50, 60, 61, 70, or 72 of this chapter, and in accordance with 10 CFR 76.60 to persons required to obtain a certificate of compliance or an approved compliance plan under part 76 of this chapter." The activities under an ESP will not fit into either of these identified scopes. Further, this SRP does not include any ESP associated site characteristic reviews, nor any ESP associated environmental impact reviews. Thus, it is not clear how the Staff intends to utilize this SRP. The SRP will provide appropriate acceptance criteria for construction and operation reviews under Part 52, Subpart C.

9. The NRC staff has indicated SRP 12.3-12.4, Radiation Protection Design Features, will be utilized. The "Areas of Review" section of this SRP identifies "areas of the applicant's safety analysis report (SAR) are reviewed as they relate to radiation protection design features, taking into account design dose rates, anticipated operational occurrences, and accident conditions." Such a review is to determine the acceptability of the design and does not include any associated site characteristic reviews, nor any associated environmental impact reviews. Thus, it is not clear how the Staff intends to utilize this SRP. It will be appropriate acceptance criteria for design reviews under Part 52, Subpart B or Subpart C.
10. The NRC staff has indicated SRP 12.5, Operational Radiation Protection Program, will be utilized. The "Areas of Review" section of this SRP identifies "areas of the applicant's safety analysis report (SAR) are reviewed as they relate to operational aspects of the radiation protection program." As there will be no operation under an ESP, there will be no operational radiation protection program associated with the ESP. Any radiation protection associated with licensed materials at nearby facilities will be under the radiation protection programs associated with the facility for which the material is licensed. Further, this SRP does not include any ESP associated site characteristic reviews, nor any ESP associated environmental impact reviews. Thus, it is not clear how the Staff intends to utilize this SRP. The SRP will provide appropriate acceptance criteria for operation reviews under Part 52, Subpart C.
11. The NRC staff has indicated SRP 13.3, Emergency Planning, will be utilized. The ESPTF agrees this SRP is appropriate for the review of the emergency planning portions of the ESP. The applicable criteria will be addressed in an ESP emergency planning information submitted as part of the ESP application. The ESPTF notes, however, that the ESP pertinent criteria are included in NUREG-0654, Rev. 1, Supplement 2.
12. The NRC staff has indicated SRP 13.6, Physical Security, will be utilized. The "Areas of Review" section of this SRP identifies "for preliminary safety analysis report (PSAR) review stage, the review of this section covers plans for implementing security measures

relating to (1) pre-employment of personnel employed to work at the proposed plant and (2) the layout of the plant and other design features and equipment arrangements intended to provide protection of vital equipment against acts of radiological sabotage in accordance with 10 CFR Part 73, §73.55." The ESPTF understands this review to be limited to the criteria provided in Regulatory Guide 4.7, position C.6 that is not identified in SRP 13.6. Any additional review with regard to pre-employment and layout of the plant and other design features are not appropriate for the ESP stage. Under an ESP, there will be no pre-employment reviews of personnel. Also, no approvals of design features and equipment arrangements will be requested. Thus, only review of the plant layout to the extent identified in Regulatory Guide 4.7 position C.6, is appropriate.

13. The NRC staff has indicated SRP 17.1, Quality Assurance During the Design and Construction Phase, will be utilized. This applicability of this SRP is dependent on the applicability of Appendix B to 10 CFR Part 50 to ESP activities and whether a QA Program is required to be submitted and reviewed as part of the ESP application. This is the topic of a separate ESPTF discussion.

Examples of SRP criteria of NUREG-0800 that may need revision to accommodate use of plant parameter envelopes and other concerns. (Sample review only; no attempt to be comprehensive.)

