PMSTPCOL PEmails

From: Foster, Rocky
Sent: Wednesday, May 29, 2013 8:26 AM
To: McKenna, Eileen; McKirgan, John; Shea, James
Cc: STPCOL
Subject: FW: Transmittal of Letter U7-C-NINA-NRC-130034
Attachments: U7-C-NINA-NRC-130034.pdf

To All,

Attached are STP's comments on the NRC Rulemaking for Station Blackout Mitigation Strategies.

Thanks,

Rocky

From: Loree Elton [mailto:leelton@ninallc.net]
Sent: Tuesday, May 28, 2013 3:25 PM
To: Reed, Timothy
Cc: Misenhimer, David; Brown, Frederick; Wunder, George; Eudy, Michael; Foster, Rocky; Jenkins, Ronaldo; Tai, Tom
Subject: Transmittal of Letter U7-C-NINA-NRC-130034

Please find attached a courtesy copy of letter number U7-C-NINA-NRC-130034, which provides comments on the NRC Rulemaking for Station Blackout Mitigation Strategies.

The official version of this correspondence has been placed in the mail. Please call Jim Tomkins at 805-215-6129 if you have any questions regarding this letter.

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May 28, 2013
U7-C-NINA-NRC-130034

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001
ATTN: Rulemakings and Adjudications Staff

South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Comments on Station Blackout Mitigation Strategies Rulemaking
(Docket ID NRC–2011–0299)

Reference: Station Blackout Mitigation Strategies, Federal Register Notice Vol. 78, No. 69, 21275, April 10, 2013

Nuclear Innovation North America LLC (NINA) appreciates the opportunity to provide comments on the NRC Rulemaking for Station Blackout Mitigation Strategies. NINA is the lead applicant for combined licenses for the construction and operation of two nuclear powered generating plants designated as South Texas Project Units 3 & 4 (STP 3 & 4). STP 3 & 4 will utilize the NRC-certified Advanced Boiling Water Reactor (ABWR) light water reactor design.

Our comments are provided in the attachment. If you have any questions regarding these comments, please contact Scott Head at (979) 316-3011 or Bill Mookhoek at (979) 316-3014.

Mark McBurnett
Chief Executive Officer and Chief Nuclear Officer
Nuclear Innovation North America LLC

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Attachment: Comments on Station Blackout Mitigation Strategies

STI 33700999

cc: w/o attachment except*
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The following comments are provided on the proposed "Rulemaking for Station Blackout Mitigation Strategies", RIN Number 3150-AJ08, NRC Docket Number NRC-2011-0299, dated April 10, 2013. The comments are provided on Appendix A, "Station Blackout Mitigation Strategies Regulatory Basis Draft Rule Concepts."

GENERAL COMMENTS:

We have two general comments. The first comment relates to the use of a Supplemental AC source. The second comment relates to the nature and timing of the external events that must be considered as part of a Station Blackout Mitigation Strategies (SBOMS) Rule.

Supplemental AC Source

One of the goals in the design of the Advanced Boiling Water Reactor (ABWR) was to make sure that station blackout was essentially eliminated as an issue. This was accomplished by including a Combustion Turbine Generator (CTG) and an AC Independent Water Addition (ACIWA) system in the design. The CTG is a stand alone, single-purpose device that is physically and electrically independent and diverse in design from the three emergency diesels and can power the Class 1E buses. The ACIWA system uses a diesel powered pump to provide water directly to the core, containment, and spent fuel pool. The NRC concluded in NUREG-1503, the ABWR Final Safety Evaluation Report, that the combination of the CTG and ACIWA "virtually eliminates SBO as a consideration."

We believe it is very important that the final rule include provisions for crediting a Supplemental AC source such as the CTG. The design attributes of the Supplemental AC source in the draft rule align with the design description of the CTG in the ABWR Design Certification Document (DCD). Furthermore, we very strongly believe that the CTG is the best protection against a Fukushima-like event. When using a Supplemental AC source such as a CTG, most of the required safety systems would operate in their normal mode which would significantly reduce the reliance on the human actions associated with aligning and operating portable equipment under challenging event conditions.

