



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 2, 2006

MEMORANDUM TO: ACRS Members

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS/ACNW

A handwritten signature in black ink that reads "David C. Fischer".

SUBJECT: CERTIFICATION OF THE MINUTES OF THE EARLY SITE PERMITS
SUBCOMMITTEE MEETING ON LESSONS LEARNED, SEPTEMBER 6, 2006,
ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on November 2, 2006, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment:

J. Larkins
M. Snodderly
S. Duraiswamy
C. Santos



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 2, 2006

MEMORANDUM TO: David C. Fischer, Senior Staff Engineer
Technical Support Staff, ACRS

FROM: Dana Powers, Chairman
Early Site Permits Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE
MEETING ON EARLY SITE PERMIT APPLICATIONS LESSONS LEARNED,
SEPTEMBER 6, 2006, ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on September 6, 2006, are an accurate record of the proceedings for that meeting.

Dana A. Powers 2/Nov/2006

Dana Powers,
Early Site Permits Subcommittee, Chairman



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 2, 2006

MEMORANDUM TO: Dana A. Powers, Chairman
Early Site Permits Subcommittee

FROM: David C. Fischer, Senior Staff Engineer */RA/*
Technical Support Staff
ACRS/ACNW

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS EARLY SITE
PERMITS SUBCOMMITTEE MEETING ON LESSONS LEARNED,
SEPTEMBER 6, 2006, ROCKVILLE, MARYLAND

A working copy of the minutes of the subject meeting is attached for your review.

Please review and comment on them at your earliest convenience. If you are satisfied with these minutes please sign, date and return the attached certification letter.

Attachment: Certification Letter
Minutes (DRAFT)

cc w/o Attachment:

J. Larkins
M. Snodderly
C. Santos
S. Duraiswamy

0474.00009 11/2/06

Issued: 11/2/06

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
EARLY SITE PERMITS SUBCOMMITTEE MEETING MINUTES
SEPTEMBER 6, 2006
ROCKVILLE, MARYLAND**

INTRODUCTION

The ACRS Subcommittee on Early Site Permits met on September 6, 2006, at 11545 Rockville Pike, Rockville, Maryland, in Room T-2B3. The purpose of this meeting was to discuss and develop "lessons-learned" items as a result of the North Anna, Grand Gulf, and Clinton early site permit reviews. The Subcommittee heard presentations by and held discussions with representatives of the NRC staff, Dominion Nuclear North Anna, LLC (Dominion), System Energy Resources, Inc. (SERI), Exelon Generation Company, LLC (Exelon); Southern Nuclear Operating Company, Inc. (Southern Company), and other interested persons regarding this matter. The Subcommittee planned to gather information, analyze relevant issues and facts to formulate proposed positions, as appropriate, for deliberation by the ACRS Full Committee. The entire meeting was open to public attendance. Mr. David C. Fischer was the cognizant staff engineer and the Designated Federal Official for this meeting. The Subcommittee received no written comments, or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 1:00 p.m. and adjourned at 4:55 p.m.

ATTENDEES

ACRS

Dana Powers, Chairman
Sam Armijo, Member
Mario Bonaca, Member
Thomas Kress, Member
Otto Maynard, Member
John Sieber, Member
William Shack, Member
Graham Wallis, Member
David Fischer, ACRS Staff

Industry Presenters

Marvin Smith, Dominion
George Zinke, Entergy/Nustart
Eddie Grant, Exelon/Excel

NRC Staff

Christian Araguas
Raj Anand
Goutam Bagchi
Dan Barss
Mark Blumberg
Kaz Campe
Stephanie Coffin
Nanette Gilles
Michelle Hart
Brad Harvey
Tony Hsia

NRC Staff (continued)

Annie Kammerer
Stephen Koenick
John Lamb
Jay Lee
Rui Li
Cliff Munson
Bruce Musico
Loren Plisco
Paul Prescott
Joelle Starefos
Robert Weisman

ATTENDEES (Continued)

Gary Becker, Southern Company
Russ Bell, NEI
Michael Bourgeois, Entergy
Patricia Campbell, General Electric
Guy Cesare, Nustart/Enercon
Eugene Grecheck, Dominion
Dayna Herrick, Duke Energy
Chris Kerr, Exelon
Ray Kuyler, Morgan Lewis
Joe Mihalcik, Unistar
R.C.L. Olson, Enercon
Steve Roth, Bechtel
Kathryn Sutton, Morgan Lewis

A complete list of attendees is in the ACRS Office file and will be made available upon request. The presentation slides and handouts used during the meeting are attached to the Office Copy of these minutes.

OPENING REMARKS BY THE SUBCOMMITTEE CHAIRMAN

Dr. Dana Powers, Chairman of the Early Site Permits Subcommittee, stated that the purpose of this meeting was to discuss and develop "lessons-learned" items as a result of the North Anna, Grand Gulf, and Clinton early site permit reviews. He indicated that the Subcommittee would here presentations by and hold discussions with representatives of the NRC staff, Dominion, SERI, Exelon, Southern Company, and other interested persons regarding this matter. Dr. Powers encouraged a free-flowing discussion at the meeting and participation by all attendees. He commended the applicants and staff on the quality of their work throughout the ESP application and review process. He said that we were developing lessons learned in order to refine what already appears to be a functional regulatory process.

NRC STAFF PRESENTATION

Mr. Christian Araguas of the NRC staff explained that the staff planned to incorporate the lessons learned from the review of ESP applications into the applicable Regulatory Guide or Standard Review Plan (SRP) section (currently being revised in support of new reactor licensing), as opposed to revising the ESP review guidance document, RS-002. The acceptance criteria currently in Attachment 2 to RS-002 will be replaced with a matrix pointing to the applicable section of the SRP. Mr. Araguas said that one lesson learned from the review of ESP applications was the need to establish criteria for identifying which site characteristics and controlling plant parameter envelope (PPE) values should be included in the ESP. He also said that they needed to establish criteria for identifying permit conditions and combined license (COL) action items in the ESP. Dr. Powers noted that the staff initially had an excessive number of permit conditions and COL action items and commended the staff for developing these criteria. At Dr. Powers' suggestion, Mr. Araguas read the criteria for establishing permit

conditions to the Subcommittee and provided an example of a site characteristic or feature which would meet each criteria. The staff plans on incorporating these criteria in the Standard Review Plan. A third lesson learned from the staff's review of the first three ESP applications is the Commission's expectation for high quality applications. Mr. Araguas said that future applicants (i.e. both ESP and COL applicants) will be expected to incorporate the lessons learned from the first three ESP applications, whether it be through the applicant's review of the staff's requests for additional information (RAIs), the ESP holders' responses to the RAIs, or other review issues that came up. He said that future ESP applicants will also benefit from the ESP lessons learned because some of them have been incorporated into the revised Part 52 rule and recent RG and SRP Section revisions. Dr. Powers noted that review of the RAIs and responses for lessons learned are particularly important as these staff/applicant interactions occur before the ACRS reviews the application and staff's safety evaluation report (SER). Next, Mr. Araguas identified several other areas where the staff's review guidance needed to be updated based on issues that came up during these first-of-a-kind review process, including: 1) performance-based methodology for defining seismic hazards, 2) major features of the applicants's emergency plan, 3) the applicability of 10 CFR Part 21 to ESP applicants, 4) the applicability of Appendix B to 10 CFR Part 50 to ESP applicants, and 5) defining acceptance criteria for computing the probable maximum flood (PMF).

Mr. Araguas noted that the Clinton ESP applicant had proposed a new performance-based methodology for determining the safe shutdown earthquake ground motion for the site, different than the staff's approved methodology as outlined in Regulatory Guide 1.165. This resulted in a delay in the completion of the staff's seismic review of the Clinton ESP application. To avoid future delays in the upcoming ESP and COL applications, the staff decided to write a new regulatory guide to capture this new performance-based methodology, Draft Regulatory Guide DG-1146. Mr. Araguas said that this new methodology is also going to be captured in an updated SRP Section revision.

Mr. Araguas said that during the course of the review of the first three ESP applications, several questions were raised regarding the level of staff review being conducted under the major features option for applicants that referenced an approved emergency plan for an existing nuclear power plant co-located with the ESP site. He said that industry felt that there was not a clear definition in the regulations regarding what constituted a "major feature." He also said that there was some confusion over the level of finality an applicant would attain if it chose the major features option. As a result, the staff recognized the need for updating the existing emergency planning (EP) guidance in NUREG-0654. While there is a plan to update this guidance, because there are no commitments from industry to submit additional ESP applications using the major features option, the staff has not yet established a schedule for updating NUREG-0654. Mr. Araguas indicated that the staff believes that the definition of major features is adequately defined in the current NUREG-0654, Revision 1, Supplement 2. Finally, Mr. Araguas said that the staff is proposing to revise Part 52 to clarify the of finality associated with the major features option, i.e., by clarifying that the major features are the basic emergency planning requirements that are directly associated with the staff's reasonable assurance determination. Dr. Powers questioned whether the staff would distinguish between the EP requirements (e.g., to adequately define the major features) for an ESP site adjacent to an existing nuclear power plant site and those for a so-called "green field" site. The staff explained that the EP acceptance criteria would be the same for either site but acknowledged that an ESP

site adjacent to an existing nuclear power plant site might have an easier job preparing its application because much of the same work would have had to have been done for the existing nuclear power plant site. Nevertheless, there appeared to be some confusion over the level of detail required to adequately describe the major features at an ESP site adjacent to an existing nuclear power plant site. The staff stated that while the two acceptance criteria related to the staff's review of the major features were applied uniformly to the three ESP applicants, the level of detail of the information provided by each applicant varied considerably. The staff said that it was trying to clarify the required level of detail in the ongoing SRP Section updates and in DG-1145, the COL Application Guidelines. Dr. Powers said that he thought the required level of detail to describe major features at the ESP stage would be three pages and a map. The staff said that if an applicant chose the complete and integrated emergency plan option(at the ESP stage), as opposed to the major features option, the staff would expect the same level of detailed information as it would get from an applicant at the operating license stage. This would afford the ESP holder with a more finality in the area of EP. The staff also said that proposed revisions to Part 52 which would allow ESP applicants to get greater finality in any (or all) of the 16 EP planning standard areas, beyond the finality afforded by the major features option. An industry representative indicated that there was not a common understanding between the applicants and staff with regard to what constituted a major feature of an emergency plan, and the level of finality achieved by providing various levels of detail.