14. See items 4 and 6 above regarding SRP 3.5.1.4 and 3.5.1.6.
15. SRP 2.1.1, Section I, Areas of Review, indicates the "location, distance, and orientation of plant structures with respect to highways, railroads, and waterways which traverse or lie adjacent to the exclusion area are reviewed to ensure that they are adequately described to permit analyses (SRP Section 2.2.3) of the possible effects on the plant of accidents on these transportation routes." This section should contain a sentence similar to the following: "An applicant for an early site permit may postulate a plant parameter envelope, such as a structural footprint, as a basis for site evaluation."
16. SRP 2.2.1, Section II, Acceptance Criteria, indicates that §100.10 requires site acceptance be based in part on proposed reactor design. This is not in the currently applicable §100.20. This and all references to 100.3(a), 100.10, 100.11, and Appendix A to Part 100 should be revised to reflect the revised applicable sections of Part 100, and the wording of the requirements updated accordingly.
17. SRP 2.2.3, Section I, Areas of Review, indicates the applicant's information is reviewed "to determine the completeness of and the bases upon which these potential accidents were or were not accommodated in the design." Since no design information is approved at the ESP stage, this is an inappropriate area of review. More appropriate would be review of the applicant's information "to determine the extent to which these potential accidents must be accommodated in the design."

18. SRP 2.3.3, Section II, Acceptance Criteria, indicates that only one annual cycle of onsite meteorological data is sufficient for a PSAR or early site permit application, but at least two annual cycles should be provided with the FSAR or COL application. This is an inappropriate consideration of an ESP as a construction permit with preliminary data that would be reviewed again with the OL application. However, for an ESP, the acceptability of the meteorological data summaries for atmospheric dispersion estimates will not be re-reviewed at COL. The meteorological information and approval will be final based on the ESP review. Thus, the ESP application should also provide the two annual cycles that would be necessary at COL.
19. SRP 2.4.1, Section I, Areas of Review, indicates the review "consists of comparing of comparing the independently verified or derived hydrologic design bases (see subsequent sections of 2.4) with the critical elevations of safety-related structures and facilities." Since the "critical elevations" is design information that is not approved at the ESP stage, this is an inappropriate area of review for the ESP stage. More appropriate would be review of the applicant's information "to determine the site characteristic (which must be accommodated in the design) has been appropriately determined."
20. SRP 2.4.1, Section II.B.1, Acceptance Criteria, indicates the "description and elevations of safety-related structures, facilities, and accesses thereto should be sufficiently complete to allow evaluation of the impact of flood design bases." However, at the ESP stage, there is no attempt to evaluate the impact of the flood design basis, only to identify the flood design basis. Thus, the identified "descriptions and elevations" are not needed and the use of a PPE that does not include this detail would provide sufficient information for the ESP approval.
21. SRP 2.4.7, Ice Effects, appears to be more design dependent than most other hydrologic SRP sections. For example, Section I, Areas of Review, indicates the review "will ascertain whether these effects are properly considered in the structural design basis for the plant," and later "whether these effects are properly considered in the mechanical design basis for the plant." While most of the Acceptance Criteria do not seem to be dependent on design information, the sample Evaluation Findings indicate the acceptance is in part based on structural design, and the final sample statement is "we concur with the applicant that icing or ice flooding should not adversely affect the plant's safety-related facilities." However, at the ESP stage, there is no attempt to evaluate the impact of the design basis, only to identify the appropriate icing design basis to be considered. Thus, the identified review of structural and mechanical design is not needed for site approval.
22. SRP 2.4.8 appears to present a challenge similar to the applicability of SRP 9.2.5. Some of this SRP may be appropriate for the review of site characteristics. However, portions of the SRP related to determining the acceptability of the canal or reservoir design may not be appropriate at the ESP stage. If not available at the ESP stage, the design

acceptability portion would be appropriate acceptance criteria for design reviews under Part 52, Subpart B or Subpart C.

