August 1, 2008

MEMORANDUM TO: Patricia A. Silva, Chief
Technical Support Branch
Special Projects and Technical Support Directorate
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

FROM: David L. Rahn, Sr. I&C Engineer **/RA/**
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Special Projects and Technical Support Directorate
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

SUBJECT: SUMMARY OF THE JUNE 25, 2008, CATEGORY 2 PUBLIC MEETING AND TELECONFERENCE WITH THE NUCLEAR ENERGY INSTITUTE AND INDUSTRY TO DISCUSS TASK WORKING GROUP #7, DIGITAL INSTRUMENTATION AND CONTROL FOR FUEL CYCLE FACILITIES

On June 25, 2008, Task Working Group (TWG) #7 held a Category 2 Public Meeting and Teleconference to discuss various issues related to fuel cycle facility digital instrumentation and control problem statements and proposed licensing methodology.

A discussion was held regarding the industry's assessment of what will be the relative future occurrence of applications of digital I&C equipment for use as items relied on for safety (IROFS) needed for criticality prevention. The U.S. Nuclear Regulatory Commission (NRC) staff was interested in learning whether the industry believed that future license applications would likely continue to describe approximately 10-12 of these criticality prevention applications, or whether future applications may contain a higher or lower number of digital I&C IROFS used for criticality prevention. The industry viewpoint was that future applications of fuel cycle facilities (including chemical conversion facilities) would likely include a greater number of criticality prevention IROFS relying on digital I&C equipment than present facilities. The reason for this is that there is a need for future fuel cycle facilities to have a higher throughput (production and productivity levels) than existing facilities, and a greater reliance will likely be made on the use of digital I&C to enhance this throughput. Therefore there will likely be a greater need for engineered safety control measures that are automated.

Felix Killar offered to develop a NEI position statement regarding criteria for evaluating the use of digital I&C equipment for use in criticality safety applications.

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Another discussion was held regarding the level of software quality requirements that would be considered required and applicable for control systems software utilized in fuel cycle facilities. Specifically, the application of commercial grade digital control equipment and its commercial grade control software is utilized to a much greater degree than custom software. When there is an opportunity to utilize custom software in an application, there is a greater opportunity to apply the software lifecycle design processes described in IEEE and NQA-1 standards. However, when commercial grade Programmable Logic Controllers (PLCs) are procured for use in fuel cycle applications, they are usually accompanied by customizable software package that was developed for use with that equipment. That software usually includes a pre-designed "library" of functional logic blocks that are "tailored" for use within the user's facility to meet the user's functional requirements specifications, and sometimes allows the use of ladder logic or limited script logic capabilities. Newer digital control systems are now offered that are certified to meet IEC-61508 criteria. The IEC-61508 standard includes a Part 3, which describes the quality processes that mirror the ANSI/NQA-1 software procurement requirements, including requirements for high quality software design processes. There are commercial grade systems that offer a degree of assurance that the software was developed by following high-quality design processes, which are then tailored for use to meet the functional design specifications for fuel cycle facilities. Further assurance of reliability of such systems may be achieved when teamed with internal or external watchdog timers to notify fuel cycle facility operators that the software has stopped running, coupled with a logic design that assures the outputs of the control system revert to their "safe state" in the event of such a watchdog timer timeout condition, provided that this ability to revert to a safe state is periodically tested on a frequency consistent with the plant's Integrated Safety Analysis requirements.

The next public meeting will be a teleconference to be held Tuesday, July 29, 2008.

ACTION ITEMS:

Item	Description	Responsibility
1.	Continue to review the draft interim staff guidance (ISG) and provide further comments to NRC staff regarding proposed criteria. Ascertain whether it is reasonable to use this type of criteria for developing estimates of overall control system reliability for criticality prevention applications	Industry Participants NEI
2.	Consideration of NEI/Industry comments into the draft ISG for Problem Statement 3	NRC Staff
3.	Provide comments on Problem Statement 5 -- software quality guidelines for fuel facilities	All
4.	Visit Westinghouse and Global Nuclear Fuels Facilities during the week of July 7-11	David Rahn
5.	Provide NEI position statement on the use of Digital I&C as IROFS in Criticality Safety applications	Felix Killar

PARTICIPANTS

NRC and external stakeholders, including members of NEI, industry representatives, consultants to the nuclear industry, and interested members of the Public:

NRC	Industry
Patricia Silva	Ed Prytherch, Westinghouse*
David Rahn	Steve Powers, AREVA*
Clifford Doutt	Janet Schlueter, NEI
Stewart Bailey	Felix Killar, NEI*
	Charlie Vaughan, GNF*
	Gordon Clefton*

* Attended via teleconference

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