The staff clarified its position on the applicability of the 10 CFR Part 21 reporting requirements to ESP applicants in a letter dated June 22, 2004. The letter states that pre-applicants do not have any obligation under the regulations to comply with 10 CFR Part 21 reporting requirements. For both ESP applicants and ESP holders, the staff stated that 10 CFR Part 21 reporting requirements do apply because site characteristics form part of the basis for the design and because the design, in turn, forms the basis for the license. Therefore, the staff feels it is appropriate to require that an ESP applicant and ESP holder to have in place a 10 CFR Part 21 program.

The staff noted that the current regulations do not require that a 10 CFR Part 50 Appendix B quality assurance program be implemented in support of an ESP application. However, the staff determined that ESP activities associated with site safety must be controlled by quality assurance measures sufficient to provide reasonable assurance that future safety-related systems, structures, and components (SSCs) of a nuclear power plant or plants that might be constructed on the site will perform adequately. Implementation of this guidance for the first three ESP applications proved challenging and the staff said that future ESP reviews will be significantly improved by the addition of an explicit QA requirement for ESP applicants. The staff believes that the level of quality used to control activities related to safety-related SSCs should be equivalent in the ESP and COL phases. The staff's position is that applicants must apply quality controls to each ESP activity associated with the generation of design information for safety-related SSCs that meet the criteria in Appendix B. The reasoning for this is that site characteristics approved at the ESP stage will form the part of the basis for the design which in turn will become part of the basis for the license. To avoid any problems in the future, the staff is proposing to modify 10 CFR 50.55(f), Appendix B, and 52.17 to make these QA requirements applicable to ESPs. The staff is also capturing this proposed change to the rule in the SRP updates. Dr. Powers asked if the staff found the use of ISO QA standards acceptable. The staff indicated that ISO standards would not be an acceptable alternative to meeting

Appendix B. Dr. Powers cautioned that plants like the EPR may be designed and built to ISO standards and that this could pose some difficulties.

Mr. Araguas said that in computing the probable maximum flood level at the Clinton ESP site, it is not the staff's job to do a bounding type analysis and then use the staff's value as the value used to characterize the ESP site. He said that the staff also needed to update the guidance and data used for computing the probable maximum flood elevation. The staff is planning on revising the review procedure and acceptance criteria for calculating the probable maximum flood elevation.

Next, Mr. Araguas discussed three lessons learned during the ESP review process that were identified by the ACRS. The first involved an inadequate analysis performed by SERI of the hazard posed to the proposed Grand Gulf ESP site by transportation accidents on the Mississippi River. As a direct result of ACRS questioning, SERI revised its analysis and performed a risk assessment to demonstrate the low probability for exceeding a peak over-pressure of 1 psi at the ESP site, as recommended by regulatory guide 1.91. The staff reviewed this analysis and performed its own confirmatory analysis to verify SERI's conclusion. The staff said that the flaws in the applicants earlier analysis were not the result of inadequate guidance in the regulatory guide or standard review plan. The second issue involved weather cycles with periods on the order of decades that could affect site characteristics. The staff indicated that it did not endorse revising the ESP review standard or SRP to develop new review procedures and acceptance criteria to account for climate changes. Dr. Powers said that it surprised him that the staff didn't plan to revise the review guidance because the guidance, as currently written, would suggest that the staff would examine the data for its applicability. Mr. Harvey of the NRC staff said that it seemed inappropriate to ask applicants to put increased margin in their site characteristics based on potential climate changes with such large uncertainties. He said that climatic site characteristics are appropriately based on industry standards and that the staff expects that the industry standards committees would be looking at climate changes as the state-of-the-art knowledge in climate prediction unfolds. Finally Mr. Harvey said that it is basically up to the applicant, after the ESP has been issued, to identify any potential major changes to the site, including any significant climatic changes. Dr. Powers said that there is an evolving understanding of climatic cycles that affect extremes of weather especially for sites on the east coast of the United States and near the Gulf of Mexico. He said the intensity of hurricanes goes through cycles. While Dr. Powers did not find the staff's position unreasonable he said the wording in the ESP review standard (RS-002) needed to be clarified to remove the suggestion that such extremes of weather would be considered. The third and final issue was that RS-002 should be clarified to describe how an ESP application can rely on the emergency plans for an existing nuclear power plant site.

Dr. Shack asked the staff how it would deal with a COL applicant who holds an ESP. Ms. Gilles of the NRC staff said that they are looking very closely at the comparison it will need to do at the COL stage to ensure that the design that was chosen by the applicant is actually bounded by the parameters that were identified at the ESP stage. She said the site safety analysis report that was prepared at the ESP stage will actually become a part of the combined license final safety analysis report.

INDUSTRY PRESENTATIONS

Dominion Nuclear North Anna, LLC

Mr. Marvin Smith, the project director for the North Anna ESP project, presented Dominion's lessons learned and said they generally apply to site-related issues. Submittal of an ESP moves the resolution of some site-related issues earlier in time. These site-related issues will not need to be revisited at the COL stage. He said that the lessons learned during the ESP application reviews would also benefit COL applicants, including those that have not applied for an ESP.

Mr. Smith said that Dominion supported the American Society of Concrete Engineers (ASCE) seismic methodology. However, he said there still needs additional clarification on where to set the safe shutdown earthquake (SSE), for example, at the free ground surface or at the foundation level. Dr. Munson of the staff said that 10 CFR Part 100.23 defines the SSE as the free surface motion. He said this was further clarified in SRP Section 3.7.1 but noted that additional clarification would be provided in an ongoing revision to SRP Section 3.7.1. Mr. Smith encourage continued work between the NRC and industry to address both the technical and regulatory aspects of the high frequency (10-100 HZ) component of the SSE (e.g., equipment qualification, relay chatter, etc.). Mr. Smith said that initially the plant parameter envelope (PPE) was a difficult concept to grasp in that there was no related regulation or guidance. He said that he hoped the PPE would provide the same level of finality as one would achieve if they had specified a specific reactor design, as long as the reactor design they ultimately choose falls within the envelope. He also suggested that the specific list of parameters in the PPE be pared down to only the important ones. With regard to emergency planning, Mr. Smith said it took Dominion a lot more review effort to define their major features than they had expected for an existing site with an approved emergency plan.

Mr. Smith said that the NRC should clarify its guidance on how to address the combination of 100 year snow load plus 24-hour winter precipitation when the maximum winter season precipitation is in the form of rain. He said it was unreasonable to assume an improbable event with another improbable event to determine the maximum loading. Mr. Harvey of the NRC staff said that the staff recognized the confusion and said that the staff was revising SRP Section 2.3.1 on regional meteorology to clarify the staff's position that these two events be considered separately. Mr. Smith also said that the NRC's guidance on how to arrive at χ/Q values for radioactive release/dispersion analyses at ESP sites where the actual plant type, release points, and building configurations are not yet known. He suggested clarifying the guidance to allow for a conservative approach (e.g., no building wake effects, assume minimum distances to the site boundaries) or a more detailed calculation.

Next, Mr. Smith brought up the need for guidance of the use of internet data for various analyses. He asked for guidance on when it appropriate to use internet data, and when you have to go back and get certified data versus simply documenting where that internet data came from. Dr. Powers agreed that guidance in this area is needed, not just for ESPs or COLs. Mr. Prescott of the NRC staff said that the Office of General Counsel said that it was up to the staff to make the determination of whether or not they felt that the internet data used by an

applicant was adequate from a quality assurance point of view. Dr. Powers said that internet data used for safety significant applications needed to be retrievable, reproducible, and scrutable. Mr. Sieber suggested that safety significant analyses be done as though the internet wasn't there. Mr. Harvey suggested printing hard copies of internet data and then archiving it in some form or fashion. Dr. Powers noted that in the current electronic age, ever more information is becoming available through the internet. This trend will continue and eventually the internet may replace libraries and other information repositories that support engineering and safety analyses. Internet resources have advantages in comparison to familiar printed resources. They also have vulnerabilities that are not suffered by printed resources. Dr. Powers said it is evident that eventually the staff will have to establish guidance to ensure reliability of internet information and the continuing ability to retrieve such information.

The final issue raised by Mr Smith was the sources of site data in general (e.g., site-specific information on meteorology, geology, etc.). He said that there needed to be early agreement, perhaps during the pre-application stage, between the NRC staff and applicants on what would be acceptable sources.

System Energy Resources, Inc.

Mr. George Zinke from Entergy presented the lessons learned from the Grand Gulf ESP application process, including pre-application and post-application phases. Some of the lessons learned related to environmental issue while others related to safety issues. His presentation focused on the safety issues. Entergy's expectations going into the process included their preparation of a high quality submittal, a stable and predictable licensing process, and reasonable schedules supportive of their business needs. In order to provide a high quality submittal, Entergy wanted timely preparation of the application, a fixed application content that would be evaluated against known NRC acceptance criteria, consistent with the regulations, and focused on public health and safety.

Mr. Zinke said that one of the major lessons learned is that it has been about three years since they submitted their ESP application, for a site that has already been approved for another plant, and they still don't have a permit. He also said that had the ESP review standard, RS-002, been published before they had prepared their ESP application, the application would have looked different. He did, however, say that Entergy had fairly extensive and good pre-application interaction with the NRC staff. He said that with the exception of the seismic area, the pre-application interactions with the staff were consistent with the guidance in RS-002. Mr. Cesare (with Entergy and Enercon) said that he thought review standard RS-002 fell short in that it did not recognize the PPE approach and also in the emergency planning area. In contrast, Mr. Zinke said that the staff has put a staggering amount of resources into the development of the COL application guidance, which he said is good.

Next, Mr. Zinke mentioned that in the areas of quality assurance and Part 21 reporting for ESP applicants and ESP holders, the staff and applicant seemed to talk past each other. He said that there are practical issues associated with how to implement such requirements for siting type issues. Mr. Seiber said that certain aspect of the site seismic design, such as the soil bore holes, the should be subject to QA and Part 21 reporting requirements.

Mr. Zinke said that there were also lessons learned in the area of emergency planning. He said Entergy initially had difficulty determining what constituted a "major feature" of their emergency plan. He also said that Entergy came away with a better understanding of what the staff thought a "full and integrated plan" submittal would look like. He noted that the event classification scheme would depend on the reactor plant design chosen for the site. He also said that Entergy did not want to try to develop full and integrated emergency plan several years ago because at that point they had not made a decision to build and had not yet settled on a reactor design. Mr. Barss explained that the staff's thinking on what can be approved as a "major features submittal" has evolved. Rather than have one set of requirements that needs to be met to describe the major features of an emergency plan, the staff is now willing to entertain and approve a submittal that describes any or all of the 16 planning standards in Supplement 2 to NUREG-0654, as a major features submittal. This additional flexibility is being reflected in the proposed revisions to Part 52 and in the revised EP guidance documents (i.e., NUREG, regulatory guides, and Standard Review Plan sections).