23. SRP 2.4.10, Section I, Areas of Review, indicates the "locations and elevations of safety-related facilities and of structures and components required for protection of safety-related facilities are compared with the estimated static and dynamic effects of design basis flood conditions identified in safety analysis report (SAR) Section 2.4.2.2...." However, at the ESP stage, there is no attempt to evaluate the impact of the flood design basis through review of the design, only to identify the flood design basis. Thus, the identified "locations and elevations" are not needed and the use of a PPE that does not include this detail would provide sufficient information for the site approval. This SRP may be entirely not applicable at the ESP stage.
24. SRP 2.4.12, Section I, Areas of Review, indicates the areas reviewed include the "hydrodynamic effects of groundwater on safety-related structures and components." However, at the ESP stage, there is no attempt to evaluate the impact of the groundwater design basis through review of the design, only to identify the design basis. Thus, the identified review of the effects on the "structures and components" is not appropriate at the ESP stage.
25. SRP 2.5.5 appears to present a challenge similar to the applicability of SRPs 2.4.8 and 9.2.5. Some of this SRP may be appropriate for the review of site characteristics. However, portions of the SRP related to determining the acceptability of the slope design may not be appropriate at the ESP stage. If not available at the ESP stage, the design acceptability portion would be appropriate acceptance criteria for design reviews under Part 52, Subpart B or Subpart C.

Comments on the NRC selection of applicable ESRP sections of NUREG-1555 per NRC's 10/16/02 table

26. ESRP 10.4.3, Summary (of the Project Benefit and Costs Evaluation), is identified as applicable. It is not clear how this section will be applicable since it is a summary of ESRP sections 10.4.1 and 10.4.2 and neither of these sections are identified as applicable. If some portions of this section are applicable, for example should an environmentally preferred alternative [per Section III, Review Procedures, Item (5)] be identified and evaluated from a benefit-cost standpoint, then ESRP 10.4.3 should be updated to indicate what aspects of this section may be applicable to the ESP stage review.

Examples of ESRP criteria of NUREG-1555 that may need revision to accommodate use of plant parameter envelopes and other concerns. (Sample review only; no attempt to be comprehensive.)

#### 27. ESRP 2.3.2, Water Use

- a. Data and Information Needs calls for a "water-use diagram" flow rates from various systems with likely water use requirements. Flow rates "to and from" the various systems may not be available, per se, at the ESP stage; however, bounding values will be established for the maximum water consumption requirements for the key water use services.
- b. This section also calls from "water consumption during periods of minimum water availability." This would be implicitly considered in the review and establishment of maximum water consumption values that are provided in the PPE. Further, the ESRP calls from operational monthly variance in water use, based on plant status. Such information would not be specified at the ESP stage. The maximum consumption values will provide a sufficient basis for judging site suitability at the ESP stage in that these bounding water use requirements would be compared with the most limiting water supply site characteristics, thereby, evaluating and demonstrating site suitability. At the COL stage, the applicant will confirm that the plants actual water use requirements are bounded by the values specified and reviewed at the ESP stage.
- c. It is recommended that this ESRP section's information be revised to recognize the data availability at the ESP stage and address the possible use of bounding PPE water use requirements for evaluating water use environmental impacts. It is also recommended that the Review Procedures and Evaluation Findings be revised to recognize and distinguish between the ESP and COL stage reviews.

#### 28. ESRP 3.3.1, Water Consumption

- a. Data and Information Needs. See Comment 1 above regarding the use of bounding water use values from the PPE.
- b. Section III, Review Procedures directs the Staff to perform "simple mass balance computations to ascertain whether the reported flow rates are consistent for each plant operating mode." This section also calls for water consumption variations by month. As noted earlier (Comment 1.b), details regarding water use variance with plant status will not be available at the ESP stage but that bounding water use values will be compared with limiting water supply site characteristics. It is recommended that this ESRP section be revised considering the expectations for the ESP stage review and likely activities at the COL stage review.
- c. Evaluation Findings per this section would provide a "description of the flow path of water" from water sources through each major plant water system to points of discharge. Such design detail would not be available at the ESP stage review. However, bounding water use values provide adequate basis for evaluating site suitability. The same concept applies to this sections findings regarding flow diagrams, operational water use variance, and seasonal differences. See Comment 1 above.