Our long term licensing strategy is to credit the CTG as a Supplemental AC source in meeting the final SBOMS rule. Our backup mitigating strategy would be to use the ACIWA system.

External Events

The SBOMS Rule should recognize that some types of external events can be foreseen and that preparation and pre-staging for such events reduces the associated risks. For example in the Gulf Coast region, hurricanes are relatively easy to predict in advance and the plants in that region typically have several days to prepare. On the other hand, earthquakes and some tornados occur without prior warning. The actions to be taken and the associated timelines can be significantly different for each type of event. The SBOMS Rule should recognize this distinction by allowing

sites where the predominant hazard is predictable to credit such preparatory actions in developing the mitigating strategies.

SPECIFIC COMMENTS:

Our specific comments follow and are organized by the sections of the Appendix A:

Applicability

Item 1 – Develop, implement and maintain

We agree with the NRC that the requirements for new plants should be applied to COL holders, and not to the COL applicants at the application stage, because design details may not be known until later stages of the design process.

Item 3 – Design requirements for protection of equipment

All of the requirements in Item 3 should be addressed by the COL holders since site-specific hazards heavily influence how these are addressed. For example, a DCD could determine the location of external electrical connections that would not be appropriate for a site with a significant flooding hazard.

Definitions

Item 4

Item 4 should refer to Item 6 instead of Item 7.

Item 6 and 7

These items should be revised to state that Supplemental AC sources should be allowed to maintain or restore functions while portable equipment should be allowed to restore functions.

Page 31, third from the last paragraph starting with “An additional consideration”

This paragraph has an extended discussion suggesting that all strategies need backups and implying that the backup strategies need backups. Similar language is used in the Mitigating Strategies sections as well. This language seems to be inconsistent with the NRC Order and the notion that the SBOMS Rule should provide more flexibility than the NRC Order. Furthermore, for a Beyond Design Basis External Event (BDBEE) which already has an extremely low probability of occurrence, this would not be expected to provide a significant safety benefit.

Page 31, second from the last paragraph starting with "The ELAP condition"

We agree with the NRC that loss of normal access to the UHS should not be an assumed starting point for the event as specified in the order. Instead, the SBOMS rule should require that loss of normal access to the UHS should only be assumed if it is an expected consequence of the BDBEE.

Mitigating Strategies

Item 4

The phrase "consider contingencies" is vague and the rule needs to be clear if it is required. Otherwise it should not be included. As stated previously for a BDBEE, it seems to be requiring a backup to a backup.

Item 5

Recommend changing "duration" to "coping duration", if that is what is intended.

Design Requirements

Item 1

Equipment used for mitigation of the ELAP should be capable of performing the function required but should NOT have to be designed for the function. For example, a fire truck with the appropriate connections and pumping capacity may be capable of providing flow to the containment, even though it is not specifically designed for that function.

Items 2, 3, and 4

These items contain references to portable equipment. This pre-supposes that only portable equipment will be used, when for some of the new plant advanced designs, installed equipment can in fact be used to mitigate the ELAP. An earlier discussion (Definitions – second paragraph) in Appendix A acknowledges that installed equipment may be part of the strategy. Requirements for installed mitigating SSCs should be added or a disclaimer added to state that these requirements do not apply to installed equipment.

Item 3

This item (and the paragraph following the bulleted list) mentions protecting equipment from BDBEEs. This is inconsistent with the order and is fundamentally not achievable, since there is no limit to BDBEEs that could be postulated. The goal of the SBOMS Rule should be to provide diversity of mitigation, such that the risk of common cause failures in the event of a BDBEE is reduced.

Item 5

Installed safety-related SSCs credited for responding to an ELAP have allowed outage times as specified by the plant Technical Specifications. We recommend that reasonable allowed outage time frames consistent with the risk of occurrence be developed for portable or installed equipment used to mitigate an ELAP since the likelihood of such events is extremely small.