The next lesson learned related to electronic submittals. Mr. Zinke said that there were difficulties in making electronic submittals (e.g., with compatibility).

Mr. Zinke said that there also should have been a early site permit template. He questioned how permit conditions would be incorporated. Mr. Araguas said that the applicant should have a pretty good idea of what will be included in the actual permit and referenced Appendix A to the staff's final safety evaluation report (FSER). Mr. Araguas also mentioned that the bounding PPEs will go in the permit. Mr. Eddie Grant, Exelon, said that there was more of a problem with regard to finality on the environmental side than there is on the safety side. Later in the meeting, Mr. Bob Weisman from the Office of General Counsel, said that the staff is currently developing an ESP template and he estimated that it would be between 8 and 20 pages in length. Ms. Gilles clarified that the staff had issued a draft ESP template to industry for comment before any ESP applications were submitted. She said that a draft was issued, industry commented on it, and it has since been revised.

Mr. Zinke said that the ACRS review process was also a lesson learned. He said that before their first meeting with the ACRS subcommittee, they really did not know what information the ACRS wanted to know. He suggested that having a better idea about what the Committee wanted to hear about at the COL stage might be helpful. Various subcommittee members explained why having an ACRS review template is not practical.

Exelon Generation Company

Mr. Eddie Grant representing Exelon presented the lessons learned from the Clinton ESP application process. He said that initially, there was not a common understanding of what should be included in an ESP application (e.g., emergency planning, major features). He said that having that common understanding is key to submitting a quality application and maintaining schedules. The NRC must be clear about its intentions by providing up-to-date guidance. And the applicants must be clear about their intentions by way of pre-application discussions with the NRC staff. Mr. Grant said that the industry and NRC have come a long way towards achieving a common understanding are continuing this effort in developing DG-1145, the COL application regulatory guide and revising other regulatory guides and

Standard Review Plan sections. He said that Southern Company should benefit greatly from the ESP lessons learned, when it submits its ESP application for the Vogtle site. He also said it should have a positive impact on schedule for the review of the Vogtle ESP application. Dr. Powers said that time spent developing a common understanding is time well spent.

Mr. Grant also noted that the staff's review guidance did not address the plant parameter envelope (as previously discussed). He said that the staff and industry did come to a common understanding that the staff needed a specific radiological consequence analysis using the site-specific χ/Q parameters. He suggested that perhaps Part 100 could be revised to simplify the process. He said that another lesson learned is that it would be simpler to pick a single design before submitting an ESP application.

Mr. Grant noted that we had already discussed the high frequency component of the seismic response spectra. He said that doing the seismic analysis using the probabilistic seismic hazards analysis (PSHA) methodology provides some seismic content beyond 10 Hz, as compared to using the old Regulatory Guide 1.60 methodology, where the seismic response is basically flat beyond 10 Hz.

With regard to emergency planning, Mr. Grant said that he was surprised at the level of detailed required to describe the major features at the proposed Clinton ESP site and by the number of RAls they received.

Mr. Grant said that a lot of the data Exelon got off the internet came from state or federal agencies, and they had a high level of confidence in that data. He said that this data is retrievable and they will have it in their files. Again, Dr. Powers expressed concern over data or information that might only be available on the internet. He said that data can be easily corrupted. Mr. Grant said that Exelon keeps a hard copy of everything they get off the web. Mr. Grant said that the staff seemed to expect that data taken off the web from state and federal agencies needed to be certified. Mr. Sieber said that perhaps the biggest problem with electronic publishing is that it may not have all the elements of peer review and all the other stuff that gives authenticity to the information. Mr. Grant said that while they do depend on a large number of papers and discussion on methods and sources in the seismic area, he said they have the Shack methodology where all of the sources are peer reviewed and assigned weights and considered in the analysis to provide some safeguards on the validity of the conclusions. Dr. Powers said that internet data is going to become a much more integral part of engineering analyses in the future and that its use is going to introduce some interesting challenges.

With regard to electronic submittals, Mr. Grant said that it may be difficult to make partial amendments or updates to previous submittals. According to Mr. Grant, the staff apparently cannot even make file replacements.

Mr. Grant expressed concern over the uncertainty associated with the ASLB hearing process.

General Questions and Observations from the Subcommittee Members

Dr. Shack asked how the staff planned on handling the newfound knowledge of the midwest

seismic hazard for existing operating plants. Dr. Powers noted that it is being addressed as Generic Issue 199.

Dr. Kress suggested that the Committee focus on those lessons learned that are more broadly applicable (e.g., to COL applicant or that should be incorporated in a regulatory guide or standard review plan section). He also suggested that general principles like improving communications should be included in the Committee's ESP lessons learned letter.

Dr. Armijo expressed surprise that the ESP applicants didn't fully understand what would be in their permit and what the permit would be worth to them.

Mr. Maynard said that while the Committee may not be able to provide ESP (or COL) applicants with a template for the ACRS's review, the subcommittee chairman and the lead ACRS engineer should identify anything specific they want covered in a meeting, and maybe any specific expertise that might be helpful to have at the meeting, and feed that back to the applicant before the meeting. Dr. Powers said that the ACRS has been pretty good about doing this in the past. Mr. Maynard also suggested that the staff do a self assessment to see if the time it takes for the staff to issue an ESP can be reduced to less than three years. He also agreed that the staff needs to improve its handling of electronic submittals and needs to develop guidance on the use of internet data. He encouraged the staff to apply the ESP lessons learned to upcoming COL review process to the extent they are applicable.

Mr. Sieber said that he also thought the 3-year review process was too long, and encouraged the staff to streamline the ESP and COL review processes based on the ESP lessons learned.

Agreements

None.

Staff/Applicant/Industry Follow-up Actions

The staff was asked to make a similar presentation to the ACRS full committee on September 7, 2006. Dr. Powers asked that Mr. Araguas augment his presentation with any lessons that he learned during this meeting and asked him to summarize industry's lessons learned.

Subcommittee's Action

The staff plans to provide a briefing regarding this matter to the full Committee during the September 7-8, 2006, ACRS meeting.

Documents Provided to the Subcommittee

None.

NOTE : Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at <http://www.nrc.gov/reading-rm/adams.html> or <http://www.nrc.gov/reading-rm/doc-collections/> can be purchased from Neal R. Gross and Co., 1323 Rhode Island Ave., N.W., Washington, DC 20005 (202) 234-4433.

Advisory Committee on Reactor Safeguards
ESP Lessons Learned
September 6, 2006
Rockville, MD

-PROPOSED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Presenters	Presentation Time
I	Opening Remarks	D. Powers, ACRS	1:00 pm - 1:10 pm
II	ESP Lessons Learned - Staff Perspective	NRR - C. Araguas	15 minutes 1:10 - 2:15 pm
III	ESP Lessons Learned - Dominion Nuclear North Anna, LLC Perspective	Dominion Marvin - J. Hegner Smith	15 minutes 2:15 - 3:00 pm
IV	ESP Lessons Learned - System Energy Resources, Inc. Perspective	SERI - G. Zinke	15 minutes 3:15 - 4:00 pm
V	Discussion	All	4:00 pm - 4:30
	BREAK	Eddie Grant, Exelon	3:00 pm - 3:15 pm
VI	Discussion	All	^{4:30} 3:15 pm - 4:45 pm
VII	Summary	D. Powers, ACRS	4:45 pm - 5:00 pm

Adjourn
4:45 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON EARLY SITE PERMITS

September 6, 2006

Date

PLEASE SIGN IN BELOW

PLEASE PRINT

	<u>NAME</u>	<u>ORGANIZATION</u>
1	✓ Krystal Sutton	MORGAN LEWIS
2	✓ Guy Cesare	NUSTAR/ENERCON
3	✓ Patricia Campbell	General Electric
4	✓ Steve Routh	Bechtel
5	✓ DAYNA HERRICK	DUKE ENERGY
6	✓ Michael Bourgeois	ENERGY
7	✓ GARY BECKER	Southern Nuclear
8	✓ Ray Kuyler	Morgan Lewis
9	✓ George Zinke	Energy/Nustart
10	✓ EUGENE GRECHEN	Dominion
11	✓ Eddie R. Grant	Exelon / EXCEL
12	✓ Chris Kerr	Exelon
13	✓ Annie Kammerer	NRE
14	✓ Joe Michalick	Unistar
15	✓ Russ Bell	NEI
16	✓ Robert M. Weisman	NRC/OGC
17	✓ R. L. Olson	ENERCON
18	✓ MARVIN SMITH	DOMINION
19	✓ Inelle Starefos	NRC
20		

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON EARLY SITE PERMITS

September 6, 2006

Date

PLEASE SIGN IN BELOW

PLEASE PRINT

	<u>NAME</u>	<u>ORGANIZATION</u>
1	✓ JOHN G. LAMB	UETO
2	✓ Loren Plisco	RIT
3	✓ Christian Aragas	NRR
4	✓ RAJ ANAND	NRR/DRIP
5	✓ Mark Blumberg	NRR
6	✓ Paul Pascott	NRR
7	✓ Nanette Gilles	NRR/DRNL
8	✓ KAZ CAMPE	NRR/DRR/AADP
9	✓ Brad Harvey	NRR/DRR/AADB
10	✓ Michelle Hart	NRR/DRR/AADB
11	✓ Jay Lee	NRR/DRR/AADB
12	✓ Goutam Rajesh	NRR/DE
13	✓ DAN BARRS	NSIR/OPR
14	✓ Stephanie Coffin	NRR/DRNL/NAPB
15	✓ JUNE HSIA	RES/DEPR/MSEB
16	✓ Rui Li	NRR
17	✓ Stephen Koenick	NRR
18	✓ Bruce Musico	NRC/NSIR/OPR
19		
20		



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 2, 2006

MEMORANDUM TO: Dana A. Powers, Chairman
Early Site Permits Subcommittee

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS/ACNW

A handwritten signature in cursive script that reads "David C. Fischer".

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS EARLY SITE
PERMITS SUBCOMMITTEE MEETING ON LESSONS LEARNED,
SEPTEMBER 6, 2006, ROCKVILLE, MARYLAND

A working copy of the minutes of the subject meeting is attached for your review.

Please review and comment on them at your earliest convenience. If you are satisfied with these minutes please sign, date and return the attached certification letter.

