

September 22, 2005

MEMORANDUM TO: Jennifer L. Uhle, Chief  
Materials Engineering Branch  
Division of Engineering Technology  
Office of Nuclear Regulatory Research

THROUGH: Deborah A. Jackson, Section Leader */RA Wallace E. Norris for/*  
Aging and Inspection Technology Section  
Materials Engineering Branch  
Division of Engineering Technology  
Office of Nuclear Regulatory Research

FROM: Wallace E. Norris, Project Manager */RA/*  
Aging and Inspection Technology Section  
Materials Engineering Branch  
Division of Engineering Technology  
Office of Nuclear Regulatory Research

SUBJECT: MEETING SUMMARY - 2005 NDE TAG MEETING

A meeting of the Nondestructive (NDE) Task Advisory Group (TAG) was held at Pacific Northwest National Laboratory (PNNL) on August 30 and 31, and September 1, 2005. The purpose of the meeting was to: provide to the Office of Nuclear Reactor Regulation and Regional participants an overview of the NDE and inservice inspection (ISI) related research programs and results to date to ensure that RES is meeting NRR and Regional needs; and maintain effective communications between NRR, RES, and regions on NDE and ISI issues.

Attached is a summary discussing highlights of the three-day meeting. PNNL will be providing a CD to all of the participants containing all of the presentations.

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DISTRIBUTION:

MEB r/f	DET r/f	R. Barrett	C. Moyer	A. Hiser	T. Chan
L. Lund	F. Cherny	M. Mitchell	D. Naujock	S. Dinsmore	M. Rubin
M. Tschiltz	M. Mayfield	B. Bateman	B. Boger	A. Blough	J. White
E. Gray	V. McCree	M. Lesser	S. Vias	J. Fuller	C. Pederson
D. Hills	T. Bilik	D. Chamberlain	C. Paulk	W. Sifre	S. Doctor
M. Anderson	G. Schuster	S. Cumblidge	S. Richards		

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OFFICE	RES/MEB/DET	RES/MEB/DET	SISP Review	SISP Review
NAME	Norris	Jackson	Originator - W. Norris	Branch Chief - J. Uhle/ AL for
DATE	09/20/05	09/20/05	09/20/05	09/20/05

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**MEETING SUMMARY - NDE TAG MEETING 2005**

A NDE Task Advisory Group (TAG) meeting was held at PNNL on August 30 and 31, and September 1, 2005. The overall purpose of the meeting was to: provide an overview of the research programs and results to date to ensure that RES is meeting NRR and regional needs; and maintain communication between NRR, RES, and regions on NDE issues. Participants were:

**NRR**

Terence Chan  
Louise Lund  
Donald Naujock  
Stephen Dinsmore (video conference)

**RES**

Wallace Norris  
Deborah Jackson  
Carol Moyer

**Region I**

Hal Gray  
John White

**Region II**

Steven Vias  
Justin Fuller

**Region III**

David Hills  
Tom Bilik

**Region IV**

Chuck Paulk  
Wayne Sifre

**PNNL**

Steven Doctor  
Michael Anderson  
Stephen Cumblidge  
George Schuster

**ANL**

Sasan Bakhtiara (video conference)  
Dave Kupperman (video conference)

PNNL has collected the presentations (including detailed attendance list [addresses, phone numbers, etc]) and will be transmitting a CD to all participants. The meeting agenda is provided below.

#### 8/30/05 Highlights

- Y6604 Program Overview: solving NDE inspection difficulties for coarse-grained material will more than likely solve inspection problems for PWR Class 1 centrifugally cast stainless steel, far-side inspection of dissimilar metal welds, and far-side inspection of austenitic stainless steels.
- Analysis of flaw density and distribution in reactor pressure vessels has improved dramatically the knowledge base for revision to the pressurized thermal shock rule (one of biggest uncertainties in the 1980s evaluation was flaw distribution - it was unknown so estimates were used).
- In the 1980 time frame, the probability of detection of a 4 mm through-wall flaw in austenitic stainless steel was about 55%. As a result of PNNL performance demonstration efforts (improving inspector's ability to detect flaws), it is now about 88%.
- PNNL investigation has concluded that there are currently twice as many ineffective ISI inspections as effective inspections for detecting flaws before they exceed 75% through-wall.
- At SMiRT-18 (2005), the French reported that statically cast elbows in steam generators (SG) have degraded to 1/3 of the design fracture toughness due to thermal embrittlement; they have embarked on replacing them.
- ANL discussed the software being developed for signal processing and analysis of SG examination data (sizing flaws). Variability of analyst results has always been an issue (sizing in particular). Regional participants asked if they could help Alpha or Beta test the software; and if ANL could provide training. Inspectors stated that a tool is needed to help with SG exams. ANL personnel are going to relay request to the RES project manager [for the next meeting, the RES project managers not at the TAG meeting should tie-in via video conference]. Louise Lund, Office of Nuclear Reactor Regulation, Associate Director For Project Licensing and Technical Analysis, Division of Engineering, Materials and Chemical Engineering Branch, discussed SG regulatory issues.