Item 7

Since much of the equipment is not safety related or in configuration control we suggest using the term "test instructions" instead of "test procedures" since it better defines the Preventive Maintenance Program instructions that would likely be used to do the testing.

Design Flexibility to use a Supplemental AC Source

NINA strongly believes that Supplemental AC sources, provided they are adequately protected against external events and appropriately separated from the Class 1E electrical systems, should be allowed to be credited. They should have requirements that are no different than the requirements for portable or offsite equipment.

As described previously, the STP 3&4 ABWRs each have a Combustion Turbine Generator (CTG) that meets the definition of a Supplemental AC source.

The CTG has the following design features as described in the STP 3&4 FSAR:

1) The CTG shall automatically start, accelerate to required speed, reach nominal voltage and frequency, and begin accepting load within ten minutes of receipt of its start signal.

2) The CTG shall be capable of being manually connected to SBO shutdown loads (via any one of the Class 1E diesel generator buses) from the main control room within ten minutes from the beginning of the event. The CTG shall also be capable of being manually connected to the remaining Class 1E buses. However, the CTG shall not be normally connected to plant safety buses nor require any external AC power to operate. There shall be two circuit breakers (one Class 1E and one non-Class 1E) in series between the bus automatically connected to the CTG and each Class 1E bus.

3) The reliability of the CTG unit, based on successful starts and successful load runs, shall be ≥ 0.95, as calculated by methods defined in NSAC-108, "The Reliability of Emergency Diesel Generators at US Nuclear Power Plants."

4) The CTG shall have an ISO rating (continuous rating at site conditions) of at least 20 MWe, with nominal output voltage of 13.8 kV at 60 Hz.

5) The generator output shall have a steady-state voltage regulation within 0.5% of required voltage when the load is varied from no load to rated load and all transients have decayed to zero. As a minimum, the CTG shall have sufficient capacity to energize required shutdown loads.

6) The transient response of the generator shall be capable of assuming sudden application of up to 20% of the generator NEMA rating when the generator, exciter, and regulator are operating at no load, with required voltage and frequency resulting in less than 25% excursion from required voltage. Recovery shall be within 5% of required voltage, with no more than one undershoot or one overshoot within one second.

7) With the generator initially operating at required voltage, and with a constant load between 0 and 100% at rated power factor, the change in the regulated output shall not exceed 1% of required voltage for any 30-minute period at a constant ambient temperature.

8) The bus tie arrangement, and the capacity and capability of the CTG, is designed such that the time to place the CTG on line to supply any one load group of safe shutdown loads (i.e., includes manual connection to any one Class 1E bus) shall be within 10 minutes.

9) The non-Class 1E CTG shall be physically and electrically independent from the Class 1E diesel generators such that weather-related failures, common cause failure, or single-point vulnerabilities are minimized or precluded.

10) The CTG shall be capable of being periodically inspected, tested and maintained.

For STP 3&4, each unit has its own CTG. The CTG in either unit can be cross-tied to the other unit, and one CTG can supply the safe shutdown loads for both units. As described above, each CTG is rated at 20 MWe, with the shutdown loads less than 7.2 MWe (the size of one of the emergency diesel generators) per unit. The CTG is designed to run indefinitely under SBO conditions at rated load. A seven-day fuel supply independent from the Emergency Diesel Generator fuel oil storage is available on the site for each CTG. Each CTG is housed in an International Building Code structure (Turbine Building) and is protected from the design basis flood and adverse weather conditions. The Turbine Building is designed to seismic II/I criteria.

Since similar CTG emergency equipment in the 20 MWe class is available packaged in trailers for air, rail, or truck transport for deployment in field locations, the CTGs are robust in nature such that they can reasonably be expected to withstand a BDBEE as discussed in NEI 12-06 (Section 11.2.2). Although the CTGs are not specifically protected from wind generated missiles, at STP 3&4, the CTGs are located in the Turbine Buildings separated from each other by approximately 900 feet and simultaneous failure of both due to wind generated missiles is extremely unlikely.