Attachment: Certification Letter
Minutes (DRAFT)

cc w/o Attachment:

J. Larkins
M. Snodderly
C. Santos
S. Duraiswamy

**CONTENTS OF OFFICIAL RECORDS FOLDERS
SEPTEMBER 6, 2006 ACRS ESP SUBCOMMITTEE MEETING**

Title: Early Site Permit Subcommittee

Date: September 6, 2006

The Federal Advisory Committee Act requires retention of certain documents related to every advisory committee meeting. The ACRS has applied this requirement to all ACRS subcommittee meetings. The cognizant engineer is responsible for assembling an official record folder for each subcommittee meeting. The folder is retained on file by the Operations Support Branch (Michele Kelton). The following is a list of the document that should be included in the official record folder.

- Federal Register Notice announcing the date and location of the meeting
- Conflict of Interest Memorandum
- NA Memorandum forwarding the draft minutes to the members
- The original draft copy of the certified meeting minutes
- ACRS Committee or Sub-committee Chairman certification sheet w/signature
- Final agenda or schedule w/markups
- List of meeting attendees
- Slides and/or handouts presented at the meeting
- Final Committee Report (if any)
- Agency Response to the Final Report
- Review Documents
- Draft Agenda
- Status Report
- NA Consultant Report
- NA Member Comments

A copy of the certified minutes and an electronic copy of the certified minutes should be provided to the Operations Support Branch (Ethel Barnard) for further distribution.

DCF

(Open): The Committee will discuss topics of mutual interest for ACRS meeting with the NRC Commissioners that is scheduled for Friday, October 20, 2006.

4:15 p.m.–7 p.m.: *Preparation of ACRS Reports* (Open/Closed): The Committee will discuss proposed ACRS reports.

**Saturday, September 9, 2006,
Conference Room T-2b3, Two White
Flint North, Rockville, Maryland**

8:30 a.m.–12:30 p.m.: *Preparation of ACRS Reports* (Open): The Committee will continue discussion of proposed ACRS reports.

12:30 p.m.–1 p.m.: *Miscellaneous* (Open): The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on September 29, 2005 (70 FR 56936). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Electronic recordings will be permitted only during the open portions of the meeting. Persons desiring to make oral statements should notify the Cognizant ACRS staff named below five days before the meeting, if possible, so that appropriate arrangements can be made to allow necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during the meeting may be limited to selected portions of the meeting as determined by the Chairman. Information regarding the time to be set aside for this purpose may be obtained by contacting the Cognizant ACRS staff prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the Cognizant ACRS staff if such rescheduling would result in major inconvenience.

In accordance with subsection 10(d) Public Law 92-463, I have determined that it will be necessary to close a portion of this meeting noted above to discuss and protect information classified as National Security information as well as safeguards information pursuant to 5 U.S.C. 552b(c)(1) and (3).

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, as

well as the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by contacting Mr. Sam Duraiswamy, Cognizant ACRS staff (301-415-7364), between 7:30 a.m. and 4:15 p.m., ET. ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at pdrr@nrc.gov, or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> or <http://www.nrc.gov/reading-rm/doc-collections/> (ACRS & ACNW Mtg schedules/agendas).

Videoteleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301-415-8066), between 7:30 a.m. and 3:45 p.m., ET, at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the videoteleconferencing link. The availability of videoteleconferencing services is not guaranteed.

Dated: August 7, 2006.

Andrew L. Bates,

Advisory Committee Management Officer.
[FR Doc. E6-13123 Filed 8-10-06; 8:45 am]
BILLING CODE 7590-01-P

**NUCLEAR REGULATORY
COMMISSION**

**Advisory Committee on Reactor
Safeguards Subcommittee Meeting on
Planning and Procedures; Notice of
Meeting**

The ACRS Subcommittee on Planning and Procedures will hold a meeting on September 6, 2006, Room T-2B1, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance, with the exception of a portion that may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to the internal personnel rules and practices of the ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.

The agenda for the subject meeting shall be as follows:

*Wednesday, September 6, 2006, 11
a.m.–12 Noon*

The Subcommittee will discuss proposed ACRS activities and related matters. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. Sam Duraiswamy (telephone: 301-415-7364) between 7:30 a.m. and 4:15 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted only during those portions of the meeting that are open to the public.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 4:15 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes in the agenda.

Dated: August 7, 2006.

Antonio F. Dias,

Acting Branch Chief, ACRS/ACNW.
[FR Doc. E6-13129 Filed 8-10-06; 8:45 am]
BILLING CODE 7590-01-P

**NUCLEAR REGULATORY
COMMISSION**

**Advisory Committee on Reactor
Safeguards, Subcommittee on Early
Site Permits; Notice of Meeting**

The ACRS Subcommittee on Early Site Permits will hold a meeting on September 6, 2006, Room T-2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

*Wednesday, September 6, 2006—1 p.m.
Until the Conclusion of Business*

The Subcommittee will review and develop "Lessons-Learned" items as a result of the three (North Anna, Grand Gulf, and Clinton) early site permits reviews. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, Dominion Nuclear North Anna, LLC (Dominion), System Energy Resources, Inc. (SERI), Exelon Generation Company, LLC (Exelon), Southern Nuclear Operating Company, Inc. (Southern), and other interested persons regarding this matter. The

Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. David C. Fischer (telephone 301/415-6889) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 4:15 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: August 7, 2006.

Antonio F. Dias,

Acting Branch Chief, ACRS/ACNW.

[FR Doc. E6-13130 Filed 8-10-06; 8:45 am]

BILLING CODE 7590-01-P

OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE

Probable Effect of Modifications to the United States-Singapore Free Trade Agreement To Accelerate the Reduction of Tariffs on Certain Articles and Modify the Rule of Origin Rule for One Article

AGENCY: Office of the United States Trade Representative.

SUMMARY: The United States Trade Representative (USTR) is requesting public input as to the probable effect certain modifications to tariff treatment of imports under the United States-Singapore Free Trade Agreement on total U.S. trade, domestic producers, and workers in the affected industries. Specifically, USTR is evaluating proposals to accelerate the planned reduction in duties on nutritionals, peanuts, and polycarbonates of Singapore and to modify the rule of origin for photocopiers of Singapore. In addition, USTR is soliciting proposals regarding what sort of concessions Singapore, which does not impose duties on imports from the United States, could make to maintain the balance of concessions if these tariff acceleration requests are approved.

FOR FURTHER INFORMATION CONTACT: Information may be obtained from Jeri Jensen, Office of Southeast Asia and the Pacific and Pharmaceutical Policy (202-395-6851). The electronic mail address for any submissions is

fr0625@ustr.eop.gov. General information about USTR may also be obtained by accessing its Internet server (<http://www.ustr.gov>).

SUPPLEMENTARY INFORMATION: Pursuant to the provisions of the United States-Singapore Free Trade Agreement (USSFTA), the United States and Singapore have agreed to enter into consultations to consider acceleration of the reduction or elimination of tariffs on certain items and a change to the rule of origin for an item. In accordance with Article 2.2.3 of the United States-Singapore Free Trade Agreement, the Parties are authorized to accelerate tariff reduction or elimination on a faster schedule than required in the Agreement. In accordance with Article 3.18.2 of the USSFTA, the United States and Singapore consult regularly to discuss necessary amendments to the USSFTA's rules of origin. Article 20.1.2(d) of the USSFTA authorizes the Joint Committee, which is composed of the designates of the U.S. Trade Representative and Singapore's Minister of Trade and Industry, to consider and adopt amendments to the agreement. Under Section 201(b) of United States-Singapore Free Trade Agreement Implementation Act (Act), 19 U.S.C. 3805, note, the President is authorized to proclaim modifications in duty treatment or continuation of any duty that the President considers to be necessary or appropriate to maintain the general level of reciprocal and mutually advantageous concessions, subject to the Act's consultation and layover requirements. In accordance with the Act, USTR will request advice regarding the potential impact of the proposed actions from the U.S. International Trade Commission.

USTR is specifically interested in determining the probable economic effect of accelerating the reduction of U.S. duties on three products and of changing the USSFTA rules of origin for photocopiers (HS 9009.1200) on domestic industries producing like or directly competitive articles, workers in these industries, and on consumers of the affected goods. The three products potentially subject to accelerated tariff reduction are nutritionals "preparations for infant use, put up for retail sale" (HS 1901.10), peanuts in snack products (HS 2008.11), and polycarbonates (HS 3907.40.00). A list of the proposed modifications to the tariff reduction schedules is available from the Office of Southeast Asia and Pacific and Pharmaceutical Policy.

Written Submissions: No public hearing is being scheduled in connection with this request. However,

interested parties are invited to submit written statements concerning any economic effects of the proposed modifications. In order to facilitate prompt consideration, USTR requests electronic mail (e-mail) submission of any statements submitted in response to this notice. E-mail submissions should be single copy transmissions, and use the following e-mail subject line: "Acceleration in Duty Reduction Under USSFTA." Documents should be submitted as WordPerfect (".WPD"), MS Word (".DOC"), or text (".TXT") files. Documents should not be submitted as electronic image files or contain imbedded images (for example, ".JPG", ".TIF", ".PDF", ".BMP", or ".GIF") as these files are often excessively large. Supporting documentation submitted in spreadsheets form is acceptable in Quattro Pro or Excel, pre-formatted for printing on 8½ × 11 inch paper. To the extent possible, any data attachments to the submission should be included in the same file as the submission itself, and not as separate files. E-mail submissions should not include separate cover letters or messages in the body of the e-mail. Information that might appear in any cover letter should be included directly in the attached file containing the submission itself, including the identity of the submitter and the submitter's e-mail address.