## 29. Section 3.4.1 (Cooling System) Description and Operational Modes

- a. Data and Information Needs. Similar to ESRP 2.3.2 and 3.3.1, the guidance seeks levels of design and operational detail that would not be available at the ESP stage of review. This sections calls for system descriptions, anticipated operational modes, estimated time periods of operation in each mode; and heat dissipation on a operational mode basis. See Comment 1 above.
- b. Section II, Acceptance Criteria lists Part 52.17(a)(1)(v) as an acceptance criterion. No other guidance is provided in the ESRP section to assist the reviewer as to how this acceptance criterion would be applied and is too general to be completely helpful. Per Comment 3.a., this criterion appears to need additional clarification as to what is acceptable for the ESP stage review.
- c. Review Procedures calls for the reviewer to ensure adequacy of information regarding "operational modes," verify water use with previous Staff analyses (ESRP 3.3.1), analyze the overall cooling system design such that it is "consistent with good engineering design," identify non-emergency modes, etc. Larger this level of review can not be accomplished at the ESP stage review. However, it is recommended that this Section's goals be reviewed as to what is appropriate for a site suitability review. This appears to be a review that would be completed once the design is finalized at the COL stage.

## 30. ESRP 3.4.2, Component Descriptions

- a. Data and Information Needs calls for intake structure drawings; description of "trash racks" and "traveling screens," etc.; and intake system performance requirements for "operational modes" identified in the ESRP 3.4.1 review. Similarly, for discharge systems, this section seeks drawings of the outfall structure; its location relative to the receiving body and water surface; and again, performance characteristics by "operational mode" identified in the ESRP 3.4.1 review. Largely this level of detail would not be developed and available for review at the ESP stage.
- b. However, it is likely that as part of the evaluation of limiting site characteristics and the comparison with bounding plant requirements, certain potential design approaches may be eliminated and some may be identified as preferred, i.e., the "proposed action" in a given category of service. In such cases, conceptual drawings showing general arrangements and key features important to the environmental impact review will likely be available. For example, the application may identify the preferred (proposed) effluent discharge as a free outfall pipe. The application would likely provide maximum discharge flow rates, discharge configuration relative to the receiving body of water, and a conceptual (non-design) drawing providing sufficient information to support the environmental effects analysis. The applicant's environmental effects analysis would be based on this level of detail and could be expected to provide an overall assessment of the nature and extent of any adverse impacts to the environment.
- c. Such information would also be sufficient to assess alternative design approaches to the preferred (proposed) approach. At the COL stage review, the final design would be reviewed against the conceptual PPE design described and evaluated at the ESP stage. If the final design is bounded by the ESP stage conceptual description, then no further

review would likely be needed. To the extent some elements of environmental impact could not be considered at the ESP stage, these aspects would be evaluated at the COL stage.

- d. Review Procedures, as in the case of ESRP 3.4.1, call for a broad range of relatively detailed design review activities that cannot, as written, literally be carried out successfully at the ESP stage. Some examples that can not be fully completed at the ESP stage are:
  - (1) Evaluate temperature rise across the condenser;
  - (2) Analyze the applicant's estimates of average monthly discharge temperatures;
  - (3) Compare the cooling system descriptions with similar plants;
  - (4) Ensure that the proposed systems are consistent with good engineering practice.
  - (5) If necessary, conduct "independent analyses to ensure that performance characteristics are accurately described."
- e. The ESP application will provide bounding values for important parameters in order to support an assessment of site suitability. The COL stage review will provide additional detail that would support Staff needs to confirm the system description and performance as it pertains to environmental impact. However, once that confirmation is made at COL, it is the industry's expectation that the final design would be compared with the conceptual design as described at the ESP stage. If the ESP stage parameters continue to bound the final design values, then the conclusions reached at ESP stage regarding the nature and extent of adverse environmental impact would be remain valid.
- f. It is recommended that this ESRP section be reviewed and updated to appropriate distinguish between information requirements and required review findings at the ESP vs. COL stage.

