**Kusnick, Joshua**

| | |
|---|---|
| **From:** | Stevens, Gary |
| **Sent:** | Tuesday, February 19, 2013 7:31 AM |
| **To:** | 'bamforwh@westinghouse.com'; Stevens, Gary; 'hdchung@kins.re.kr'; 'russell.cipolla@intertek.com'; 'guy.deboo@exeloncorp.com'; 'rdyle@epri.com'; 'buchi.ganta@power.alstom.com'; 'tgriesbach@structint.com'; 'hasegawa-kunio@jnes.go.jp'; 'kiminobu_hojo@mhi.co.jp'; 'daniel.hopkins@swri.org'; 'koji_koyama@mhi.co.jp'; 'drlee@babcock.com'; 'hardayal.mehta@gene.ge.com'; 'rmcgill@structint.com'; Mitchell, Matthew; 'katsumasa.miyazaki.xs@hitachi.com'; 'rpace2@entergy.com'; 'sranganath@sbcglobal.net'; 'doug.scarth@kinectrics.com'; 'truong.v.vo@dom.com'; 'keithwich@comcast.net'; 'steven.xu@kinectrics.com'; 'thardin@epri.com' |
| **Cc:** | 'yschang7@skku.edu'; 'claude.faidy@gmail.com'; 'Ramiz.Gilada@luminant.com'; 'fdhayes@comcast.net'; 'fuminori.iwamatsu.vt@hitachi.com'; 'kashima@creipi.denken.or.jp'; 'donald.sampson@ge.com'; Benson, Michael; Rudland, David |
| **Subject:** | SGES November Meeting Minutes |
| **Attachments:** | SGES Minutes 02-13-2013.doc |

Dear SGES Members and Visitors:

The minutes from the February 2013 meeting of the ASME Section XI Sub-Group on Evaluation Standards (SGES) in Los Angeles, CA are attached. Due to the file size of the attachments, they are not included. The entire meeting minutes including the attachments can be obtained from the ASME web site as follows:

- Go to the following link: http://cstools.asme.org/csconnect/
- Login in using your Username and Password
  (NOTE: If you have not used C&S Connect before, please contact the ASME Section XI Secretary, Ryan Crane, at craner@asme.org, 212-591-7004)
- Select the **My Committee Page** tab.
- Click on the link for **Subgroup on Evaluation Standards (SGES) (SCXI)**
- Click on the link for **Minutes** under **This Committee** on the left side of the page.
- The link to the minutes will appear as **SGES February 2013 Meeting Minutes**. Click and you will be prompted to Open or Save the minutes.

The following actions were recorded during the meeting beyond those associated with the normal progress of action items:

- **Russ Cipolla get the Master Curve Code Case action on the SC XI agenda for the May meeting.**

The agenda for the May meeting in Miami will be sent under separate cover a few weeks prior to the meeting.

Regards,
Gary

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***Gary L. Stevens, P.E.***
Senior Materials Engineer
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
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D/44

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Released [illegible]
ASME Code [illegible] - Public

# COMMITTEE CORRESPONDENCE


| | | | |
|---|---|---|---|
| **COMMITTEE:** | SUBGROUP ON EVALUATION STANDARDS | **ADDRESS WRITER CARE OF:** | Gary L. Stevens, P.E.<br>Senior Materials Engineer<br>U.S. Nuclear Regulatory Commission<br>M/S CSB-05C07M<br>Washington, DC 20555-0001 |


**DATE:** November 12, 2012

**SUBJECT:** November 7, 2012 Meeting Minutes

**TO:** Subgroup Members

The meeting minutes from the November 7, 2012 meeting of the Subgroup on Evaluation Standards (SGES) are attached. The next meeting of the SGES will be on February 13, 2013 in Los Angeles, CA. The hotel information is:

Westin Bonaventure Hotel and Suites
404 South Figueroa Street
Los Angeles, CA 90071
Reservations: (800) 937-8461 or (213) 624-1000
Rate: $169/night, single/double occupancy
Reservation Cut-off Date: Friday, January 11, 2013

Future meetings are as follows:

**October 28-November 1, 2013**
Westin Peachtree Plaza
$169/night
Atlanta, GA

**August 18-22, 2014**
Hyatt Regency Washington
$189/night
Washington, DC

**May 13-17, 2013**
Hyatt Regency Miami
$165/night
Miami, FL

**February 10-14, 2014**
Sheraton S. D. Hotel & Marina
$189/night
San Diego, CA

**November 17-21, 2014**
Orlando World Center Marriott
$170/night
Orlando, FL

**August 12-16, 2013**
Le Centre Sheraton
$169 CAN/night
Montreal, ON, Canada

**May 12-16, 2014**
Hyatt Regency Bellevue
$189/night
Bellevue, WA

Sincerely,
Gary L. Stevens
(301) 251-7569
E-mail: gary.stevens@nrc.gov

# Meeting Minutes
# ASME Section XI
# Subgroup on Evaluation Standards
November 7, 2012, Pointe Hilton Squaw Peak Resort, Phoenix, AZ

## INDEX OF ATTACHMENTS

- **Attachment 1** = Agenda
- **Attachment 2** = Attendance List
- **Attachment 3** = 09-182, Proposed Master Curve Code Case
- **Attachment 4** = 02-3759, Presentation on Proposed Flaw Tolerance Approach for CASS Piping
- **Attachment 5** = 02-3759, Proposed Code Case for Flaw Tolerance Approach for CASS Piping
- **Attachment 6** = 02-3759, PVP Background Paper on Proposed Flaw Tolerance Approach for CASS Piping
- **Attachment 7** = 08-1642, Proposed Code Change for Appendix G Nozzles
- **Attachment 8** = 12-795, Letter Ballot Comments for Acceptance Standards for Austenitic Steel Heat Exchangers, IWC-3510
- **Attachment 9** = 12-1602, SC XI Agenda Form for Use of SGES Nonmandatory Appendices
- **Attachment 10** = 12-1602, Proposed Code Change for Use of SGES Nonmandatory Appendices
- **Attachment 11** = 12-40, White Paper for Code Case N-648-2, "Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles"
- **Attachment 12** = 12-40, Proposed Code Case N-648-2, "Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles"
- **Attachment 13** = 12-40, Features of Code Case N-648-2, "Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles"
- **Attachment 14** = Presentation on Japanese Government Nuclear Reorganization
- **Attachment 15** = SGES Changes for Table IWA-1600-1

Warren Bamford opened the meeting at 8:30 a.m. The agenda is provided as **Attachment 1**. The attendance list is provided in **Attachment 2.**

## AGENDA

- There were three new business items added to the agenda. **Attachment 1** reflects these changes.