Commercial or financial information that a submitter desires USTR to hold in confidence must be submitted on separate sheets of paper, each clearly marked at the top and bottom as "Confidential Business Information". For any document containing business confidential information submitted as an electronic file attached to an e-mail transmission, in addition to the proper marking at the top and bottom of each page as previously specified, the file name of the business confidential version should begin with the characters "BC-", and the file name of the public version should begin with the characters "P-". The "P-" or "BC-" should be followed by the name of the person or party submitting the document. All written submissions, except for confidential business information, will be made available for inspection by interested parties. To ensure consideration by USTR, all statements must be received no later than the close of business on September 15, 2006. All submissions should be submitted by electronic mail (e-mail) to: *FR0625@ustr.eop.gov*. Persons with mobility impairments who will need special assistance in gaining access to USTR or who are otherwise unable to submit comments by e-mail should

NRC Early Site Permit Review Lessons Learned

Presentation to:

Advisory Committee on Reactor Safeguards
Subcommittee on Early Site Permits
September 6, 2006

Staff ESP Lessons Learned

Criteria for Identifying Site Characteristics and
Controlling Plant Parameter Envelope (PPE) Values
Included in an ESP

Criteria for Identifying Permit Conditions and
Combined License (COL) Action Items in an ESP

Commission's Expectation for High-Quality
Applications

Staff ESP Lessons Learned

Update ESP Review Guidance to Address Issues Raised During First Of-A-Kind Review Process

- Criteria for Identifying Site Characteristics, Controlling PPEs, COL Action Items, Permit Conditions
- Performance-Based Methodology for Seismic Hazards
- Major Features of the Emergency Plan
- Applicability of 10 CFR Part 21 to ESP Applicants
- Applicability of Appendix B to 10 CFR Part 50 to ESP Applicants
- Criteria for Computing Probable Maximum Flood

ACRS Identified Lessons Learned During the ESP Review Process

Review the Staff's Analysis of the Hazards Posed to the Proposed Site by Explosions in

Transportation Accidents on the Mississippi River

Review the Development and Study of Climate

Change for the Next 20 Years

RS-002 Should Clarify How and ESP application can Rely on the Emergency Plans for the Existing Nuclear Power Plant

North Anna Early Site Permit Lessons Learned

**Presentation to
Advisory Committee on Reactor Safeguards
Subcommittee on Early Site Permits**

September 6, 2006



Dominion

ESP Lessons Learned

- The lessons learned apply to site issues
 - Submittal of an ESP may move evaluation of site issues earlier in time, but the issues/lessons remain the same for a COL applicant
- Seismic Methodology
 - Support ASCE methodology for long term
 - Clarify SSE definition—free ground surface, foundation level
 - Further work needed on high frequency effects
 - Support continued interactions between NRC Staff and NEI Seismic Issues Task Force

ESP Lessons Learned

- Plant Parameters Envelope
 - Difficult concept initially
 - Regulations and guidance not structured to support
 - However, it remains an appropriate approach
 - PPE provides the same level of finality as specific design
 - Pare down list of parameters to important ones
- Emergency Planning
 - Major features approach is a reasonable concept
 - Level of NRC review and resources required to support major features approach was inconsistent with applicant expectations for an existing site with an approved emergency plan

ESP Lessons Learned

- Snow Load
 - NRC guidance should be clarified on combination of 100 year snow load plus 24 hour winter precipitation when maximum winter season precipitation is in the form of rain
- X/Q
 - Clarify guidance to allow for a conservative approach (e.g., no wake effects, minimum distances) or a more detailed calculation
- Use of Internet Data
 - NRC guidance needed
- Sources for Site Information
 - Early agreement needed between NRC Staff and applicant
 - Should occur during pre-application phase
 - Examples: meteorology, geology, etc.

**ACRS Presentation
September 6, 2006**

**Early Site Permit Application
Clinton Power Station Site
Lessons Learned Discussion**

"Common Understandings"

- Essential to high quality applications
- Essential to maintaining schedules
 - NRC must be clear about intentions
 - Provide up-to-date guidance
 - Applicant must be clear about intentions
 - Inform NRC via pre-application discussions

Examples

- Plant Parameter Envelope
- Seismic Methodology
- Emergency Planning
- Quality Assurance
- Electronic Submittals
- ASLB Hearings Process
- Permit Content

Entergy Early Site Permit Lessons Learned Discussion

Presentation to
Advisory Committee on Reactor Safeguards
Subcommittee on Early Site Permits
September 6, 2006
George Zinke, Entergy



ESP Lessons Learned Discussion

- Entergy GGNS ESP Project Purpose
 - Project Purpose included licensing process development
 - Lessons Learned inherent to ESP project
 - Lessons applicable to Entergy New Plant projects (ESP & Combined License)
 - Captured for complete project
 - Pre-application and post-application
 - Safety and Environmental

ESP Lessons Learned Discussion

- **Expectations**
 - **Process supportive of High Quality Submittals**
 - Timely preparation of application
 - Application Content fixed
 - NRC Acceptance Criteria known
 - Consistent with Regulations
 - Focused on Public Health & Safety
 - **Stable and Predictable Licensing Process**
 - **Reasonable Schedules supportive of Business Needs**

ESP Lessons Learned Discussion

- Examples
 - NRC Guidance Documents
 - Quality Assurance
 - Emergency Preparedness
 - Electronic Submittals
 - Permit Template
 - Plant Parameter Envelope
 - ACRS Review Process

HAS ITEMS FOR LESSONS - LEARNED

To: Dana Powers
From: Bill Hinze
Subject: Exelon ESP
Date: March 8, 2006

Per your request the following are my general observations about the Exelon ESP application and the NRC Staff Safety Evaluation Report that were reviewed in the ACRS subcommittee on March 08, 2006:

- The performance-based, risk-informed methodology that is detailed in ASCE 043-05 is a desirable replacement of current procedures used to investigate seismic design criteria for SSC in nuclear facilities. It conservatively estimates the risk to a nuclear power plant from seismic vibrations. As such it incorporates the risk-informed process that is increasingly the basis for NRC evaluations and leads to stability in the evaluation process. Furthermore, the inputs needed for the methodology are readily determined from seismic hazard studies. The question of the effect of the use of this procedure on current nuclear plants needs to be addressed.
- All power plant sites pose challenges to the applicant, but the Clinton site is particularly challenging from a seismic standpoint because of the proximity of the New Madrid and Wabash Valley Seismic Zones and evidence of a significant paleoearthquake within 60 km of the site. In view of the challenges the applicant has done a very thorough job of evaluating the risk to the site from seismic activity based on the available data.
- The NRC staff has done an insightful and deliberate review of the application which has been instrumental in markedly improving the application as submitted in draft form by EGC. Their review is comprehensive in all the critical technical aspects of the application

In addition, you asked for topics to be considered in a lessons learned from the review of the Exelon ESP application. A few topics that could be considered are:

- What is an appropriate cutoff time for the addition of new technical material?
- What types of technical data are appropriately obtained prior to the completion of the application versus data that should be acquired only after a decision is reached to build a nuclear power plant of a specific type? (Dana, I have been put off by the response to some of my questions, particularly during the Gulf presentation, that suggested that the applicant would only consider obtaining a specific set of data after the decision was made to build the plant.)
- What type of editorial review process should be implemented before the application is received? Accepted? (Dana, I have a sense in reading the documents for Clinton that there were contradictory statements or at least statements that could be interpreted in more than one, leading to contradictory interpretations.)
- For what type of technical expertise should the application and NRC staff be written? (Dana, it is obvious to me that some parts of the Clinton documents were written by experts without much thought to the problems the non-expert might

- have in comprehending them. The addition of references to useful background material would be helpful in this regard.)

Dana,,,these general observations and lessons learned recommendations are off the top of my head. If I think of others that may be important, I will be in touch . If you wish to contact me about any of these, please feel free to do so.....cheers,,,,,,,Bill
Hinze(bima@insightbb.com)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

August 28, 2006

MEMORANDUM TO: Dana Powers, Chairman
Early Site Permit Subcommittee

FROM: David C. Fischer, Senior Staff Engineer */RA/*

SUBJECT: STATUS REPORT FOR THE MEETING OF THE EARLY SITE
PERMIT SUBCOMMITTEE, SEPTEMBER 6, 2006, IN
ROCKVILLE, MARYLAND

The purpose of this memorandum is to forward written materials for your use in preparing for the meeting of the ACRS Early Site Permit Subcommittee on September 6, 2006. The purpose of the meeting is to review and develop "lessons learned" as a result of the three (North Anna, Grand Gulf, and Clinton) early site permit reviews. Attached please find the agenda and status report.

Attendance by the following members and consultants is anticipated and reservations have been made at the following hotels for September 5, 2006, unless otherwise indicated.

Powers	RESIDENCE INN
Armijo	BETH. N. MARRIOTT (AR 9/6)
Bonaca	RESIDENCE INN (AR 9/6)
Kress	RESIDENCE INN (AR 9/6)
Maynard	RESIDENCE INN (AR 9/6)
Shack	RESIDENCE INN
Seiber	RAMADA INN
Wallis	RESIDENCE INN

Please notify Ms. Barbara Jo White at 301-415-7130 if you need to change or cancel the above reservations.

Attachments:

1. Agenda
2. Status report

cc: ACRS Members
cc w/o attach: J. Larkins
M. Snodderly
S. Duraiswamy

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
ESP LESSONS LEARNED
SEPTEMBER 6 , 2006
ROCKVILLE, MARYLAND

TABLE OF CONTENTS

	<u>Page</u>
I. Table of Contents	1
II. Proposed Agenda	2
III. Status Report for ESP Lessons Learned	3-13

Cognizant ACRS Member:

Dr. Dana Powers

Cognizant ACRS Staff Engineer:

David Fischer

**Advisory Committee on Reactor Safeguards
ESP Lessons Learned
September 6, 2006
Rockville, MD**

-PROPOSED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Presenters	Presentation Time
I	Opening Remarks	D. Powers, ACRS	1:00 pm - 1:10 pm
II	ESP Lessons Learned - Staff Perspective	NRR - C. Araguas	15 minutes
III	ESP Lessons Learned - Dominion Nuclear North Anna, LLC Perspective	Dominion - J. Hegner	15 minutes
IV	ESP Lessons Learned - System Energy Resources, Inc. Perspective	SERI - G. Zinke	15 minutes
V	Discussion	All	
	BREAK		3:00 pm - 3:15 pm
VI	Discussion	All	3:15 pm - 4:45 pm
VII	Summary	D. Powers, ACRS	4:45 pm - 5:00 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
ESP LESSONS LEARNED
SEPTEMBER 6, 2006
ROCKVILLE, MARYLAND

- STATUS REPORT -

LESSONS LEARNED FROM EARLY SITE PERMIT REVIEWS

Previous ACRS/EDO Correspondence

In the Committee's March 11, 2005, interim letter on the North Anna Early Site Permit application, the Committee stated that it hoped "to work with the staff in the development of "lessons learned" from the review of this and the next few applications for early site permits."

The EDO's response to the Committee's March 11, 2005, letter on the North Anna early site permit application stated that "we welcome the opportunity to work with the ACRS to identify issues that should be addressed during the planned update of the ESP review standard (RS-002), in preparation for future ESP applications."

