

June 13, 2012

MEMORANDUM TO: Thomas A. Bergman, Director  
Division of Engineering  
Office of New Reactors

Patrick L. Hiland, Director  
Division of Engineering  
Office of Nuclear Reactor Regulation

FROM: Daniel J. Santos, Senior Technical Advisor **/RA/**  
Division of Engineering  
Office of New Reactors

SUBJECT: SUMMARY OF MAY 16, 2012, CATEGORY 2 PUBLIC  
MEETING WITH THE NUCLEAR ENERGY INSTITUTE TO  
ADDRESS DIGITAL INSTRUMENTATION AND CONTROL  
ISSUES

On May 16, 2012, a meeting was held between the Nuclear Regulatory Commission (NRC) and Nuclear Energy Institute (NEI). The purpose of the meeting was to provide follow up from a previous meeting<sup>1</sup> and continue the executive level discussion to identify strategic Digital Instrumentation and Control (DI&C) issues for future engagement with industry, which are not a part of the existing programs and processes.

The resulting action items from this meeting are documented below in this meeting summary.

The NRC indicated that there are many lessons learned associated with DI&C and the need to disseminate information to an even larger audience exists. Industry and the NRC agreed on the need to have a Lessons-Learned Workshop. The NRC took an action to coordinate with industry on the planning of the Lessons-Learned Workshop<sup>2</sup>. NRR/DE stated that it would be the contact for coordination of the Lessons-Learned Workshop. The consensus at the meeting was to conduct the Lessons-Learned Workshop in October 2012. Industry suggested that the topic of cyber security be added to the workshop agenda. Additionally, during this discussion, NRR/DE took an action to provide the ADAMS accession number for documents related to a public meeting that discussed the license amendment request that Pacific Gas and Electric

CONTACT: Deirdre Spaulding-Yeoman, NRO/DE  
(301) 415-3912

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<sup>1</sup> Previous meeting held December 6, 2011, meeting summary located at ADAMS accession no, ML12011A101.

<sup>2</sup> Meeting Handout, Proposed Agenda Items for Proposed Lessons-learned Workshop, ADAMS accession number ML12137A334.

submitted for the digital replacement of the process protection system portion of the reactor trip system and engineered safety features actuation system.<sup>3</sup>

Regarding the topic of Change Management Process of Topical Reports; Industry recommended the creation of a joint working group, including NRC representatives, to develop guidance for this topic. NRR/DE took the action to coordinate with the other NRC stakeholders (e.g., NRR, Division of Policy and Rulemaking) to determine the feasibility and scope of the Industry recommendation.

The NRC asked Industry how this [change management process] compares to other non-nuclear industrial entities that do a similar type of change management. Industry took an action to go back, take a broader look at this, and see what is done in other industries.

NRO/DE discussed that the DI&C initiative is under development and is specific to mPower. For highly integrated and complex I&C systems, the regulatory reviews of these I&C systems have been a significant challenge from the perspective of both safety demonstration and the amount of resources consumed. In addition, NUREG-0800, Standard Review Plan, Chapter 7, which is the primary agency guidance for these reviews, is adequate; however, improvements could be achieved if lessons-learned are applied in a timely manner. Under this initiative, the goals are to improve: (1) the safety focus of the reviews by better establishing the level of detail required for licensing and a clear connection between that information and the applicable regulations, (2) the effectiveness of the reviews by eliminating unnecessary information from being docketed, and, (3) the regulatory guidance to eliminate unnecessary requests for additional information.

NRO/DE further discussed that in order to accomplish these goals the initiative framework includes four key elements: (1) restructure the existing guidance, (2) develop an integrated hazards analysis approach, (3) define the scope and level of detail of the information to support the licensing finding, and, (4) leverage third-party assessment of safety-system software development processes. The NRC is developing a design-specific review standard (DSRS) for use in reviewing the mPower design. The staff has identified that the DSRS development and the timing of the projected licensing applications allows for the incorporation of the broad set of I&C lessons-learned in addition to other generic improvements in order for the review to focus on the fundamental principles of good I&C design: redundancy, independence, deterministic behavior, and diversity.

NRO/DE stated that the mPower applicant has been very supportive of the initiative and that frequent interactions have taken place. The early preliminary draft of the DSRS Chapter 7 will be publicly available in coming months for comments and feedback, as well as early engagement with stakeholders, including the public, the Advisory Committee for Reactor Safeguards, and the applicant. The schedule is to develop the DSRS Chapter 7 final draft for formal public comments by November 2012.

NRO/DE stated that the NRC is considering whether a generic communication should be issued regarding embedded DI&C devices. Embedded DI&C devices are included in a wide array of

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<sup>3</sup> ADAMS accession number ML12142A214, ML113070457 – The public meeting notice contains instructions for the public to subscribe to the plant specific e-mail distribution list. Once on this list, members of the public will receive correspondence and will have access to the information being discussed at the meeting.

devices such as diesel governors, protection relays, and motor control systems, which employ complex microprocessor based hardware operating software. Design details for these devices are not included in the application, but appear in construction documents. The NRC issued Information Notice 2010-10 regarding a related topic, but additional information and experience suggests further evaluation of the issue from the agency's perspective. Currently the NRC staff is developing a generic communication (tentatively in the form of a Regulatory Issue Summary) with a main goal of communicating this issue and its safety and regulatory nexus to the industry more clearly. The NRC staff plans to engage the industry during the development of the generic communication, and one of the approaches being considered is to hold a public workshop working with the NEI. In addition, the NRC staff is looking into the longer-term plan beyond the short-term generic communication to fully address the issue, and one of the key aspects is to investigate the need for a clearer regulatory basis and guidance on the issues.