The CTG was included in the ABWR design for protection from the very event that is the basis for the SBOMS Rule, and it should be able to be credited for mitigation of such an event.

Item 5

The Supplemental AC source should not have a requirement that is beyond the requirements for portable equipment as mentioned above. Also, the requirement that the connections be both physically and electrically separate is not needed if the switchgear being connected to is Class 1E.

Item 6 and the second paragraph

This item requires that Supplemental AC be designed for the same margin to external events as the systems they support. In the case of the new reactor designs, the design certification is often done for a bounding set of external events. For a given site, these bounding analyses may or may not be beyond the site-specific hazard for the actual site where the plant will be built. For this reason, this item should be revised to state that the Supplemental AC power source is designed for the site-specific external events.

Control of Changes

We believe that an approach similar to the guidance in Section 11.8 of NEI 12-06 is an appropriate change process. This change process requires the documentation of changes including the justification that the changes continue to meet the requirements.

Implementation

Item 4

Clarification should be added that new plants would not need to supplement their application in 6 to 12 months if they have already submitted a plan in response to NRC Order EA-12-049, or to NRC requests for additional information based on that order.

Additional Questions

Appendix A contains several questions. Comments are provided below:

Question 1 – Broader Rule that includes 10 CFR 50.63

The 50.63 rule should be left in place and a separate rule created for Station Blackout Mitigating Strategies.

Question 2 – Requirements for New Reactors

2a – Requirement for AC sources and extra margin in flood protection

New reactor designs should have the option (in lieu of portable equipment) of providing an installed robust (as defined in NEI 12-06 Revision 0 and endorsed in JLD-ISG-12-01) Supplemental AC power source that is designed for or protected from site-specific external events (e.g., earthquake, flooding, and wind) with sufficient capacity to shutdown the reactor and maintain it in a safe condition and satisfy the safety functions of providing core cooling, spent fuel pool cooling and maintaining containment integrity. Due to the new reactor designs implementing site-specific state-of-the-art design requirements, regulatory requirements, and operating experience for external events, additional margin for flooding or other external events should not be required in order to provide reasonable assurance of the adequate protection of public health and safety. NRC should not impose any more stringent requirements since they are not needed to meet the NRC safety goals and are inconsistent with the requirements for the operating fleet as a whole.

2b – Credit for Supplemental AC

For new reactor designs with an installed robust Supplemental AC power source that is designed for or protected from site-specific external events (e.g., earthquake, flooding, and wind) with sufficient capacity to shutdown the reactor and maintain it in a safe condition, the NRC should allow credit as the primary method for the installed Supplemental AC power source under extended loss of AC power (ELAP) conditions. As such it would be appropriate that contingency plans be discussed if the primary method was not successful.

2d – Requirements for Design Certifications

All requirements should be addressed by the applicant since the selected site would be unique and some hazards would not be applicable. Design Certifications should include permanently installed equipment that would be credited by an applicant to respond to the event based on site specific hazards. If the NRC decides to impose new requirements for design certification, it should also provide guidance for Combined License Applications (COLAs) that reference previously certified designs.

2e – Inclusion in FSAR

A summary of how the rule is met should be provided in the FSAR with a reference to the detailed mitigation plan in a controlled document.

2f – Implementation of plan

Since much of the detail needed to finalize mitigation strategies for a particular site will not be available at the Combined License (COL) stage, a license condition would be the appropriate vehicle to ensure that the strategies, procedures, programs, equipment, training, and

walkthroughs are completed prior to fuel load. A plan level document would be appropriate during the COLA phase and the COL issued with a license condition as described above.

Question 3 – Human Reliability

Human reliability can be addressed through procedures and training in the use of Emergency Operating Procedures (EOPs), Severe Accident Management Guidelines (SAMGs), and Extensive Damage Mitigation Guidelines (EDMGs). It should be noted that greater reliance on installed versus portable equipment should enhance human reliability in BDBEE scenarios. Human reliability should be considered the same as it is applied with Severe Accident and Loss of Large Areas of the Plant mitigating strategies.