The EDO's response to the Committee's July 18, 2005 letter on the North Anna early site permit application stated that "[t]he NRC staff welcomes the opportunity to collaborate with the ACRS and develop lessons learned to improve and streamline the ESP process for future applications. While some issues may be resolved in the ongoing Part 52 proposed rulemaking (refer to Subpart A of rulemaking identification number (RIN) 3150-AG24 in the NRC's Rulemaking-RuleForum website), the staff will work with the ACRS to develop additional recommendations as needed. The NRC staff plans to interact with the ACRS starting in FY 2006 and identify issues in the ESP review standard that should be modified for the planned revisions to the Standard Review Plan (SRP)."

The Committee's letters on the ESP applications and associated staff SERs, as well as the EDO's responses to those letters, provide insights into how the ESP review standard (RS-002) and certain sections of the Standard Review Plan (SRP) should be modified.

Summary of the Lessons Learned From Early Site Permit Reviews

1. Review the concepts of "Site Characterization" versus constraints imposed by the site.

I suspect the lesson to be learned here relates to how the staff (and applicant) should determine which design parameters/considerations should be specified as "ESP Site Characteristics," which establish the plant parameter envelope (PPE), and which PPE values or bounding parameters are so directly tied to the site characteristics that they should be part of the permit. The staff should consider establishing criteria for determining which ESP plant parameter envelope (PPE) values or bounding parameters should be included as part of the permit.

2. Review the concept of issues to be addressed in the COL versus ESP.

[March 12, 2003, letter on ESP review standard]

Some review issues that require knowledge of the items that are design-specific, such as source terms, will be accommodated by bounding values specified in the PPE portion of the application and confirmed at the Combined License (COL) stage.

[July 18, 2005, letter on North Anna]

Staff generated criteria to identify permit conditions. Permit conditions are recommended by the staff when:

- evaluations of the site rest on an assumption that can be justified only after a site permit has been issued
- a physical attribute exists for the site that is not acceptable for the design of SSC important to safety, or
- evaluation can be completed only after some future act has taken place

[September 22, 2005, interim letter on Clinton]

After the staff met with the ACRS for an Interim review of the Clinton ESP, the staff re-examined the proposed ESP permit conditions with the criteria that they came up with during the North Anna review. It is anticipated that some permit conditions will be turned into COL action items.

[March 24, 2006, letter on Clinton]

The staff has used technically sound, objective criteria for identifying these permit conditions.

The NRC staff should consider incorporating the criteria for determining which issues should be addressed as an ESP permit condition and which issues can be addressed as a COL action item in the ESP Review standard or applicable SRP sections.

3. Areas where process can be refined and streamlined

[July 18, 2005, letter on North Anna]

This first use of the early site permit process has revealed several areas where the process can be refined and streamlined. We look forward to working with the staff to improve the early site permit process. Examples might include:

- Criteria for permit conditions (see item 2 above)
- Performance-based seismic hazard analysis (see item 4 below)
- Definition of probable maximum flood

During the 532nd meeting of the Advisory Committee on Reactor Safeguards, May 4-5, 2006, the Committee considered the changes reflected in Revision 4 of Exelon Generation Company (EGC), LLC, application for an early site permit (ESP). The changes included a revised analysis for determining the probable maximum flood (PMF) elevation at Clinton Lake for the Clinton ESP site. Several lessons can be learned from consideration of the PMF at Clinton. First, is that in the face of a substandard PMF analysis by the applicant, the staff should not do a bounding type analysis and then use the staff's PMF level to characterize the ESP site. The

PMF should be based on the applicant's analyses. This confusion arose in part because the words in Review standard RS-002 which states: "If the applicant's estimates of discharge are more than 5% less conservative than the staff's, the applicant should fully document and justify its estimate or accept the staff's estimate [emphasis added]." A second lesson learned is that the applicant and staff should use up to date guidance and data for computing the PMF. In this regard, the ESP Review standard (or applicable SRP sections) should be revised to clarify the staff's review procedure and acceptance criteria for calculating the PMF.

4. Review of Performance-Based methodology for seismic hazards

[March 11, 2005, interim letter on North Anna]

North Anna original application used performance-based seismic hazard analysis methodology. Dominion ultimately used the RG 1.165 approach.

[September 22, 2005, interim letter on Clinton]

The applicant asserts that the result yields a [seismic] core damage frequency (CDF) of $1-4 \times 10^{-6} \text{ yr}^{-1}$. Documentation to substantiate this assertion is not available now for review. The applicant further asserts that the alternative will promote greater regulatory stability in the face of continuing improvements in our understanding of the seismicity of the site though it is not immediately apparent why this is so.

The Committee recommended that "A thorough, expeditious review of the applicant's performance-based seismic hazard analysis methodology should be conducted, recognizing that this methodology may be used by applicants for purposes other than early site permits."

[March 24, 2006, letter on Clinton]

The Committee concluded: "The staff has thoroughly reviewed a performance-based method proposed by the applicant for determining the safe shutdown earthquake (SSE) ground motion. This method is an attractive alternative to methods endorsed in current regulatory guides."

The Committee recommended: "The staff should consider development of a regulatory guide dealing with the alternative, performance-based, method for assessing the seismic hazard of a site." The Committee stated that "The alternative, performance-based, method uses a target frequency that does not change with time as new information on the seismicity of power plant sites changes. In this sense, the alternative method provides some additional regulatory stability. For this reason, if no other, we expect that the alternative method will be attractive to licensees and applicants for a variety of purposes."

Several specific topics that should be considered in revising RG 1.165 include:

- What is the appropriate cutoff time for the addition of new technical material?
- What types of technical data are appropriately obtained prior to the completion of the application versus data that should be acquired only after a decision is reached to build a nuclear power plant of a specific type?
- What type of editorial review process should be implemented before the application is received or accepted (e.g., to eliminate contradictory statements or statements that could be misinterpreted)?
- For what type of technical expertise should the application and NRC staff evaluation be written? Should these documents be understandable to the non-expert? The addition of references to useful background material would be helpful in this regard.

5. ACRS Letter dated 12/23/05, regarding Grand Gulf - Review the staff's analyses of the hazards posed to the proposed site by explosions in transportation accidents on the Mississippi River.

[June 14, 2005, interim letter on Grand Gulf]

The draft SER should be augmented with a more complete exposition on threats posed by transportation accidents on the river adjacent to the proposed site.

[December 23, 2005, letter on Grand Gulf]

The staff concludes, however, that because the site is located behind a 65-foot bluff, the 1.1 mile standoff is adequate. The technical basis for this conclusion needs to be made clear in the Safety Evaluation Report prior to its issuance. This clarification should include a description of the reliability of the calculational method adopted by the staff.

The staff has concluded also that the detonation bounds the explosive hazard posed by vapor explosions such as might occur in the release of liquefied natural gas during a transportation accident on the river. The technical basis for this conclusion should also be made clear in the Safety Evaluation Report. The clarification should include a discussion of whether the staff used the TNT-equivalent method to analyze vapor explosions and the conservatism associated with such an approximation if it was adopted.

The Committee concluded "This Safety Evaluation Report should be issued once the staff has made more explicit its analyses of the hazards posed to the proposed site by explosions in transportation accidents on the Mississippi River."

The ESP Review standard or applicable SRP sections should be revised to clarify the staff's review procedure and acceptance criteria in this area (e.g., to preclude the inadvertent omission of a major transportation route in the vicinity of the proposed ESP site when performing hazards analyses).

6. Review the guidance to applicants concerning the discussion in an application of "major features" of the emergency planning

[March 11, 2005, Interim letter on North Anna]

The regulations do not provide a clear definition of what is meant by the term "major features" as it applies to emergency plans. Therefore, it can be foreseen that the emergency plans will change by the time any decision is made to construct a plant on the site. We question the need for such detailed examinations of emergency plans for proposed sites that are on or adjacent to sites with operating plants having approved emergency plans.

[June 14, 2005, interim letter on Grand Gulf]

The applicant has elected to submit for review just the "major features" of emergency planning for the proposed site, as is allowed by the regulations. These major features appear adequate should a new plant be built on the site.

[December 23, 2005, letter on Grand Gulf]

Committee concluded that the staff needs to provide additional guidance to applicants concerning the discussion in an application of "Major Features" of the emergency planning for a proposed site. The applicant and the staff encountered challenges in defining the limitations that should exist on descriptions of major features of emergency planning, especially for a site

where reactors currently exist. These challenges could be avoided in the future by providing additional guidance to the applicants.

[February 1, 2006, EDO response to ACRS's December 23, 2005 letter]

The ACRS recommended that the staff provide additional guidance to applicants concerning "Major Features" of emergency planning for a proposed site. The staff agrees with the ACRS recommendation and is working to establish additional guidance, which will be included in a revision of Supplement 2 to NUREG-0654/FEMA-REP-1. It is the staff's understanding that industry does not plan to submit a "Major Features" ESP application in the near future and therefore the priority for this work is considered low. Currently, the staff's focus is on activities related to updating the emergency planning sections of the standard review plan and creation of guidance for future combined license applicants.

In its May 22, 2006, report to the Chairman on the proposed revisions to Part 52, the ACRS recommended that "It should be sufficient for the ESP applicant to identify only the major features of the site emergency plan. The definition of major features should be specified in regulatory guidance documents." The discussion portion of that report goes on to say "One of the lessons learned from existing ESP applications is that significant impediments to emergency planning are not anticipated. This is because it is unlikely that a site with a significant impediment would be proposed for an ESP. It should be sufficient for an ESP applicant to identify the major features of the emergency plan. Experience has shown, however, that the definition of "major features" should be clarified in guidance documents available to ESP applicants."

During the May ACRS Full Committee meeting, Dr. Powers explained that the ESP Subcommittee had real problems with applicants' interpretation of "major features" because they ended up with people counting hospital beds, which is ridiculous. That's not a major feature."

10 CFR 52.17, Contents of [ESP] application subsection (b) states that:

- (1) The 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.
- (2) The application may also either:
 - (i) Propose major features of the emergency plans, such as the exact sizes of the emergency planning zones, that can be reviewed and approved by NRC in consultation with FEMA in the absence of complete and integrated emergency plans; or
 - (ii) Propose complete and integrated emergency plans for review and approval by NRC in consultation with the Federal Emergency Management Agency, in accord with the applicable provisions of 10 CFR 50.47.