#### 8/31/05 Highlights

- Stephen Dinsmore, Office of Nuclear Reactor Regulation, Associate Director For Project Licensing and Technical Analysis, Division of Systems Safety and Analysis, Probabilistic Safety Assessment Branch, via video conferencing, summarized current risk-informed ISI programs. Questions from Regional inspectors focused on which welds a licensee examines under RI-ISI versus traditional Section XI programs since the percentage of welds examined in some cases is quite lower (e.g., for Class 1, the percentage of welds examined has gone from 25% to approximately 7% making NRC overview of these programs more critical). Steve clarified that RI-ISI and traditional programs use the

same Section XI provisions for weld selection. The difference is that traditional programs have a set sampling percentage based on engineering judgment. RI-ISI programs on the other hand use risk criteria to concentrate examinations on the high risk locations.

It is likely that the NRC will approve the ASME Code Cases/Appendix addressing risk-informed examination of piping which would mean that NRR would no longer review each licensee's RI-ISI program prior to implementation. Regional participants pointed out that under the BWRVIP program, licensees committed to implementation and the agency put its trust in the industry. To date, not all licensees are fully complying with the BWRVIP documents. Many aspects of RI-ISI programs are variable, dependent on license implementation and decision making. Regional participants requested that NRR consider this in its acceptance of the ASME provisions to preclude a BWRVIP type situation.

- Donald Naujock, Office of Nuclear Reactor Regulation, Associate Director For Project Licensing and Technical Analysis, Division of Engineering, Materials and Chemical Engineering Branch, discussed regulatory issues related to the Performance Demonstration Initiative at the EPRI NDE Center and the ASME Code, Section XI, Appendix VIII.
- Region III has implemented a website to post inspection related information. Region III participants agreed to act on behalf of all four regions to facilitate information exchange. For example, it was suggested that one use of the web site would be information exchange on operating experiences. Also, Justin Fuller from Region II developed an Inspection Aide (Best Practices Paper) for the "Boric Acid Corrosion Control Program (BACCP)." The web site will also be used to post such documents.
- GE-San Jose has a BWR vessel mockup that industry inspection personnel use for training. NRR and RES staff have expressed interest in the training. Because there are many new inspectors in the regions, regional participants requested that training for NRC staff be pursued at this facility.
- Given the many inspection issues associated with systems and components addressed under Inspection Procedure (IP) 71111.08 [e.g., repair/replacements, boric acid, welding, upper head] and that only 35 hours in total are allotted to this IP, the inspectors believe that additional guidance is needed. Currently, many inspectors are not sure how to best prioritize their time.
- Some regional inspectors indicated that it would be very helpful if a web page or e-mail group could be developed for NDE and inspection related questions. This would assist in disseminating information from discussions and outcomes between several individuals from one region and NRR to all interested NRC staff.

#### 09/01/05 Highlights

- Justin Fuller from Region II discussed his BACCP paper and findings from inspections. For example, licensees are not taking Mode changes into account. Also, some licensees are taking credit for general employee training relative to BAC programs

rather than taking specific training such as the EPRI developed BACCP training. INPO has begun systematic reviews of licensee practices which has had an effect on improving those licensee's BACCPs. Licensees have committed to implementing the WCAP 18 months from January 2005.