## MINUTES APPROVAL

- The minutes were approved with no changes.

## ADMINISTRATIVE ITEMS

- Membership
  - Warren reported that there were four relevant membership items:
    - Reddy Ganta was added as a member to WGPFE, WGFE, and SGES.
    - Sam Sham was terminated from WGPFE and SGES.
    - Yutaka Imamura was changed from "Member" to "Alternate" for Koji Koyama on SGES.
    - Bob McGill will be added as a new member for SGES (Warren will try to get Bob added to the SC XI agenda for tomorrow, as this was overlooked for the Executive Committee XI meeting yesterday).

- Based on input from WGPFE at the end of the meeting, Gary provided input to SC XI to drop Bilal Dogan as a member from WGPFE as he recently passed away.

- Executive Committee Report (Warren Bamford, Gary Stevens, and Robin Dyle)
  - Met Tuesday afternoon from 3:00 to 8:30 pm.
  - Membership: See above for membership issues related to SGES and the supporting WGs.
  - Tim Lupold (NRC) presented eddy current needs in Code Case N-773 that should be adopted into other Code Cases associated with overlay repairs (e.g., N-766 and N-770-1).
  - Nonmandatory Appendices: Activity continues on revising the nonmandatory appendices as guidance, etc. SG NDE and SGES have the only remaining actions. The SGES action associated with this item is discussed below. The proposed changes to the SGES Appendices are complete and on the SC XI agenda for tomorrow so that all changes will be included in the 2013 Edition.
  - Rick Swayne described an editorial action to correct different forms of "bolts and bolting" terminology throughout Section XI. All such occurrences will be corrected to "bolts and studs" for consistency.
  - An issue at Doel Nuclear Power Station Unit 3 in Belgium was discussed. Inspections were performed for RPV under-clad cracks. As a part of these examinations, many (over 9,000) laminar indications were detected within the lower shell ring forging. There is a great deal of media sensitivity on this subject. Both NRC and Tractebel discussed this issue at several meetings and provided updates. The NRC will hold a public meeting on this topic to collect relevant information from the U.S. industry on January 8, 2013.
  - The Gravelines Nuclear Power Station in France experienced one bottom-mounted instrument (BMI) nozzle indication. As a result, the French regulatory authority has required that all plants inspect BMI nozzles. Previously, the regulator decided that no inspections were required because the BMI penetrations operate at $T_{cold}$. To-date, 5 other plants have inspected and no additional indications have been found. Additional plants will be inspecting in the future.
  - ASME Certification marks (formerly known as "Code stamps"): Stamps for nuclear components have been replaced with a new common certification mark. However, for nuclear components, the NRC has not yet approved the Code Edition that incorporates the new certification mark, nor have they approved the Code Case that justifies use of the new certification mark in lieu of the old Code stamps. This is problematic in that some plants have already installed replacement parts that use the new certification mark, which vendors are required to use. The NRC and ASME management discussed this issue the August semi-annual ASME/NRC Management Meeting and the NRC has established an action plan to address this issue. In short, no enforcement actions will be imposed on those who have used the new marks until the issue is formally addressed. Refer to the NRC Report to SC XI for details.
  - Decommissioning Plants: A number of issues related to inspections and other activities associated with decommissioned plants were raised by Dominion over the planned shutdown of Kewaunee in March 2013. At issue is whether there is a need for Section XI to define requirements for such plants. A handful of plants have shut down in the past, so the NRC took an action to find out what requirements are in place and to report back to EC XI in February. EC XI will then decide if further actions are warranted.

- Table IWA 1600-1 is under development. Refer to the discussion under "New Business" below for further information on this topic.
- Nuclear Plant Aging Management Issues: At the NPAM meeting on Monday, discussion occurred over whether Section XI requirements are needed for various aging management issues, i.e., one-time examinations. EC XI decided that if the utilities need guidance such as this, they should send members to the ASME meetings that are willing to develop such guidance for incorporation into the Code.
- Joint JSME/ASME Committee. This committee has decided to work together to address issues associated with high temperature reactors. Members are being solicited for this group.

- Honors
  - None.

**ACTION ITEMS**

09-182: Code Case to Incorporate Full Master Curve Approach (Cipolla)

- Bill Server reported.
- The proposed Code Case for this item is included in **Attachment 3.**
- The proposed Code Case passed at WGFE and WGOPC.
- Two corrections were identified during the discussion of this item, as marked in Attachment 3.
- The item was motioned and seconded. The vote was unanimous.
- This item will be placed on the SC XI agenda for the February meeting.

02-3759: Cast Stainless Steel Inspection Issues (Griesbach)

- Tim Griesbach reported.
- The TG on CASS met on Monday.
- A presentation was given to the TG (see **Attachment 4**).
- The latest version of the draft Code Case on methodology to evaluate flaws was discussed at the TG and the WGPFE and is included as **Attachment 5.**
- A supporting PVP background paper that describes the work performed to-date was provided (see **Attachment 6**).
- The fracture mechanics and NDE portions of this effort are now converging. The item is not quite ready for voting as items are still being finalized.
- A Technical Basis Document is being assembled. Another PVP paper for 2013 is being prepared.

05-248: Implementation of Code Case N-597 (Scarth)

- Gery Wilkowski reported.
- This item is still being worked and will require a few more meetings before it is finalized for voting.

08-1595: Revision to Article A-3000 for K Calculation Methods for Surface and Subsurface Flaws (Cipolla/Miyazaki)

- Russ Cipolla reported.
- The proposal was updated to include Action 10-783 below.
- This item is now combined with Action 10-783, and will be tracked as Action 10-783 moving forward. Drop this item from the agenda.

