

November 18, 2009

MEMORANDUM TO: Stacey L. Rosenberg, Chief  
Special Projects Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

FROM: Eric E. Bowman, Project Manager **/RA/**  
Special Projects Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF OCTOBER 21, 2009, MEETING WITH DRS  
CONSOLIDATED CONTROLS

On October 21, 2009, a Category 2 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of DRS Consolidated Controls (DRS) at NRC Headquarters, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the submittal of a topical report on the PI $\mu$ s 32 Distributed Control System. A list of attendees is provided as Enclosure 1.

#### Review Process

The NRC staff discussed the current efforts in reengineering the licensing process for digital instrumentation and control systems and the desire to use the draft interim staff guidance (ISG) number 6 review process with this application. The staff indicated that this meeting would be considered as a Phase Zero meeting in that process.

#### Scope

DRS presented details on the PI $\mu$ s 32 Distributed Control System. Proprietary and nonproprietary versions of their presentation are available in the Agencywide Documents Access and Management System (ADAMS) Accession Numbers ML092810269 and ML092810268, respectively. Full presentation was not made due to time constraints. DRS was informed that the remainder of the presentation could be covered in a later meeting if DRS so desired.

DRS advised NRC that they had some safety related digital applications implemented in foreign countries but there were none in the USA at present. DRS is actively looking for an industry sponsor for the DRS PI $\mu$ s 32 Distributed Control System.

CONTACT: Eric E. Bowman, NRR/DPR  
301-415-2963

DRS plans to use the software compiler tool, Functional Interconnect Diagram (FID), as a safety related tool and informed the staff that the software compiler has been 100 percent tested. DRS has written the software code and would like to have the FID compiler approved by staff. Staff indicated its willingness to review the tool in detail if submitted for approval; however, the staff cautioned that the additional review would significantly add to the complexity of the review and the time required to complete the review. The staff also noted that no software tool has been reviewed as safety-related, and therefore, there is no existing precedent for this review.

The DRS system used Window's based operator interface station which is not safety related. The NRC Staff noted that this interface is likely to require close scrutiny due to the fact that it interfaces with the safety related platform changes. The staff also noted that the software verification and validation (V&V) activities must be performed by an organizational structure which separates the design and production personnel from the V&V staff. Testing activities are part of the V&V responsibility; therefore, test personnel should be part of the V&V organization. The NRC Staff further noted the fact that the sensor inputs are transmitted over redundant networks through intermediate network connections which raises the issue of deterministic nature of the sensor input. In addition, DRS uses the divisional networks to communicate all data over the same network. This would need to be examined in light of the ISG #4, position 14 requirement that vital communications should be point-to-point by means of a dedicated medium (copper or optical cable). By mixing the control and protection signals on the same network, DRS does not seem to follow the guidance of general design criterion (GDC) 24 which requires that interconnection of protection and control systems shall be limited so as to assure that safety is not significantly impaired.

Staff advised DRS that in its current form there would be a low probability of approval of the topical report based on the following:

- a) Use of local area networks (LANs),
- b) Non-deterministic communication and lack of compliance with ISG number 4,
- c) Lack of managerial independence of V&V staff, and
- d) Lack of compliance with GDC 24, separation of protection and control systems.

#### Miscellaneous

No members of the public were in attendance.

Please direct any inquiries to me at 301-415-2963, or [Eric.Bowman@nrc.gov](mailto:Eric.Bowman@nrc.gov).

Enclosure:  
List of Attendees

cc w/encls: See next page

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cc w/encls: See next page

ADAMS ACCESSION NO.: ML093070466(Package) ML093060217 (Summary)  
ML092720027 (Notice) NRC-001

OFFICE	PSPB/PM	PSPB/LA	EICB/BC	PSPB/BC	PSPB/PM
NAME	EBowman	CHawes for DBaxley	WKemper	SRosenberg	EBowman
DATE	11/02/09	11/05/09	11/12/09	11/18/09	11/18/09

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CONTROLS

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Project No. 778

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**MEETING WITH DRS CONSOLIDATED CONTROLS TO DISCUSS SUBMITTAL OF A  
TOPICAL REPORT ON THE PL<sub>μ</sub>S 32 DISTRIBUTED CONTROL SYSTEM**

**OCTOBER 21, 2009**

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ENCLOSURE