

June 4, 2007

MEMORANDUM TO: W. E. Kemper, Chief
Instrumentation and Electrical Engineering Branch
Division of Engineering, Fuel, and Radiological Research
Office of Nuclear Regulatory Research

FROM: Girija S. Shukla, Project Manager */RA/*
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE MAY 22, 2007, MEETING WITH INDUSTRY REPRESENTATIVES AND THE DIGITAL INSTRUMENTATION AND CONTROLS (DIGITAL I&C) HIGHLY INTEGRATED CONTROL ROOM – COMMUNICATIONS ISSUES TASK WORKING GROUP (TWG) TO DISCUSS ISSUES RELATED WITH THE DIGITAL I&C PROJECT

On May 22, 2007, the U.S. Nuclear Regulatory Commission (NRC) Digital I&C Highly Integrated Control Room – Communications (HICR – Communications) Issues Task Working Group (TWG) and industry representatives of the Digital I&C Project held a Category 2 public meeting at NEI headquarters in Washington, D.C. The purpose of the meeting was to discuss to the HICR – Communications issues related with the Digital I&C project.

In the meeting the discussions included; (1) progress on follow-up actions identified during previous meetings; (2) the HICR – Communications project plan schedule, (3) Industry comments on NRC draft guidance outline; (4) HICR – Human Factors position on the use of non-safety multi channel Video Display Units (VDU) to control reactor operations; (5) VDU design concepts; and (6) an industry presentation on Precluding Multiple Spurious Commands from Video Display Units.

The following items were discussed in the meeting in detail:

- Draft IEEE Std. 7-4.3.2 § 5.6

A draft of IEEE Std. 7-4.3.2 § 5.6 was discussed in the meeting. It is intended that this draft will cover priority modules as well as communications, but it has not been sent to the IEEE committee yet. The industry expressed a concern that priority modules may not exist as a physical entity and the priority may be implemented as a physical module, as a software function in the voting logic, or higher up in logic train. The NRC staff will consider how to accommodate this in the guidance.

- NRC draft guidance outline

A detailed discussion of the NRC draft guidance outline was held in the meeting. There is a need to clarify the definition of a “channel”, and it may be an elaboration of the IEEE Std. 603 definition. Extensive discussion of industry comments took place regarding reduced verification and validation (V&V) process of non-safety software running on safety related processors. The staff could not identify technical or regulatory basis for this practice and decided not to endorse this practice at this time. If further dialogue is desired on this subject, the industry was requested to provide a white paper to clarify this issue.

The industry also discussed the following comments on the NRC draft guidance outline.

- The receipt and storage of the data section is not general enough and needs to provide more clarification.
- The communications faults should be considered as single-failures, not common-cause failures. The concern is for signals provided to the voting logic.
- Priority modules section needs to account for the non-safety diverse actuation systems.
- Regarding non-safety control stations controlling operation of the safety equipment, safety systems should decide that bypass of control signals is ok before non-safety system could implement it. Similarly, safety systems should decide that the safety function is complete before permitting non-safety systems to terminate the operation. The industry made a comment regarding permitting non-safety systems to reset the safety systems only after safety systems have determined that this is ok. The industry also discussed initiation of the maintenance bypass from non-safety systems, and stated that it would need to have safety systems make their own decision that the bypass is acceptable before initiation of the maintenance bypass.

AREVA requested a proprietary meeting with the TWG to address design details concerning their priority module. The results of that meeting will be taken into consideration by the TWG in the further development of the guidance recommendations.

- Multi-channel video display units

The NRC staff indicated that a determination on acceptance of the concept of multi-channel video display units has not been made. The NRC staff is seeking more information or data from the industry to support claims of benefits of having both safety and non-safety channels on the same VDU. The NRC staff also expressed concerns about the amount of data and type of data (safety vs. non-safety) being displayed at the same time and the potential problems that might occur combining both display and control functions for safety and non-safety systems on a single VDU. It was suggested that the NRC staff identify examples of the human factors problems that could be introduced by the use of the multi-channel VDUs.

- Multiple spurious signals from video display units

The industry made a presentation on the credibility of the occurrence of multiple spurious signals from video display units. The presentation also pointed out that non-safety related failures are important, because safety analysis only addresses a limited set of control-induced transients. It is, therefore, important to ensure that multiple spurious signals from video display units are not credible.

Summary of Action Items Assigned

The following key action items were assigned during the meeting:

- Industry:
 - AREVA will arrange a meeting with the NRC staff to discuss details of priority module.

- NRC:
 - The NRC staff will address industry comments on the NRC draft guidance outline.
 - The NRC staff will set up the next HICR – Communications meeting for June 14, 2007.
 - The NRC staff will identify examples of the human factors problems that could be introduced by the use of the multi-channel VDUs.

Following the meeting, the NRC staff expressed its appreciation to the industry for their participation and comments. An attendance list is provided in the enclosure. The meeting agenda can be found via the Agencywide Documents Access and Management System (ADAMS), Accession Number ML071240342. The meeting handouts are provided in ADAMS as 1. Consolidated comments on NRC draft guidance outline (ML071530003); 2. Industry presentation “Precluding Multiple Spurious Commands from Video Display Units” (ML071530004). Please direct any inquiries to Girija Shukla at 301-415-8439, or gss@nrc.gov.

Enclosure: List of Attendees

ADAMS ACCESSION NO. **ML071530005**

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DATE	6 / 2 / 2007	6 / 4 / 2007	6 / 4 / 2007

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ATTENDEES

MEETING WITH INDUSTRY REPRESENTATIVES AND THE DIGITAL I&C
HIGHLY INTEGRATED CONTROL ROOM – COMMUNICATIONS ISSUES
TASK WORKING GROUP

TUESDAY, MAY 22, 2007

INDUSTRY:

Benjamin Borrusch	AREVA
Wes Bowers	Exelon
Joe Murray	Invensys
Ken Scarola	MNES-NAE
Dave Herrell	MPR Associates
Kimberly Keithline	NEI
James Ross	NEI
Roger Kisner	ORNL
Ron Jarrett	TVA
Shelby Small	AREVA
Don Chase	Scientech
Peter Yanan	GE
Mark Burzynski	AREVA
Jerry Maur	STP 3&4
Tom Hayes	Westinghouse

NRC:

William Kemper	NRC/RES	
Girija Shukla	NRC/NRR	
Kimberley Corp	NRC/NRO	
Royce Beacom	NRC/NRO	
Paul Rebstock	NRC/RES	
Wilkins Smith	NRC/NMSS	
James Bongarra	NRC/NRO	(By Phone)

ENCLOSURE