**"TOP TEN" ITEM!!!**

**10-783: Revise K Calculation Methods for Circumferential ID Flaws in Cylinders (Lee)**

- **Darrell Lee reported.**
- **This item was merged with Action 08-1595 above to simplify these two items into one action.**
- **This item will be finalized for voting at the February meeting.**

08-1642: Revision to Appendix G to Include Nozzle Discontinuity Solutions (Stevens)

- Gary Stevens reported.
- The latest proposed Code Action for this item is included in **Attachment 7**.
- This item was presented and discussed yesterday at WGFE. There were no comments.
- The discussion noted that the "T" term used for thickness should be checked for consistency with the rest of Appendix G, and the equation numbers should be checked for consistency with Appendix G. Gary will review and fix accordingly.
- The item was motioned and seconded. The vote was unanimous.
- This item is on the SC XI agenda for tomorrow. Gary will read in any changes necessitated from the SGES discussion.

09-170: Integral Attachments (Dyle)

- Robin Dyle reported.
- No progress has been made on this item.
- Robin expects to have something drafted for the February meeting.

11-1991: IOU from Wirtz's Withdrawn Inquiry 10-96 (Dyle/Wirtz)

- Robin Dyle reported.
- Robin and Chuck Wirtz have started work on this item.
- Robin expects to have something drafted for the February meeting.

12-552: IWA-9000 Glossary definitions for "evaluation," "engineering evaluation," and "analytical evaluation" (Bamford)

- Gary Stevens reported.
- These 3 terms are used pervasively throughout Section XI (over 600 times total). They are used inconsistently, and there aren't any definitions for these terms in IWA-9000.
- Warren Bamford drafted definitions for these terms earlier this year and distributed those definitions to a few individuals for comment. Extensive comments were received.
- This item was discussed yesterday at EC XI; after much discussion, it was decided that SGES would take the lead, and that all other Section XI SGs would provide an individual to help with this effort since this item affects all portions of Section XI. This small "task group" would work this item off-line.
- **ACTION: Gary will provide a mark-up of Section XI identifying all uses of the "evaluation" terms and Warren's definitions to the "task group" for review and action.**
- Gary will report on progress at the February meeting.
- This item is expected to take a while to complete given the scope of the change to Section XI and the number of SGs involved.

12-841: Operational Leakage – Code Case N-513-4 (McGill/Griesbach)

- Tim Griesbach and Bob McGill reported.
- Phase I of Operational Leakage is complete - Nonmandatory Appendix U.

- For Phase II, WGPFE is revising Code Case N-513-4 to include elbows, reducers, tees, and heat exchangers with external tubing. In addition, the maximum pressure for application of the case is being increased from 275 to 375 psig or possibly higher.
- The hope is to vote on this item at the February meeting. Bob McGill will present the Code Case at the February SGES meeting.
- The WG is reviewing vessel and tanks (Code Case N-705) to see if similar changes are needed.
- WGPT is also putting together an action, but the specifics of that action are unknown.
- **ACTION: Tim will get with Dan Lamond to develop a coordinated status report for Operational Leakage for SGES and EC XI for the February meeting.**
- A new Action Item No. will be needed for other changes made to the Code on this subject after Code Case N-513-4 is approved.
- Phase III will look at leakage in Class 1 systems, but is not being worked on yet. This aspect of this topic will be discussed in the status report above.
- The applicability index was updated for N-513-3; however, at SC XI on Thursday after the SGES meeting, that change was deleted because the Code Case itself has an applicability statement included – so, to change the applicability index would cause a conflict. This needs to therefore be fixed in N-513-4.

12-842: Code Case N-694 on Evaluation of Flaws in PWR Reactor Head Nozzles (G. DeBoo)

- Guy DeBoo reported.
- This item missed the SC XI agenda for the August meeting, but is on the SC XI agenda tomorrow.

12-795: Acceptance Standards for Austenitic Steel Heat Exchangers, IWC-3510 (T. Vo)

- Russ Cipolla reported.
- This item received negatives/comments on the SC XI ballot.
- **Attachment 8** provides the SC XI negatives/comments and responses and the revised action.
- The item was discussed and motioned and seconded as-is. The vote was unanimous.
- This item is on the SC XI agenda for tomorrow.

12-1602: Use of Nonmandatory Appendices A, C, E, G, H, K, L, and O (W. Bamford)

- Warren Bamford reported.
- Based on the markups compiled by Angah Miessi, Gary Stevens re-compiled all changes made to the first page of each appendix into one action and obtained an Action Item No. (see **Attachments 9 and 10**).
- The item was discussed and motioned and seconded as-is. The vote was unanimous.
- This item is on the SC XI agenda for tomorrow.

12-1411 Clarification of IWB-3514 Acceptance Standards for Flaws in SCC Susceptible Materials (S. Xu)

- Russ Cipolla and Gery Wilkowski reported.
- This item passed SGES at the May meeting and is on the SC XI agenda for tomorrow.

12-zzzz: Effects of Residual Stress on Flaw Evaluation (Bamford)

- Warren Bamford reported.
- Guy DeBoo's Task Group on Reference Crack Growth Curves is addressing this item by developing a Nonmandatory Appendix for WRS analysis guidance.

- Continuing effort -- it's too early to obtain an action number until things get more defined.

"TOP TEN" ITEM!!!

**11-4: Code Case N-809, "Reference Fatigue Crack Growth Rate Curves for Austenitic Stainless Steels in Pressurized Reactor Water Environments" (Cipolla)**

- No report but this item was added to the minutes/agenda for future tracking as it is a "Top Ten" item. This item is being worked in the TG on Crack Growth.

## INQUIRIES

- There were no inquiries.

## RECURRING ITEMS

**R1. Errata**

- There were no new errata identified.