Regarding the topic of embedded I&C, an action was taken to add this topic to the next DI&C issues meeting agenda, for information on its progress.

During discussion at the meeting, a potential new strategic issue was identified. Industry indicated a concern regarding problems with DI&C interfaces with systems outside of the component itself. The NRC mentioned that in other public forums, representatives from other organizations have discussed the possible need for an "interface requirement document." Industry indicated that the issue of integration of performance needs to be looked at. The resulting consensus at the meeting was that the agenda item of "Integration and Implementation Issues" would be part of the Lessons-Learned Workshop.

The meeting concluded with a consensus to meet again in January 2013. Daniel Santos, the NRC point of contact, and Gordon Clepton, the NEI point of contact, will coordinate stakeholder participation.

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Enclosures:

1. Meeting Agenda
2. Meeting Attendee List

cc w/encl:

Mr. Gordon Clefton, Sr. Project Manager,  
Nuclear Energy Institute  
1776 I Street, NW, Suite 400  
Washington, DC 20006-3708  
gac@nei.org

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**ADAMS ACCESSION No.: ML12165A187**

**NRO-001**

<b>OFFICE</b>	NRO/DE/ICE	NRO/DE
<b>NAME</b>	DSpaulding-Yeoman	DSantos
<b>DATE</b>	06/13/12	6/13 /12

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## **AGENDA FOR PUBLIC MEETING**

### **MEETING WITH THE NUCLEAR ENERGY INSTITUTE TO ADDRESS DIGITAL INSTRUMENT AND CONTROL ISSUES**

Wednesday, May 16, 2012  
10:00 A.M. – 12:00 P.M

- |  |        |
|--|--------|
| 1) Introductions   | 20 min |
| <ul style="list-style-type: none"><li>• Logistics</li><li>• Attendees</li><li>• Telephone participants</li><li>• Introductory remarks by NRC management</li><li>• Introductory remarks by industry</li></ul> |        |
| 2) Re-cap from December 2011 meeting   | 20 min |
| <ul style="list-style-type: none"><li>• Action Item Status</li></ul>   |        |
| 3) Lessons-Learned   | 20 min |
| <ul style="list-style-type: none"><li>• Digital I&amp;C Lessons-Learned – purpose, scope, proposed agenda</li><li>• Communication initiatives</li><li>• NRC Brief Summary on ISG Pilot</li></ul>             |        |
| 4) Recommendations for Change Management Process of Topical Reports  | 20 min |
| <ul style="list-style-type: none"><li>• Industry</li><li>• NRC</li></ul>   |        |
| 5) New Items for Discussion  | 10 min |
| <ul style="list-style-type: none"><li>• NRC - Embedded I&amp;C, mPower</li></ul>   |        |
| 6) Meeting Closure   | 20 min |
| <ul style="list-style-type: none"><li>• Summary</li><li>• New Action Items</li></ul>   |        |
| 7) Public Interactions   | 10 min |
| Adjourn  |        |

## Attendee List

### Location - OWFN 3B04

Name	Organization
Gordon Cleifton	NEI
Charlie McCarthy	Northrup Grumman
Mark Jekel	Northrup Grumman
Brian Arnholt	B&W mPower
Patrick Troy	Lockheed Martin
Jonathan K. Witter	B&W mPower
Dan Stiffler	Westinghouse
Mark Stofko	Westinghouse
Thomas Graham	B&W mPower
Ifti Rana	B&W mPower
Kati Austgen	NEI
William Gross	NEI
Chris Massaro	Northrup Grumman
Bruce Budinger	Northrup Grumman
Randy Eubanks	GE Hitachi
David Spaulding	GE Hitachi
Milton Conception	US NRC
Russell Sydnor	US NRC
Eric Mino	GE Hitachi
Rodger Magness	B&W mPower
Peter Rosecrans	Lockheed Martin
Daniel Santos	US NRC
Pat Hiland	US NRC
Steven Arndt	US NRC
Mohammed Shuaibi	US NRC
Joseph Balitski	Bechtel
Rich Stattel	US NRC
Terry Jackson	US NRC
Deirdre Spaulding-Yeoman	US NRC

**Location - Via Conference Call**

<b>Name</b>	<b>Organization</b>
Ted Quinn	PG&E Diablo Canyon
Charles Lewis	Palo Verde
Sara Rudy	GE Hitachi
Denny Bischbaum	Luminant
Robert Austin	EPRI
Joseph DeBor	DeBor
Richard Harper	South Texas Project
Dale Wuokko	Toshiba
Tricia Bolian	AREVA
Bob Keller	Duke-Energy
Deborah Williams	INPO
David Waller	Ameren Missouri
Mark Burzynski	Rolls-Royce
Bob Hirmanpour	Southern Company
Bruce Geddes	Southern Engineering
Criag Butcher	AREVA
Ken Scarola	Nuclear Automation Engineering
David White	AREVA
Daniel Cronin	University of Florida
Kirk Melson	Excel Services