- Terence Chan, Office of Nuclear Reactor Regulation, Associate Director For Project Licensing and Technical Analysis, Division of Engineering, Materials and Chemical Engineering Branch, discussed determination of operability issues, specifically flaw evaluation and operational leakage. An updated procedure is expected by the end of 2005. Relative to a recent request by a licensee, it was reiterated that temporary repairs are not permissible coming out of the outage.

#### *TAG Meeting Feedback*

Participants agreed that these meetings are very useful. Bringing NRC ISI/NDE staff together to discuss items such as research results, field experiences, ASME Code activities, and EPRI PDI qualifications is invaluable. The information exchanges provide insights from one item that can be applied to other items to make NRC ISI/NDE activities more effective and efficient. Relative to frequency, the participants agreed that these meetings should occur every 18-24 months. It was determined that the best time frames for the next meeting would be December 2006/January 2007 or May/June 2007. Regional attendees indicated that it is difficult for the regions to send more than a few participants to meetings at PNNL given the cost of the trip and connections required. Additional participation would be likely if the meetings were held at more accessible locations. Meeting attendees noted that participation from the Office of Nuclear Reactor Regulation, Associate Director for Inspection and Programs, Division of Licensing Project Management, would have been beneficial.

## **NRC NDE TECHNICAL ADVISORY GROUP MEETING**

### **Tuesday, August 30, 2005**

8:30 - 8:45 am	Introductions, Administrative Issues	Wally Norris Steve Doctor
8:45 - 8:50 am	Purpose/Objectives of TAG Meeting	Wally Norris
8:50 - 10:00 am	Overview - NDE Research Programs at PNNL	Steve Doctor
10:00 - 10:30 am	BREAK/Move to Video Conference Room	
10:30 - 12:00 pm	Steam Generator NDE Research Program - ANL Steam Generator Issues/Assessments - NRR Replacement Issues/Lessons Learned	Sasan Bakhtiara Louise Lund Regional Staff
12:00 - 1:00 pm	Lunch	
1:00 - 1:15 pm	Director of Office of Nuclear Regulatory Research	Carl Paperiello
1:15 - 1:30 pm	Visual Examination Research - PNNL	Stephen Cumblidge
1:30 - 2:00 pm	CRDM NDE - PNNL	Stephen Cumblidge
2:00 - 3:00 pm	Phased-Array and SAFT Research - PNNL Development Work CASS	Mike Anderson
3:00 - 3:15 pm	BREAK	
3:15 - 4:30pm	Laboratory Demonstrations	PNNL Staff
4:30 - 5:00pm	Regional Feedback on RES NDE Program Need for revisions to RES NDE program to address specific issues	

### **Wednesday, August 31, 2005**

8:30 - 10:00 am	Risk-informing - Overview Risk-informed inspections Inspection activities	Stephen Dinsmore  All
10:00 - 10:30 am	BREAK/Return to meeting room	
10:30 - 11:30 am	Update PDI/Appendix VIII/50.55a	Don Naujock
11:30 - 12:00 pm	PDI Implementation Issues	Regional staff
12:00 - 1:00 pm	LUNCH	

1:00 - 2:00 pm	ASME Code NRC/lab committee representatives NRC contacts Post-inspection questions/feedback ASME Interpretations	Wally Norris Terence Chan Regional staff
2:00 - 4:45pm	ISI procedures/guidance for inspectors 50.55a inspection guidance 10-year ISI instructions/procedure/guidance  BREAK  RI-ISI SG Information/tools to assist inspectors Consistency between regions	Inspection Program Management/All

**Thursday, September 1, 2005**

8:30 - 9:30 am	Boric Acid Corrosion Control Program Inspection	Justin Fuller
9:30 - 10:30 am	Operability for Degraded Conditions (Guidelines That Have Been Developed Operable/Inoperable) Determination of Adequacy of Structural Integrity Assessment	Terence Chan
10:30 - 10:45 am	BREAK	
10:45 - 11:30 am	PNNL BWR Core Shroud Weld Investigation	George Schuster
11:30 - 12:00 pm	Inspector training State-of-the-art NDE GE Palo Alto facility - vessel mockup	All
12:00 - 1:00 pm	LUNCH	
1:00 - 2:00 pm	Information Exchange within NRC Points of Contact Procedures Research Results PNNL Assistance to Regional Inspectors	All
2:00 - 4:00pm	TAG meeting discussion Workshop successes/improvements Next meeting	