**R2. Fatigue Issues (Stevens)**

- EPRI's EAF Advisory Panel has been replaced with a new Section III WG called the Working Group on Environmental Fatigue Evaluation Methods. The WG met for the first time on Monday from 2:00 to 3:30 pm. Jack Cole led the meeting.
- The WG established a membership of 13 members and drafted a charter. The charter includes fatigue crack initiation plus fatigue crack growth since one of the items they will be working on is a Section III Flaw tolerance Code Case similar to Section XI Nonmandatory Appendix L.
- The WG will send out a Letter Ballot to select a Chairman. After that, they will ask for a volunteer to be secretary.
- The initial agenda for the WG will be to pick up the Section III Fatigue Action Plan developed in 2008, update that list, and continue to work those items.
- There is some confusion over the relative jurisdictions of this group and the SG on Fatigue Strength. No clarifications were made to these jurisdictions during the meeting.
- SGFS met on Tuesday a.m., and there were presentation made by the French and the Germans on recent EAF work performed in those countries.
- EPRI has restructured their EAF activities into two parts: (1) a near-term effort for license renewal and operating plants headed by Ken Wolfe with support from Shannon Chu, and (2) a longer-term effort directed at research activities identified by EPRI's Gap Report headed by Jean Smith with support from Letitia Midmore.

**R3. Working Group Reports**

- WGPFE (Scarth)
  - Gery Wilkowski reported
  - There was discussion at the WG about heat exchanger leakage and whether that action should go to WGFE instead. The PM (Truong Vo) was absent.
  - The TG on HDPE is finally proceeding under the direction of Phil Rush.
- WGOPC (Griesbach)
  - Nothing further to report.
- WGFE (Cipolla)
  - There was further discussion about possible modifications to Appendix K and incorporation of material from Regulatory guide 1.61; a presentation was given by Michael Benson (NRC). No decisions have been made by the WG yet. There is need to review the history of Appendix K to determine why the toughness data present in RG 1.61 was not incorporated into Appendix K before proceeding with this item. Russ

Cipolla has the lead on this item; Benson is in the process of getting his paper work in to become a member of WGFE and will help with this item.

**R4. Task Group Reports**

- **Task Group on HDPE Pipe (Scarth)**
  - Gery Wilkowski reported.
  - The TG met on Monday and is finally proceeding under the direction of Phil Rush.
- **Task Group on Evaluation of Beyond Design Basis Events (Pace)**
  - Ray Pace reported.
  - The TG met on Tuesday from 4:00 to 6:00 pm.
  - Tim Griesbach found an old draft Code Case on this topic from 1984 developed by Don Landers that was discussed.
  - Ray Pace presented the Entergy fleet post-earthquake procedure for inspections.
  - EPRI recently published a report on the North Anna earthquake that the TG will be reviewing.
  - The TG first actions will be to develop a Code Case for reactor pressure vessel and reactor coolant loop and what to do to start a plant back up after an earthquake. Hal Gustin volunteered to draft the enabling words.
  - The TG will not use the 1984 Code Case; it has good information in it, but it needs to be completely reworked.
  - Gery Wilkowski will draft a white paper on margins available above SSE.
  - Paul Donavin will draft up some proposed initial inspection plans.
  - Collectively, these items will provide a strawman on where the TG is headed.

**R5. Approved Action Items Retained Until Printed**

- **"TOP TEN" ITEM!!!! -- 05-1328: Alternative Acceptance Criteria and Evaluation Procedure for Flaws in Ferritic Steel Components Operating in the Upper Shelf Range (Cipolla)**
- (Errata) Keep Appendices proof mark-up issues on agenda until published.
- (Errata) N-641 identified by Nathan Palm (Westinghouse) -- Warren provided this item to Ryan Crane for processing at the February meeting.
- 03-1377: Code Case for $RT_{T0}$ **(Cipolla)**
- 05-1328: Alternative Acceptance Criteria and Evaluation Procedure for Flaws in Ferritic Steel Components Operating in the Upper Shelf Range **(Cipolla)**
- 07-1307: Class 1, 2, and 3 Flaw Evaluation for Pipes Less Than NPS 4" **(Cipolla)**
- 09-159: EPRI-MRP-BWRVIP Risk Informed Appendix G Work **(Server/Griesbach)**
  - Need to verify that editorials submitted in November 2011 SC XI meeting get implemented.
- 09-794: Operational Leakage **(Griesbach)**
- 10-915: Evaluation of Metal Loss in Class 2 and 3 Metallic Piping Buried in a Back-filled Trench **(McGill/Scarth)**
- 11-61: Change to IWB-3112/IWC-3112 to Allow Evaluation of Subsurface Flaws Found During Pre-Service Inspections **(Stevens)**
- 11-207: Improvements in Evaluation of Flaws in PWR Reactor Head Nozzles (Guy DeBoo)
- 11-1791: Change to IWB-3112/IWC-3112 to Allow Evaluation of Subsurface Flaws Found During Pre-Service Inspections **(Stevens)**
- 11-1996: (Errata) An editorial change to Appendix G and a Table note correction for Appendix A.

**NEW BUSINESS**

- 12-40: Code Case N-648-2, "Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles" (R. Rishel)
  - Rick Rishel (WesDyne) reported.
  - Proposed Code Case N-648-2 and supporting documents were presented (see **Attachments 11 – 13**).
  - This item was originally written to address nozzle inner radius examinations for operating plants, so it only includes inservice examination requirements.
  - It is now desired to apply this Code Case to new plants so the Code Case is being revised to adopt preservice examination requirements.
  - The changes to the Code Case involve editorial improvements plus the addition of the preservice examination requirements.
  - The item was discussed and motioned and seconded as-is. The vote was unanimous.
- Dr. Kunio Hasegawa (JNES) gave an updated presentation on the restructuring of the Japanese nuclear regulator (see **Attachment 14**).
  - A new regulatory structure became effective in September 2012.
  - The key motivation is to ensure separation between nuclear power promotion and regulation responsibilities. New entities were formed.
  - The details of the structure are provided in the attachment. Further changes will occur over the next few years.
- References to Other Standards, Table IWA-1600-1 (Stevens)
  - Kevin Rhyne of WGGR led the effort for this item.
  - This was discussed at EC XI; there was recent e-mail discussion on the SGES aspects of this item.
  - Gary Stevens took the action at EC XI to address the needed changes to this table with SGES.
  - Gary developed a proposed markup of the changes needed for the SGES items (see **Attachment 15**).
  - The item was discussed and motioned and seconded. The vote was unanimous.
  - Gary sent this item to Ryan Crane and Kevin Rhyne for inclusion into Kevin's action, which is on the SC XI agenda for tomorrow.

