



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 24, 2015

LICENSEE: PSEG Nuclear, LLC

FACILITY: Hope Creek Generating Station, Unit 1

SUBJECT: SUMMARY OF JANUARY 29, 2015, PRE-LICENSING MEETING WITH PSEG REGARDING DIGITAL UPGRADE OF POWER RANGE NEUTRON MONITOR (PRNM) (TAC NO. MF5496)

On January 29, 2015, a Closed meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of PSEG (the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. This meeting was closed to members of the public because it involved the discussion of proprietary information.

Digital Instrumentation and Controls (DI&C) Draft Interim Staff Guidance (ISG)-6, "Task Working Group #6: Licensing Process," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110140103) provides guidance for the licensing process to be used in the review of DI&C system modifications in operating plants. As described in this guidance, a pre-licensing (Phase 0) meeting was held to discuss the planned submittal of a license amendment to install the General Electric-Hitachi (GEH) digital Power Range Neutron Monitor (PRNM) System at the Hope Creek Generating Station (Hope Creek). Enclosed is a list of attendees.

In two previous Phase 0 meetings, PSEG had discussed the need and the plan to replace the current Neutron Monitoring System with the Nuclear Measurement Analysis and Control (NUMAC) digital PRNM system at Hope Creek. Summary reports for those meetings are available under ADAMS Accession Nos. ML13364A242 and ML14224A133.

A non-proprietary version of the presentation slides is available under ADAMS Accession No. ML15021A500. A summary of the items discussed at the meeting is provided below. By e-mail dated March 20, 2015 (ADAMS Accession No. ML15083A262), PSEG confirmed that this meeting summary does not contain proprietary information and can be made available to the public.

Scope

The scope of proposed upgrade is to replace the current Neutron Monitoring System (NMS) with the digital NUMAC PRNM system. The current NMS provides trip outputs to the Reactor Protection System (RPS) when appropriate trip levels are reached. These trip signals are used in the RPS to trip the reactor. The PRNM will provide the reactor trip outputs above the Intermediate Range Monitoring (IRM) neutron flux (i.e. in the power range neutron monitoring range) to initiate a reactor trip. Other lower power range instrumentation (i.e. Source Range Monitor (SRM) and IRM) are not covered by the PRNM which only addresses the power range. These low power instruments will not be affected by the proposed PRNM modifications.

The NUMAC upgrade will include implementation of ARTS (Average Power Range Monitor, Rod Block Monitor, and Technical Specifications) as well as Oscillation Power Range Monitoring

(OPRM). The licensee plans to follow the Digital Instrumentation and Controls Draft Interim Staff Guidance (ISG)-06.

The purpose of this meeting was to discuss the updated software process that is part of the NUMAC development process. This software process differs from the previous NUMAC PRNM systems approved by the staff (i.e., Grand Gulf Nuclear Station (GGNS) and Columbia Generating Station (CGS)). In particular, PSEG and GEH presented the differences between the original NUMAC process and the new enhanced process. These differences contain proprietary information.

Standard Review Plan Discussion

The NRC's Standard Review Plan (SRP) (NUREG 0800, Chapter 7) provides guidance for review of Instrumentation and Controls (I&C) safety systems. In previous Phase 0 meetings, PSEG described how they plan to use and comply with the guideline provided in the SRP.

Chapter 7 of the SRP was last updated in 2007; therefore, many of the Regulatory Guides to which it refers have been updated to endorse newer versions of the associated standards. This means that the SRP is currently in a state of transition and currently two different revisions are being pursued by the NRC staff. The first of these revisions is intended to update the referenced guidelines and standards and correct some known errors. This revision will likely be issued in 2015. The second revision is intended address more long term issues such as incorporating guidance of ISG-06 and incorporating the principles being used by the Office of New Reactors (NRO) for design-specific review standards (DSRS). This is important because the NRC staff would follow the guidance of the SRP revision valid 6 months prior to the date of the submittal of PSEG's license amendment request (LAR). Therefore, the NRC staff does not expect the second revision of Chapter 7 to affect the evaluation of the Hope Creek PRNM system.

GEH and the NRC have been communicating on these transitional developments and GEH has decided to develop its digital system programs to comply with the newer Regulatory Guides and Standards even though they are not currently referenced in the SRP. The NRC staff stated that they are prepared to evaluate the Hope Creek PRNM system regardless of the SRP status at the time of submittal. The NRC can support such a review because the NRC staff was involved with the development of the new Regulatory Guides and is familiar with the changes they incorporate. If the GEH programs are compliant with the newer standards, then they will be considered as an acceptable means of meeting regulatory requirements.

Impact of the new 50.55a(h) Rule on the Hope Creek Application

The licensee asked whether the proposed rule changes to Title 10 of the *Code of Federal Regulations*, (10 CFR) Section 50.55a(h), "Protection and safety systems," would have any impact on the Hope Creek PRNM system LAR. The NRC staff stated the proposed draft version of the rule should not impact the PRNM system safety evaluation; however, it is possible that unforeseen changes to the rule could be made. Since PSEG is expected to submit its LAR in the third quarter of 2015, it is highly unlikely that the new rule would be in effect prior to that time. Any further developments of this rule would be subject to a public comment period; therefore, PSEG will have an opportunity to review the proposed rule and provide comments prior to its final approval.

Software Development (follow-up discussion to previous Phase 0 meetings)

The original software for PRNM system was developed by GEH based on the regulatory guidance available at the time the design was completed and approved by the NRC in 1996. Since that time, many changes have been made to the industry standards for software development and to the NRC's guidance for evaluating digital I&C safety systems. GEH has updated the NUMAC Software planning documentation such that no special critical design review will be needed for independent software validation and verification (IV&V) as was done for the previous GGNS and CGS PRNMS upgrades.