### 31. ESRP 5.3.2.1, (Discharge System) Thermal Description and Physical Impacts

- a. In general, the environmental impact of the bounding cooling water concept (as proposed in the ESP application) must be evaluated by the applicant. This section is largely applicable in describing the approach to this review. Maximum expected flow rates for the proposed cooling system discharge method would be established along with maximum estimated temperatures in the receiving water body, as well as an assessment of the thermal plume's bounding impact to the receiving water body. However, as with other sections, some qualifications to distinguish the ESP review are considered appropriate. For example:
- b. Data and Information Needs seeks "detailed drawings" of the discharge structures and discharge flow rates and temperatures as a "function of operating conditions." Per comments above, such detailed design and operational information would not be available at the ESP stage. However, as discussed in Comment 4.b above, certain types of information will be available and used in the ESP application. This information will be sufficient for making a determination on site suitability at the ESP stage review.

### 32. ESRP 7.3 Severe Accident Mitigation Alternatives

- a. Data and Information Needs lists a number of requirements that would only be developed once the design has been sufficiently completed and analyzed to support emergency procedure development and a probabilistic risk assessment. Items such as "core damage frequency," "large release frequency," and "dose consequences with and without interdiction" are examples of such information. This section also requires the description and listing of alternatives that would prevent or mitigate severe accidents.
- b. While some of this information may exist, to a limited agree for a certified design, not all designs being considered for a site would be certified. In general, this assessment could only be performed with the final design of both safety and non-safety SSC essentially complete. (This is the case due to potential reliance on non-safety related SSC to prevent or mitigate severe accidents.) This section should be revised to indicate applicability at the COL stage of review.

## **ESP-16**

### **Guidance for Emergency Planning at the ESP Stage**

- NUREG/CR-4831 (ETEs)
- Major Features - 14 Planning Standards
- Supplement 2 (NUREG-0654/FEMA-REP-1)
- Appendix E (Section II)
- NRC Interaction with FEMA
- NRC Review & Findings

January 29, 2003

Status of Generic ESP Interactions and Plans for Remaining Issues

ESP Topic	Initial Discussion	Next Discussion	NEI Resolution Letter	NRC Response	Potential Snr. Mgmt Issue	ESP Schedule Impact if not Resolved by	Status/Remarks	Target Date for Resl'n Letter
1. ESP application form & content and ESP review guidance	8/22	1/29					<ul style="list-style-type: none"> <li>• Preliminary industry comments on RS-002 to be discussed on 1/29</li> <li>• Stakeholder comments due by 3/31</li> </ul>	Later
2. ESP inspection guidance	4/24	3/5					<ul style="list-style-type: none"> <li>• IMC-2501 to be conformed to resolution of ESP-3 (QA)</li> <li>• NEI to provide additional comments on IMC-2501 for discussion on Mar. 5</li> <li>• ESP inspection procedures to be completed to support June submittals</li> </ul>	Mar. or April
2a. Pre-application interactions (voluntary nature, plans for local public mtgs & review fee structure)	4/24		11/26	1/10			Resolved	
3. QA requirements for ESP information	5/28		12/20			2/03	Resolution Pending	
4. Nominal NRC review timeline	10/17	1/29					<ul style="list-style-type: none"> <li>• Industry timeline provided to NRC on 4/1/02</li> <li>• NRC to discuss ESP review timeline on 1/29, including consideration of competing agency priorities and impacts of concurrent applications</li> <li>• Note ESP review process description in draft RS-002</li> </ul>	Mar. or April
5. Mechanism for documenting resolution of ESP issues	5/28		9/10	11/5			Resolved	
6. Use of plant parameters envelope (PPE) approach	7/16		12/20			2/03	Resolution Pending	
7. Guidance for satisfying §52.17(a)(1) requirements	7/16		12/20			2/03	Resolution Pending	