The meeting was adjourned at ~11:00 a.m.

(February 13 - 14, 2013
Public ASME code meeting info.

**NRC Report**
**February 2013 – Los Angeles, CA**

1. Amendment to 10 CFR 50.55a – ASME Code Edition/Addenda

*ASME Edition/Addenda*

The NRC has approved Section III, Division 1, and Section XI, Division 1, of the *Boiler and Pressure Vessel Code* through the 2008 Addenda (76 FR 36232).

*Proposed Rule – 2009 through 2011 Edition/Addenda*

The proposed rule that would incorporate the 2009 Addenda, the 2010 Edition, and the 2011 Addenda is scheduled for publication in summer 2013 (hereafter called the edition rulemaking). The NRC staff is currently revising the proposed edition rulemaking to be consistent with the new Office of the Federal Register (OFR) guidelines addressing the format of rulemakings and also to be consistent with the changes that will be proposed in the rulemaking addressing the incorporation into 10 CFR 50.55a by reference of the revised ASME Code Case regulatory guides (hereafter called the Code Case rulemaking (see No. 2 below)). The proposed Code Case rulemaking effort is the lead rulemaking with respect to addressing the new OFR guidelines. Accordingly, the proposed edition rulemaking will be published after the proposed Code Case rulemaking.

2. ASME Code Case Rulemaking/Regulatory Guides

The latest NRC-approved versions of the ASME Code Case Regulatory Guides (RG) are: RG 1.84, Revision 35, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," and RG 1.147, Revision 16, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," (75 FR 61530).

Draft Revision 36 to RG 1.84, draft Revision 17 to RG 1.147, draft Revision 1 to RG 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," and draft Revision 4 to RG 1.193, "ASME Code Cases Not Approved for Use," are scheduled to be published for public comment in February 2013 in conjunction with the proposed Code Case rulemaking. The draft guides will address Supplements 1 through 10 to the 2007 Edition. *The risk-informed Code Cases in draft RG 1.192 have been clarified to make them consistent with current generic NRC risk-informed guidance.* The issues raised by Raymond A. West in a petition for rulemaking dated December 14, 2007, and revised on December 19, 2007, will be addressed in the proposed Code Case rulemaking. The proposed Code Case rulemaking and guides are scheduled for publication in spring 2013.

The NRC staff has completed its review of Supplements 1 – 11 to the 2007 Edition and Supplement 0 through Supplement 8 to the 2010 Edition. Supplement 9 to the 2010 Edition has been reviewed by the staff, and the review of Supplement 10 to the 2010 Edition will be initiated in mid-February 2013.

Draft Revision 37 of RG 1.84, draft Revision 18 of RG 1.147, and draft Revision 5 of RG 1.193 have been initiated. The draft will address the Code Cases published by the ASME in Supplement 11 to the 2007 Edition through Supplement 8 to the 2010 Edition. It is expected that

these drafts will be published in the *Federal Register* for comment within a few months after Revision 36 of RG 1.84, Revision 17 of RG 1.147, and Revision 4 of RG 1.192 are published as final guides.

3. ASME Certification Mark

The ASME representatives at the August 17, 2012, NRC/ASME management coordination meeting requested that the NRC address the regulatory transition from the Code Symbol Stamps (CSS) to a Certification Mark (CM) in a timely manner as licensees would be ordering replacement equipment with the CM in the near-term. Licensees have indicated to the ASME their concerns with respect to whether or not there are potential licensing implications.

NRC technical staff met with NRC's legal staff from the Office of the General Counsel (OGC) to discuss this issue. OGC understands that the ASME has determined the technical equivalency of CSSs and the CM. However, OGC indicates that this is a legal issue, i.e., edition and addenda earlier than the 2011 Addenda specifically require CSSs, and the interpretation by the ASME of equivalency cannot address an issue which is specific to 10 CFR 50.55a.

The NRC developed a regulatory path forward to address the issue. The NRC will issue a Regulatory Issue Summary (RIS) in conjunction with an Enforcement Guidance Memorandum (EGM) (i.e., exercise enforcement discretion). The documents are in concurrence, and the package is expected to be issued in late February / early March 2013. In the meantime, for operating facilities that are in a more urgent situation, the NRC will authorize, on a plant-specific basis, an alternative pursuant to 10 CFR 50.55a(a)(3) to allow the use of the CM until the final rule incorporating by reference Section III, 2011 Addenda to the ASME Boiler and Pressure Vessel Code, is issued by the NRC. For new plants under construction, the NRC authorized an alternative for Vogtle Units 3 and 4 and for V.C. Summer Units 2 and 3 to use the ASME CM in lieu of CSSs in letters dated November 29 and December 3, 2012, respectively (ADAMS ML12331A309 and ML12335A330). The NRC plan for addressing the CM issue is described in a letter from R.W. Borchardt (NRC) to B. Erler and R. Swayne (ASME) dated October 2, 2012 (ADAMS Accession No. ML12262A005).

4. Risk-Informed Activities

The NRC issued its final Safety Evaluation (SE) on the Electric Power Research Institute (EPRI) Topical Report (TR) 1021467 (previously numbered 1018427), "Nondestructive Evaluation: Probabilistic Risk Assessment Technical Adequacy Guidance for Risk-informed Inservice Inspection Programs," on January 18, 2012 (ADAMS Accession Nos. ML11325A375 (cover letter) and ML11325A340 (final SE)). The TR was developed, in part, as a technical support document for Code Case N-716, "Alternative Piping Classification and Examination Requirements, Section XI, Division 1." The SE contained four conditions and four plant-specific action items associated with use of the TR, discussed in Section 4.0 of the SE. The NRC requested that EPRI publish a revised version of the TR incorporating the changes outlined in the SE. A letter from EPRI to NRC dated June 18, 2012 (ML12171A450) provided the updated version of EPRI Report 1021467.