GEH has developed and implemented a digital I&C system life cycle program to address the NRC staff concerns raised during previous reviews. GEH described its current plan to reference support documents which were submitted under the CGS PRNM system LAR review. The presentation included a mapping table to show these references. The attendees agreed additional documents, which are plant specific to Hope Creek, as well as documents which have changed since the CGS review, must be provided on the Hope Creek docket to support review. In addition, the NRC staff agreed the combined approach of providing reference to previously docketed and approved material in conjunction with supplemental information to be provided by PSEG is acceptable provided all required information to support NRC staff's review is contained within these documents.

ISG-06 Pilot Status Discussion

The NRC staff shared information on the current status of the Diablo Canyon Power Plant (Diablo Canyon) ISG-06 pilot program and potential revisions to the digital I&C licensing processes. In addition, the NRC staff discussed one new concept which is currently being considered: classifying certain documents as being volatile. In an effort to minimize the amount of docketed material required to complete its review, the NRC would like to acknowledge the fact that several design documents are intended to be updated as the system development process is performed, making these documents volatile. The requirements traceability matrix, as defined in ISG-06 Section D.9.4.2, is one example of a volatile document.

Though the revision to ISG-06 is still under review, the NRC staff suggested the licensee consider identifying such volatile documents as they prepare the PRNMS license amendment. The goal of the NRC is to ensure adequate information is submitted to support its evaluation. However, the NRC staff has found submission of multiple versions of such documents has reduced evaluation efficiency.

Use of Sharepoint

The NRC staff shared its experiences with the use of Sharepoint sites as a means of providing NRC read only access to documents that are not submitted on the docket (i.e. placed into ADAMS). The Diablo Canyon pilot and other projects have benefited from the use of a Sharepoint site. In particular, having access to these sites allows the NRC staff to perform preliminary reviews of documents and access what parts, if any, are needed for submittal. This gives the licensee the option of creating a summary document for submittal in lieu of docketing voluminous documents for which only small portions are required to support the NRC staff review. It also provides a means by which the NRC staff can perform audit review activities to support the review.

The NRC explained that it is not necessary to include redacted versions of proprietary documents on the Sharepoint site. None of the Sharepoint documents are made public and they cannot be relied on by the NRC staff when making a final decision regarding the LAR. Upon project completion, access to Sharepoint documents is removed and no Sharepoint records are retained or placed into ADAMS. The NRC considers Sharepoint documents to be similar to having on-site access to documents to support inspections or audits. No transfer of documentation or material is performed during such a review and a report is used to document the review activity.

The Sharepoint site can also be used as a way to provide NRC access to volatile documents, as described above, as they are developed in order to eliminate the need for multiple submittals of different document versions.

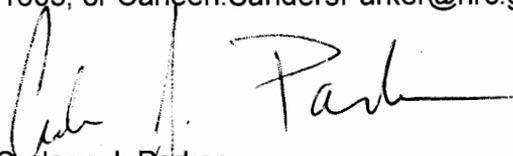
Use of Open Items List

The NRC staff explained how an Open Items list is being maintained and used to facilitate conference calls for the Diablo Canyon project. The Open Items list has been useful for the NRC staff and applicants in reducing the number of requests for information (RAIs) and has resolved many misconceptions which would have otherwise been difficult to address. Since the Open Items List is publicly available, the NRC staff agreed to provide a current version of Diablo Canyon's list to PSEG so they can see what types of interactions are taking place. The NRC staff intends to use a similar Open Items list and periodic public meetings during the PRNMS review.

ISG-06 Compliance Matrix

Another useful tool that has been developed by the Diablo Pilot project team is the ISG-06 Compliance Matrix. This is an Excel spreadsheet which was originally developed by Pacific Gas and Electric Co. (PG&E) to map the ISG-06 Annex B list to project specific documents. This mapping proved to be very useful in aiding the NRC staff during the acceptance review period which was completed in just over two months. This matrix established traceability between the ISG-06 criteria and the documents and/or specific sections of the LAR which demonstrate compliance to those criteria. The NRC staff agreed to provide access to this matrix to give the licensee an idea of information to include in the license amendment submittal.

Please direct any inquiries to me at 301-415-1603, or Carleen.SandersParker@nrc.gov.



Carleen J. Parker,
Project Manager Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-354

Enclosure:
List of Attendees

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

JANUARY 29, 2015, CLOSED MEETING WITH PSEG, LLC

HOPE CREEK GENERATING STATION, UNIT 1

PRESUBMITTAL MEETING FOR DIGITAL UPGRADE

OF POWER RANGE NEUTRON MONITOR

Name	Organization
Meena Khanna	NRC
Allison Dietrich	NRC
Gursharan Singh	NRC
Rossnyev Alvarda	NRC
Richard Stattel	NRC
Carleen Parker	NRC
Muhammad Razzaque	NRC
Tanya Hood	NRC
Ken Knaide	PSEG
Bill Kopchick	PSEG
Jim Stavely	PSEG
Robert Gallaher	PSEG
Brian Thomas	PSEG
Robert Hoffman	PSEG
Ty Rogers	GEH
Erin Joy	GEH
Kahlim Miller	GEH
David Heinig	GEH
Frank Novak	GEH
Larry Chi*	GEH
Ralph Hayes*	GEH
Peter Stanza*	GEH
Ross Merante*	GEH

*Participated by phone

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