Thus, at the ESP stage the applicant has three alternatives: 1) identify significant impediments, 2) identify significant impediments plus major features of the emergency plan, or 3) identify significant impediments and provide complete and integrated emergency plans. The applicant's choice would determine the level of finality obtained at the ESP stage. Because the Committee believes it is unlikely that a site with a significant impediment would be proposed for an ESP, it concluded that it should be sufficient for an ESP applicant to identify the major features of the emergency plan. I do not believe that the Committee's recommendation is at odds with the regulation and I do not believe the Committee was proposing a specific revision to 10 CFR

52.17(b). Nevertheless, better guidance on what constitutes a “major feature” seems appropriate.

[Proposed revisions to Part 52]

The staff proposes to amend § 52.17(b)(1), which currently requires that an ESP application identify physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. The staff proposes to add a sentence stating that if physical characteristics that could pose a significant impediment to the development of emergency plans are identified, the application must identify measures that would, when implemented, mitigate or eliminate the significant impediment.

The staff also proposes to add new provisions in § 52.17 to require that complete and integrated emergency plans submitted for review in an ESP application must include the proposed inspections, tests, and analyses that the holder of a COL referencing the ESP must perform and the acceptance criteria (i.e., an emergency preparedness ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the NRC's regulations. Requiring the inclusion of emergency preparedness ITAAC in the ESP application is consistent with the Commission's goal of resolving siting issues early in the licensing process.

7. Development and study of “Climate Change” for the next 20 years

- Study of cyclic weather may help identify site weather boundaries.

[March 11, 2005, interim letter on North Anna]

Application and safety evaluation report should discuss how weather and climate patterns may be changing. (RS-002) indicates that, “The applicability of these data to represent site conditions during the expected period of reactor operations should be substantiated.” [reference RS-002, page 2.3.1-3]

[June 3, 2005, EDO response to the ACRS's March 11, 2005, letter on North Anna]

In conclusion, considering the effects of climate change into ESP reviews is not supported by existing NRC regulations and would be a departure from previous license reviews. Climatic change is a long-term phenomenon and would not be expected to have an adverse impact on the safe operation of a facility without being noticed. Nonetheless, the following statement will be added to the end of SER Section 2.3.1.3, “Technical Evaluation”:

The staff acknowledges that long-term climatic change resulting from human or natural causes may introduce changes into the most severe natural phenomena reported for the site. However, no conclusive evidence or consensus of opinion is available on the rapidity or nature of such changes. If in the future the ESP site is no longer in compliance with the terms and conditions of the ESP (e.g., new information shows that the climatic site characteristics no longer represent extreme weather conditions due to climate change), the staff may seek to modify the ESP or impose requirements on the site in accordance with the provisions of 10 CFR 52.39, “Finality of Early Site Permit Determinations,” if necessary, to bring the site into compliance with Commission requirements to assure adequate protection of the public health

and safety.

[June 14, 2005, interim letter on Grand Gulf]

We continue to question the defensibility of the methods used by the staff and the applicant to prognosticate the weather at the site over the next 65 years based just on historical frequencies of severe weather events. At the very minimum, staff should review current literature on possible changes in weather in the upper Gulf of Mexico to be confident that the methods used for weather predictions are defensible.

[September 22, 2005, interim letter on Clinton]

Weather extreme characteristics of the site have been based on historical data. Neither the applicant nor the staff have taken account of literature suggesting that there are cycles in weather that may complicate the prediction of future weather extremes based on historical records.

[December 23, 2005, letter on Grand Gulf]

There is evidence that storm activity is increasing in the Gulf of Mexico due to known weather cycles. Bounds estimated by the applicant may not be especially conservative but Committee found no definitive evidence that storm intensities in excess of the bounds established by the applicant and accepted by the staff will develop. Staff stated that should future weather evidence indicate site characteristics accepted in the Safety Evaluation Report are not adequate, these characteristics will be amended as needed.

[March 24, 2006, letter on Clinton]

Neither the applicant nor the staff has considered the potential for cycles in weather that may complicate the prediction of future weather extremes based on historical records.

A lesson learned from the review of the first three ESP applications is that neither the applicant nor the staff have taken account of literature suggesting that there are cycles in weather that may complicate the prediction of future weather extremes based on historical records. Rather than take a reactive approach as proposed by the staff (e.g., If in the future the ESP site is no longer in compliance with the terms and conditions of the ESP, the staff may seek to modify the ESP or impose requirements on the site) the staff could take a more proactive approach. For example, the staff could either revise the ESP Review standard (or applicable SRP sections) to account for these complicating factors (i.e., develop new review procedures and acceptance criteria) or the staff could develop a permit condition that requires the permit holder to periodically assess the potential for more severe weather extremes (i.e., based on new data and not solely on historical records) and requires that the permit holder take any actions necessary to stay in compliance with the permit.

8. Commission's expectations for High Quality applications

[March 11, 2005, interim letter on North Anna]

The application by Dominion and the safety evaluation report are lengthy, but nevertheless very readable documents that have been well prepared by their respective authors and represent significant amounts of effort.

[March 11, 2005, interim letter on North Anna]

With regard to the consequences of radionuclide release: "Neither the application nor the safety evaluation report provides sufficient information for the interested reader to reproduce these analyses or to judge the reasonableness of the conclusions."

[June 14, 2005, interim letter on Grand Gulf]

The staff has prepared a quality draft SER of the SERI application for the Grand Gulf early site permit.

[June 14, 2005, interim letter on Grand Gulf]

We note that the staff has done a good job critically reviewing and correcting the applicant's historical weather data.

[December 23, 2005, letter on Grand Gulf]

The NRC staff has written a very readable and comprehensive Safety Evaluation Report.

[Proposed revision to Part 52]

Current regulations in 10 CFR Part 52 do not require that a 10 CFR Part 50, Appendix B, program be implemented in support of ESP applications. However, the staff's guidance to ESP applicants was that ESP activities associated with site safety must be controlled by QA measures sufficient to provide reasonable assurance that future safety-related systems, structures, and components (SSCs) of a nuclear power plant or plants that might be constructed on the site will perform adequately. Implementation of this guidance for the first three ESP applications proved challenging and the staff believes that future ESP reviews will be significantly improved by the addition of an explicit QA requirement for ESP applicants.

The staff believes that the level of quality used to control activities related to safety-related SSCs should be equivalent in the ESP and COL phases. The staff's position is that applicants must apply quality controls to each ESP activity associated with the generation of design information for safety-related SSCs that meet the criteria in Appendix B. Therefore, the staff proposes to modify 10 CFR 50.55(f), Appendix B, and § 52.17 to make these QA requirements applicable to ESPs.

The staff should consider revising the ESP Review standard and applicable SRP sections to be consistent with the proposed QA requirements for ESP activities.

9. Radiological consequence evaluation versus level 3 PRA at the ESP stage

In its May 22, 2006, report to the Chairman on the proposed revisions to Part 52, the ACRS recommended that "A level-3 probabilistic risk assessment (PRA) consequence analysis should not be required at the early site permit (ESP) stage." The discussion portion of that report goes on to clarify that "The ACRS considers a 10 CFR Part 100, "Reactor Site Criteria," radiological analysis to be an adequate characterization of a site for the purpose of an ESP. At the ESP stage, there is insufficient design detail to make a level-3 radiological consequence analysis meaningful." The Committee's use of the expression level-3 PRA consequence analysis in this context has led to some confusion.

In the staff's proposed revision to Part 52 there is a new proposed §52.17(a)(1)(ix) that would require an ESP applicant to evaluate postulated fission product releases from accidents (i.e., perhaps a plant parameter envelope type approach) using the expected demonstrable containment leak rate and any fission product cleanup systems intended to mitigate the consequences of the accidents, together with applicable site characteristics, including site meteorology, to evaluate the offsite radiological consequences. This new requirement is identical to the requirement contained in 50.34 (a)(1)(ii)(D) for construction permit applicants. During the May Full Committee meeting and in its May 30th letter to the Commission, NEI voiced an objection to this requirement for ESP applicants.

The staff's proposed revisions to Part 52 did not include revised PRA requirements at the ESP stage. However, the staff had considered revising the PRA requirements at the COL application stage (e.g., to require a level-3 PRA), but was directed by the Commission to relocate these requirements to a guidance document (e.g., DG-1145, the COL application guidance document).

The lesson learned here is that the first three ESPs were issued having assessed the potential radiological source term associated with accidents at the proposed nuclear power plant sites (SER Section 15.3.4). However, and as stated in the ACRS's March 11, 2005, interim letter on North Anna, "Neither the application nor the safety evaluation report provides sufficient information for the interested reader to reproduce these analyses or to judge the reasonableness of the conclusions." The ESP Review standard or applicable SRP sections should be revised to clarify the staff's review procedure and acceptance criteria in the area of potential source term and radiological consequence analysis, consistent with the new propose rule language. The revised ESP Review standard or applicable SRP sections should clarify how, and the extent to which, an ESP application for a site co-located on an existing nuclear power plant site, can rely on the emergency plans for the existing nuclear power plant.

10. Other Potential Issue

[Proposed revision to Part 52]

The proposed rule includes a number of conforming changes to clarify the applicability of 10 CFR Part 21 and equivalent requirements in 10 CFR 50.55(e) to applicants for and holders of ESPs, design approvals, design certifications, COLs, and manufacturing licenses and suppliers of basic components to such applicants or holders. Note that the staff's current proposals regarding the applicability of Part 21 or § 50.55(e) to applicants for and holders of ESPs and design certifications are different from the staff's positions in the 2003 proposed rulemaking. The changes are mainly the result of the staff's experience in reviewing ESPs and design certification applications since the earlier proposed rule was developed. ESPs precede construction and are considered partial CPs; hence the staff believes that they should be subject to reporting under § 50.55(e).

Industry argues:

An ESP is an approval for a site, not for a design. In fact, under both the existing and proposed revision to Part 52, an ESP applicant is not required to designate a specific design to be located on the site in question. Given the absence of design information, Part 21 should not be applicable to an ESP applicant or an ESP holder.

Under Part 21, only noncompliances and defects in basic components involving "substantial safety hazards" are reportable. It may be impossible for an ESP applicant or holder to determine whether a particular deficiency or noncompliance in siting information creates a "substantial safety hazard" because it may not have a design against which to make the determination.¹ As a result, absent final design information, an error in siting information will not meet the definition of a reportable condition. Since there is no practicable method for ESP applicants or holders to determine whether an error in siting information creates a substantial safety hazard, Part 21 should not be applicable to ESP applicants or holders.

¹ In this regard, a mere nonconservatism or error in siting issues does not create a substantial safety hazard, since plant designs typically include significant margins to account for such errors.