It is expected that Code Case N-716-1 will be approved in a future revision of Regulatory Guide 1.147. Comments provided to Section XI by NRC staff during consideration of the revisions to Code Case N-716 addressed concerns with the application of risk-informed inservice inspection in new construction. It should be noted that new plants holding a combined license under 10 CFR Part 52 will be required to submit the results of their application of the Code Case to the regulatory body having jurisdiction at the plant site for review and approval.

In a separate matter, by letter dated January 17, 2013 (ML12362A354), the NRC notified the Pressurized Water Reactor Owners Group (PWROG) that the NRC staff had completed its review of Topical Report (TR) WCAP-17236-NP-A, Revision 0, "Risk-Informed Extension of the Reactor Vessel Nozzle Inservice Inspection Interval," and that the staff had determined that the subject version is acceptable for referencing in licensing applications for nuclear power plants to the extent specified and under the limitations delineated in this TR.

5. Generic Activities on Material Degradation/PWR Alloy 600/182/82 PWSCC

*North Anna 1*

On March 24, 2012, during the Alloy 600 dissimilar metal weld overlay work on the 'B' Reactor Coolant loop hot leg to the 'B' Steam Generator nozzle weld at North Anna 1, significant defects were identified by leakage that occurred during weld excavation. Approximately 1 inch of weld material was removed prior to the seepage being identified.

The NRC considers this to be a serious incident in that an examination was recently conducted of this weld, and none of the five indications were detected during the examination. It was determined that two of the cracks were greater than 80 per cent through-wall and three were greater than 40 per cent through-wall. Teams were dispatched to the site on two separate occasions, including nondestructive examination (NDE) experts, to gather additional information.

The NRC held a public meeting on May 30, 2012, at which industry representatives discussed the formulation of a team to investigate the impact of the occurrence and determine appropriate industry corrective actions. A subsequent meeting was held on July 20, 2012, at NRC headquarters where industry representatives discussed 29 corrective actions that had been identified and initiated. A follow-up public meeting with industry representatives was held on September 11, 2012, where progress-to-date on the 29 actions was discussed.

The NRC conducted an assessment of the event and reviewed the licensee's root cause analysis. A Pacific Northwest National Laboratory Technical Letter Report (PNNL-21546) developed in concert with the NRC staff entitled, "Evaluation of Manual Ultrasonic Examinations Applied to Detect Flaws in Primary System Dissimilar Metal Welds at North Anna Power Station," is available (ADAMS Accession No. ML12200A216). The NRC and EPRI are currently conducting independent evaluations with respect to the probe design and characteristics, and mockup design. The NRC is also assessing factors such as method of examination, use of site specific mockups, and adequacy of PDI technical justification. Subsequent reports are planned

that will discuss the results of on-going research, and the status of the open issues identified in PNNL-21546.

The next NRC/NDE Implementation Focus Group (NIFG) meeting is tentatively scheduled for Thursday, February 28, 2013, at NRC headquarters in Rockville, MD. A public meeting notice for this meeting will be issued once the details are finalized.

*Dissimilar Metal Welds*

The NRC staff continues to monitor and evaluate operating experience to ensure that the current inspection schedules are adequate.

Other items:

The NRC has reviewed the information on Gravelines, and the NRC will be requesting that the ASME initiate Code action to develop requirements for volumetric and/or surface examination of the bottom head penetrations and associated welds. This action should include the development of inspection frequency, qualification requirements and consideration for mitigation/repair activities.

Five cold head plants have now experienced cracking of top head penetration nozzles and/or associated welds. The NRC is evaluating the need for changes to the inspection periodicity for cold head plants. Specifically, the need to increase bare metal visual examinations to ensure timely detection of leakage through J-groove welds. Cold head plants should highly consider submitting proactive repair requests prior to their refueling outages.

Five cracks were missed during a dissimilar metal (DM) weld inspection at a plant. Questions were raised regarding the adequacy of current inspection and qualification requirements for performing inspections on DM welds for the detection of primary water stress corrosion cracking (PWSCC). If used, the site-specific mockup process must be robust and meet the letter of Supplement 10 of Appendix VIII. Currently, there is no mechanism in the ASME code or 10CFR50.55a to allow the use of site-specific mockups to modify essential variables. In accordance with Paragraph 4(d) of Supplement 10, "to qualify new values of essential variables, at least one personnel performance demonstration set is required."

When issues occur with un-encoded exams, the lack of recorded/reviewable examination results makes diagnosis of problems difficult or impossible. The NRC is considering new requirements on ASME Code Case N-770-1 to require encoded examinations of PWSCC susceptible dissimilar metal butt welds and mitigated welds with indications of PWSCC in the susceptible material.

6. New Reactor Licensing Activities

As of January 31, 2013, the status of new reactor licensing under 10 CFR Part 52 is as follows:

*Design Certification*

NRC has issued four design certifications to-date (ABWR, System 80+, AP600, and AP1000). These are certified in 10 CFR Part 52, Appendices A, B, C, and D, respectively.

The NRC is currently reviewing two design certifications:

- AREVA's EPR (evolutionary pressurized-water reactor design from France)
- Mitsubishi Heavy Industries' US-APWR (advanced pressurized water reactor design from Japan)

The NRC staff completed its review of General Electric-Hitachi's ESBWR (first passive BWR) and issued its final safety evaluation report (FSER) in March 2011. On March 24, 2011, the NRC issued in the *Federal Register* a proposed rule (76 FR 16549) for public comment on the ESBWR design certification. Five public comments were received on the proposed rule. The final rule to certify General Electric-Hitachi's ESBWR standard plant design in Appendix E to 10 CFR Part 52 is on hold pending resolution of steam dryer issues.

The NRC issued a final rule amending Westinghouse's AP-1000 design certification rule (Appendix D to 10 CFR Part 52) on December 30, 2011.