January 29, 2003

ESP Topic	Initial Discussion	Next Discussion	NEI Resolution Letter	NRC Response	Potential Snr. Mgmt Issue	ESP Schedule Impact if not Resolved by	Status/Remarks	Target Date for Res'n Letter
8. Fuel cycle and transportation impacts (Tables S-3 & S-4)	9/25	1/29				3/03	<ul style="list-style-type: none"> <li>Preliminary industry assessment of current Tables S3 and S4 to be discussed w/NRC on Jan. 29</li> </ul>	Feb.
9. Criteria for assuring control of the site by the ESP holder		3/5					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Mar 5</li> </ul>	Mar. or April
10. Use of License Renewal GEIS for ESP	9/25						Resolution Pending	Jan. or Feb.
11. Criteria for determining ESP duration (10-20 years)	12/5		12/20				Resolution Pending	
12. Guidance for evaluating severe accident mitigation alternatives under NEPA	8/22		12/20			2/03	Resolution Pending	
13. Guidance for ESP seismic evaluations	6/13	3/5					<ul style="list-style-type: none"> <li>Applicants proceeding as described on Oct. 16</li> <li>Remaining issues, if any, to be identified for discussion on Mar. 5</li> </ul>	Mar. or April
14. Applicability of Federal requirements concerning environmental justice		-					<ul style="list-style-type: none"> <li>Commission action pending in response to Dec. 20 NEI letter</li> <li>No ESP-specific discussion of EJ or ESP-14 resolution letter necessary*</li> </ul>	*No letter needed
15. Appropriate level of detail for site redress plans	9/25		11/26	1/16			Resolved	
16. Guidance for ESP approval of emergency plans		1/29					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Jan. 29</li> </ul>	Feb.
17. Petition to eliminate duplicative NRC review of valid existing site/facility information		-					<ul style="list-style-type: none"> <li>Commission action pending on petition PRM-52-1</li> <li>No ESP-specific discussion or ESP-17 resolution letter necessary*</li> </ul>	*No letter needed

January 29, 2003

ESP Topic	Initial Discussion	Next Discussion	NEI Resolution Letter	NRC Response	Potential Snr. Mgmt Issue	ESP Schedule Impact if not Resolved by	Status/Remarks	Target Date for Res'n Letter
18. Petition to eliminate reviews for alternate sites, sources and need for power		-					<ul style="list-style-type: none"> <li>Supplemental industry comments on PRM-52-2 provided on Dec. 18</li> <li>Staff recommendation and Commission action pending</li> <li>No ESP-specific discussion or ESP-18 resolution letter necessary*</li> </ul>	*No letter needed
18a Alternative site reviews	12/5		12/20			3/03	Resolution Pending	
19. Addressing effects of potential new units at an existing site		3/5					<ul style="list-style-type: none"> <li>To be discussed w/NRC on Mar. 5</li> </ul>	Mar. or April
20. Practical use of existing site/facility information	9/25		11/26	12/18			Resolved	
21. Understanding the interface of ESP with the COL process.		3/5					<ul style="list-style-type: none"> <li>Purpose is clarity of expectations regarding reference to an ESP by a COL applicant</li> <li>Analogous to "COL Items" identified as part of the design certifications</li> </ul>	Mar. or April
22. Form and content of an ESP	8/22	3/5					<ul style="list-style-type: none"> <li>NEI Aug. 21 draft under consideration by NRC (also included as enclosure with 12/20 ESP-6 letter)</li> <li>Revisions under consideration and will be identified in ESP-22 letter</li> </ul>	Mar. or April

Summary of plans for discussing remaining generic ESP issues		
For discussion Jan. 29	For discussion March 5	
• ESP-1 (RS-002)	• ESP-2 (IMC-2501)	• ESP-19
• ESP-4	• ESP-4 (follow-up)	• ESP-21
• ESP- 8	• ESP-9	• ESP-22
• ESP-16	• ESP-13	