The Committee may want to investigate how the staff's experience in reviewing ESPs resulted in the staff's proposal to impose Part 21 reporting requirements on the holders of an early site permit. The Committee's May 22, 2006, report to the Chairman did not comment on this aspect of the proposed revision to Part 52. However, the final revision to Part 52 is scheduled to be published by the end of October 2006.

Expected Committee's Action

The Full Committee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, and may prepare a letter to the EDO on the lessons learned from the NRC's early site permit reviews.

References

1. Report from Mario V. Bonaca, ACRS Chairman, to Richard A. Meserve, NRC Chairman, Subject: Draft Review Standard, RS-002: "Processing Applications For Early Site Permits", dated March 12, 2003.
2. ACRS Interim Letter, Draft Safety Evaluation Report on North Anna Early Site Permit Application, dated March 11, 2005.
3. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: Interim Letter: Draft Safety Evaluation Report on North Anna Early Site Permit Application, dated June 3, 2005.
4. Letter dated June 14, 2005, from G. B. Wallis, Chairman, ACRS, to L. A. Reyes, Executive Director for Operations, NRC, Subject: Interim Letter: Draft Safety Evaluation Report on Grand Gulf Early Site Permit Application.
5. Letter dated July 18, 2005, from G. B. Wallis, Chairman, ACRS, to N. J. Diaz, Chairman, NRC, Subject: Dominion Nuclear North Anna, LLC, Early Site Permit Application and the Associated NRC Final Safety Evaluation Report.
6. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: Interim Letter: Draft Safety Evaluation Report on Grand Gulf Early Site Permit Application, dated August 12, 2005.
7. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: Dominion Nuclear North Anna, LLC, Early Site Permit Application and the Associated NRC Final Safety Evaluation Report, dated September 1, 2005.
8. ACRS Interim Letter, Exelon Generation Company, LLC, Application for Early Site Permit and the Associated NRC Staff's Draft Safety Evaluation Report, dated September 22, 2005.
9. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: "Interim Letter: Exelon Generation Company, LLC,

Application for Early Site Permit and the Associated NRC Staff's Draft Safety Evaluation Report on the Clinton Early Site Permit Site," dated October 26, 2005.

10. Letter dated December 23, 2005, from G. B. Wallis, Chairman, ACRS, to L. A. Reyes, Executive Director for Operations, NRC, Subject: Early Site Permit Application for the Grand Gulf Site and the Associated Final Safety Evaluation Report.
11. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: Early Site Permit Application for the Grand Gulf Site and the Associated Final Safety Evaluation Report, dated February 1, 2005.
12. Letter dated March 24, 2006, from G. B. Wallis, Chairman, ACRS, to N. J. Diaz, Chairman, NRC, Subject: Final Review of the Exelon Generation Company, LLC, Application for an Early Site Permit and the Associated NRC Staff's Final Safety Evaluation Report.
13. Letter dated May 22, 2006, from G. B. Wallis, Chairman, ACRS, to N. J. Diaz, Chairman, NRC, Subject: Proposed Revisions to 10 CFR Part 52: Licenses, Certifications, and Approvals for Nuclear Power Plants, and Conforming Amendments to Applicable NRC Regulations.
14. Memorandum from Luis A. Reyes, NRC Executive Director for Operations, to Graham B. Wallis, Chairman, ACRS, Subject: Proposed Revisions to 10 CFR Part 52: Licenses, Certifications, and Approvals for Nuclear Power Plants, and Conforming Amendments to Applicable NRC Regulations, dated May 22, 2006.

September 22, 2006

Mr. Luis A. Reyes
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: LESSONS LEARNED FROM THE REVIEW OF EARLY SITE PERMIT APPLICATIONS

Dear Mr. Reyes:

During the 535th meeting of the Advisory Committee on Reactor Safeguards (ACRS), September 7-8, 2006, we met with representatives of the NRC staff; Dominion Nuclear North Anna, LLC; System Energy Resources, Inc.; and, Southern Nuclear Operating Company, Inc. to discuss any lessons that may have been learned in the submission, evaluation, and review of the North Anna, Grand Gulf, and Clinton early site permit applications. This matter was also discussed by our Subcommittee on Early Site Permits on September 6, 2006. We had the benefit of the documents referenced.

In accordance with 10 CFR Part 52, Subpart A, early site permit applications address separately safety and environmental issues. The ACRS is required to report on those portions of the applications that concern safety. We have reported separately on each of the applications for North Anna, Grand Gulf, and Clinton. Generally, we have praised both the quality of the applications and the quality of the staff safety evaluation reports on these applications.

Based on our review of the applications and discussions with representatives of the NRC staff and the applicants, two lessons emerged that may have generic applicability, especially to the many Combined License (COL) applications now anticipated by the agency. One lesson concerned the development of a "common understanding" between the staff and the applicant regarding expectations for the application. The second concerned the use of data obtained from the internet to substantiate portions of an application and safety analysis.

The applications we have reviewed have been the first opportunity to exercise the early site permit regulations. Not all the guidance that might be desired has been in place. Some available guidance was written for rules in place in a previous era. Applicants found it important to establish through direct discussions with the staff a common understanding of staff expectations concerning portions of the early site permit applications. Where this common understanding had been established, the preparation of the application and review process were generally smooth. Where a common understanding was not established, the processes often were more time consuming. Time spent by the staff to establish guidance and develop a common understanding with the applicants should facilitate processing of anticipated COL applications.

In the current electronic age, ever more information is becoming available through the internet. This trend will continue and eventually the internet may replace libraries and other information repositories that support engineering and safety analyses. Internet resources have advantages in comparison to familiar printed resources. They also have vulnerabilities that are not suffered by printed resources. Though internet information sources were conservatively and appropriately handled for the three early site permit applications we have reviewed, it is evident that eventually the staff will have to establish guidance to ensure reliability of internet information and the continuing ability to retrieve such information.

Two of the applicants made specific note of the challenges they faced in the electronic submission of their applications and continuing challenges they face in the electronic submission of updates to these applications. The NRC staff is addressing these challenges in anticipation of electronic submissions of COL applications.

In the course of reviews of the first three early site permit applications, the staff found that it had to discipline the review process by defining criteria for the imposition of permit conditions and COL action items. We have reviewed the criteria staff established and reported favorably on these criteria in our March 24, 2006, report. The applicant for an early site permit application for the Clinton site surprised the staff by invoking a novel, performance-based, seismic hazard analysis. This new methodology deviated markedly from the staff-approved seismic analysis methodology. The staff was able to examine and approve this methodology as it applied to the Clinton early site permit. Again, we reviewed the staff's analysis and reported favorably in our March 24, 2006 report. Nevertheless, the new approach to seismic hazard analysis did strain staff resources. Timely processing of future early site permit applications and COL applications will depend on advance dialog between the staff and the applicants when new analysis methodologies are to be introduced.

The staff has identified other lessons from the review of the first three early site permit applications and is acting upon these lessons. Among the lessons are the needs for:

- definition and criteria for pertinent site characteristics,
- criteria for the controlling elements of the plant parameter envelope,
- guidance on the treatment of the high frequency (10-100 Hz) component of seismic ground motion,
- guidance on the depth of review of major features of the emergency plan for a proposed new site, and
- criteria and review guidance for the computation of the probable maximum flood at a proposed site.

The priority that staff ascribes to addressing these lessons is influenced by its anticipation that future applicants will adopt specific reactor technologies and will not rely on the plant parameter envelope option permitted under the current regulations. The staff also anticipates that future applicants will provide fully integrated emergency plans and will not ask for approval of just specific major features of an emergency plan.

During the review of the early site permit applications, a number of questions arose concerning the applicability of 10 CFR Part 21 and 10 CFR Part 50, Appendix B to the early site permit process and holders of early site permits. The staff did conclude that processes for reporting deficiencies and quality control of activities are needed. The staff now proposes rule changes to make these elements of the regulations applicable to the early site permit process.

Among the characteristics of a proposed site considered in the early site permit process are extremes of weather. There is an evolving understanding of climatic cycles that affect extremes of weather especially for sites on the east coast of the United States and near the Gulf of Mexico. Though it cannot be claimed that the understanding is well established, it is evident that there are weather cycles with periods on the order of decades that can affect site characteristics. The popular press ensures that the public is aware of this growing understanding of weather cycles. This public awareness may make it particularly important that the staff demonstrate some understanding of these processes and the likely effects of weather cycles on the suitability of proposed sites for nuclear power plants. The staff needs to ensure that historical weather data used to characterize a site extend over sufficient time intervals to capture cyclical extremes in the weather that will affect plant design.

In our meeting with the staff and applicants, a consensus developed that the experiences gained in the course of the early site permit process would aid considerably the preparation of applications for COLs at the sites. Applicants that have not been through the process will benefit from an effort to derive their own lessons to the extent they can from the review of these three early site permit applications. We anticipate that additional lessons will be learned should the staff undertake a review of an early site permit for a so-called "green field" site that is not adjacent to the site of a currently operating nuclear power plant.

Sincerely,

/RA/

Graham B. Wallis
Chairman

References:
See next page

References:

1. Report dated March 12, 2003, from Mario V. Bonaca, Chairman, ACRS, to Richard A. Meserve, NRC Chairman, Subject: Draft Review Standard, RS-002: "Processing Applications For Early Site Permits."
2. Letter dated March 11, 2005, from G. B. Wallis, Chairman, ACRS, to L. A. Reyes, Executive Director for Operations, NRC, Subject: Interim Letter: Draft Safety Evaluation Report on North Anna Early Site Permit Application.
3. Letter dated June 14, 2005, from G. B. Wallis, Chairman, ACRS, to L. A. Reyes, Executive Director for Operations, NRC, Subject: Interim Letter: Draft Safety Evaluation Report on Grand Gulf Early Site Permit Application.
4. Report dated July 18, 2005, from G. B. Wallis, Chairman, ACRS, to N. J. Diaz, Chairman, NRC, Subject: Dominion Nuclear North Anna, LLC, Early Site Permit Application and the Associated NRC Final Safety Evaluation Report.
5. Letter dated September 22, 2005, from G. B. Wallis, Chairman, ACRS, to L. A. Reyes, Executive Director for Operations, NRC, Subject: Interim Letter: Exelon Generation Company, LLC, Application for Early Site Permit and the Associated NRC Staff's Draft Safety Evaluation Report.
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7. Report dated March 24, 2006, from G. B. Wallis, Chairman, ACRS, to N. J. Diaz, Chairman, NRC, Subject: Final Review of the Exelon Generation Company, LLC, Application for an Early Site Permit and the Associated NRC Staff's Final Safety Evaluation Report.
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