In addition, the NRC staff is reviewing two applications for design certification renewal:

- ABWR GE-Hitachi (application submitted on December 7, 2010)
- ABWR GE-Toshiba (Revision 1 to application submitted on June 22, 2012)

*Early Site Permits (ESPs)*

NRC has issued four ESPs (Clinton, Grand Gulf, North Anna, and Vogtle). The NRC's issuance of the Vogtle ESP on August 26, 2009, was the first based on a specific technology (AP-1000) and the first to include a limited-work authorization (LWA).

The NRC received an application for an ESP for the Victoria County Station submitted by Exelon on March 25, 2010. The site is located in Victoria County, Texas, with no specific technology selected. On August 28, 2012, Exelon requested withdrawal of the Victoria County Station ESP application from the docket. By letter dated October 3, 2012, NRC accepted the applicant's request, and the application was withdrawn.

The NRC received an ESP application for the PSEG site in New Jersey (same site as Hope Creek and Salem 1&2). The ESP application was tendered on May 25, 2010, and was docketed on August 4, 2010. This application uses the Plant Parameter Envelope (PPE) approach which means no specific reactor design has been selected.

*Combined License (COL) Applications*

NRC is currently reviewing 10 COL applications (24 new reactor units):

- 1 ABWR South Texas Project 3 and 4
- 4 AP-1000 William S. Lee Station 1&2, Shearon Harris 2&3, Levy County 1&2, Bellefonte 3&4*, and Turkey Point 6&7
- 1 ESBWR Fermi 3, Grand Gulf 3*, River Bend 3*, Victoria County 1 and 2**
- 2 EPR Calvert Cliffs 3, Nine Mile Point 3*, Bell Bend, Callaway 2*
- 2 US-APWR Comanche Peak Units 3 and 4, North Anna 3

* NRC staff review suspended at request of applicant.
** Application withdrawn

The NRC issued the combined license and limited work authorization for Vogtle Electric Generating Plant, Units 3&4 on February 10, 2012. The Vogtle plants reference the AP-1000 design certification amendment. It was the first combined license issued by the NRC to construct and operate a nuclear power plant under the alternative licensing process in 10 CFR Part 52. It is the first time since 1978 that the NRC issued a license to construct a nuclear power plant in the United States.

The NRC staff issued the combined license for V.C. Summer 2&3 on March 30, 2012. The V.C. Summer 2&3 plants reference the AP-1000 design certification amendment.

*Advanced Reactors Program*

NRC established an advanced reactors program in the Office of New Reactors. Currently, there are no applications under review, but several applications are expected in the next three years including:

- High Temperature Gas-Cooled Reactors:
  - Next Generation Nuclear Plant (DOE) – Pre-application interactions are continuing. The Secretary of Energy sent letters to Congress on October 17, 2011, describing his decision regarding continuation of the NGNP project. The Secretary informed Congress that the project will continue high-temperature-reactor research and development activities, interactions with the NRC to develop a licensing framework, and efforts to form a cost-shared public-private partnership. However, initial NGNP design parameters have not been selected, pending establishment of the public-private partnership.

- Integral PWRs (iPWRs):
  - NuScale (iPWR) – NuScale Power is developing a modular, scalable 45 MWe iPWR. Pre-application reviews are currently under discussion. In addition, NuScale LLC is working together with NuHub to pursue a small modular project (SMR) project at the Savannah River Site in South Carolina. The team's plan is to

assist in the design certification licensing process and development of the reference combined-license application (R-COLA).

- B&W mPower (iPWR)– B&W is developing a modular, scalable 125 MWe iPWR. Pre-application interactions are underway. A standard design certification application expected by the end of 2013. An integrated test facility is under construction. TVA Clinch River is planning to build an mPower plant under the 10 CFR Part 50 licensing process. B&W will pursue a standard design certification under the alternative 10 CFR Part 52 licensing process in parallel when the design details are more finalized. On November 20, 2012, the U.S. Department of Energy announced that they selected the Generation mPower Team (B&W, Bechtel, and TVA) as the recipient of cost-share funding to design and build an SMR in the United States.
- Westinghouse is developing a modular iPWR design.

The New Reactor Licensing public web-site http://nrr10.nrc.gov/NRO/new-rx-status/index.cfm has a list of expected new nuclear power plant applications, and an estimated schedule by fiscal year for new reactor licensing applications.

*NRO Vendor Inspection*

The NRO vendor inspection program is described in Inspection Manual Chapter (IMC) 2507, "Construction Inspection Program, Vendor Inspection." This IMC will be implemented by various Inspection Procedures (IPs) including:

IP 43002: Routine Inspections of Nuclear Vendors;
IP 43003: Reactive Inspections of Nuclear Vendors;
IP 43004: Inspection of Commercial-Grade Dedication Programs;
IP 43005: NRC Oversight of Third Party Organizations Implementing Quality Assurance Requirements; and
IP 36100: Inspection of 10 CFR Parts 21 and Programs for Reporting Defects and Noncompliance.

FY 13 Vendor Inspection Plans

- Commercial grade dedication organizations
- Manufacturing for valves (all new reactor Design Centers and for operating reactors)
- AP-1000 modular construction
- AP1000 and operating reactor equipment qualification test programs
- AP1000 manufacturing
- Digital Instrumentation and Control for AP-1000 and US-APWR
- Instrumentation and Control for operating reactors

Vendor Inspection Reports Completed, Issued and Planned Inspections

- Nuclear Logistics, Inc, Fort Worth, TX - issued

- Flowserve, Raleigh, NC - issued
- Target Rock, Farmingdale, NY - issued
- Shaw Modular Solutions, Lake Charles, LA - issued
- Flowserve Limitorque, Lynchburg, VA - issued
- Enertech & Utah State University, Brea, CA and Logan UT - issued
- Westinghouse Electric Company, Cranberry Township, PA - issued
- Mitsubishi Heavy Industries, Kobe, Japan - issued
- Mangiarotti, Monfalcone, Italy - issued
- Cives Steel Company, Thomasville, GA - completed
- ABB Inc., Florence, SC - completed
- DRS Consolidated Controls Inc, Danbury, CT - completed
- Weir Valves & Controls USA Inc., Ipswich, MA - completed
- Westinghouse Electric Company, Cranberry Township, PA - ongoing
- Stern Labs, Hamilton, Canada - scheduled
- Scientech, Idaho Falls, ID - scheduled
- QualTech NP, Cincinnati, OH - scheduled
- Flowserve Pumps, Vernon, CA - scheduled

Vendor Inspections continue to identify findings related to commercial grade dedication activities and inadequate Part 21 programs for evaluating and reporting of defects that could cause a substantial safety hazard.

On January 24, 2013, the NRC held a public meeting to discuss the NRC staff's draft regulatory basis to clarify 10 CFR Part 21. The goal of this regulatory basis was to simplify and clarify the rule language in Part 21, provide consolidated regulatory guidance on compliance with Part 21, and enhance regulatory stability and predictability for the entities to which Part 21 applies. A summary of the meeting will be published.

Previously issued NRC inspection and trip reports can be located at:

http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/vendor-insp.html

*Multinational Design Evaluation Program (MDEP) Activities*

A. Vendor Inspection Cooperation Working Group (VICWG)

The MDEP VICWG members continue to allow opportunities for NRC staff participation and observation of vendor inspections conducted by regulatory authorities from other countries and for opportunities where participation and observation of NRC vendor inspections by representatives of regulatory authorities from other countries is possible. VICWG objectives include: explore international regulators' vendor oversight requirements and programs; apply lessons learned; exchange vendor inspection insights; and identify areas where international cooperation can yield tangible benefits.

The VICWG is evaluating the advantages and disadvantages of conducting multinational inspections. It is recognized that only specific vendors who routinely apply both GS-R-3, ISO 9000+, and Appendix B requirements would be good candidates for such inspections. The scope and requirements for such inspections would need to be clearly outlined and agreed upon by the VICWG participants.

On November 13-15, 2012, NRO staff participated at the VICWG meeting in Paris, France. The MDEP VICWG continues to achieve its short-term goals and is making progress towards achieving its long-term program goals. Multinational inspections of vendors according to common Quality Assurance/Quality Management (QA/QM) requirements remains a long term goal of the group although there are obstacles to achieving this goal. For the intermediate term, emphasis will be placed on maximizing information sharing, joint inspections (multiple nations inspecting to the regulatory requirements of one country), and witnessing of other regulators' inspections. The VICWG will also continue to work with the Standards Development Organizations (SDOs) to encourage and explore harmonization of QA/QM standards.

The NRC's currently planning a joint multinational inspection with 2 inspectors from KINS of QualTech NP of Curtis-Wright Flow Control Company for March 18-22, 2013.

The next VICWG meeting is tentatively planned for April 23 - 25, 2013 in Paris, France. Representatives from IAEA, relevant SDOs and ISO will be invited to give input on potential QA requirements and standards harmonization.

B. Codes and Standards Working Group (CSWG)

MDEP is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of mature, experienced national regulatory authorities who are tasked with the regulatory design review of new reactor plant designs. One of the issue-specific working groups established under the MDEP organization is the Codes and Standards Working Group (CSWG) whose goal is to achieve harmonization of code requirements for pressure-boundary components.

Harmonizing pressure-boundary codes used by member countries ensures a consistent level of quality and safety in the design of pressure-boundary components such as the reactor vessel, piping, pumps, and valves, and allows components manufactured in other countries to be used in member countries with a relatively minor review and reconciliation of code differences. Such an approach would significantly simplify the licensing of nuclear power plants and reduce the burden on the regulatory authorities on an international scale.

The MDEP/CSWG worked with standards development organizations (SDOs) from several countries (i.e., U.S., Japan, Korea, France, Canada, and the Russian Federation) for the past 5 years to compare each countries' pressure-boundary code requirements for Class 1 vessels, piping, pumps and valves to the requirements of the ASME Boiler and Pressure Vessel Code, Section III. Similarities and differences were documented in a database table and summarized in a final report. The code-comparison effort is the first step to achieve harmonization of pressure-boundary codes and standards. The final code-comparison report and tables were completed for Class 1 vessels, piping, pumps and valves for Korea, Japan, Canada and France and were

supplemented with Russia's input in December 2012. Revision 1 to the SDOs' final report, ASME Report STP-NU-051-1, "MDEP-CSWG Code Comparison," and tables were issued as an ASME Standard Technical publication and is publicly available free for download from the ASME Standards Technology, LLC website at http://stllc.asme.org/News_Announcements.cfm.

The MDEP/CSWG issued letters to: ASME, AFCEN (France), JSME (Japan), CSA (Canada), the KEA (Korea), and NIKIET (Russia) SDOs, in part, to ask these SDOs to address their plans to preclude future divergences of code requirements. In response, the SDOs met with MDEP/CSWG in September 2012 and discussed the establishment of an SDO Convergence Board that would pursue convergence of code requirements where realistic and practical, limit further divergence of code requirements, and develop a process for reconciling different code requirements. The SDO Convergence Board is also working with World Nuclear Association's CORDEL Group to identify potential areas of code convergence. The SDO Convergence Board held its first meeting in conjunction with the ASME Boiler Code Week in Washington DC in August 2012.

*Public Meetings*

A public meeting was held at NRC headquarters on January 22, 2013, to discuss specific aspects of the Commission's Staff Requirements Memorandum to SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors." The NRC staff discussed use of risk-informed inservice inspection and the applicability of 10 CFR 50.69 to new reactors licensed under 10 CFR Part 52. A summary of the meeting will be published.

A public conference call will be held on Tuesday, February 19, 2013, from 1:00 p.m. to 2:00 p.m. to facilitate communication between the NRC and industry on risk-related topics for new reactors, specifically in the areas of risk-informed in-service inspection and risk-informed safety classification (10 CFR 50.69). The meeting notice and agenda are available in ADAMS under ML13018A213.

7. License Renewal Activities

Following are on-going activities related to license renewal:

*Current status of applications, staff reviews and approvals*

- 73 units approved
- 10 applications (15 units) under review.
  - 1 (2 units) in hearings (Indian Point 2 & 3)
  - 1 (2 units) completed ACRS Full Committee (Limerick 1 & 2)
  - 3 (4 units) awaiting ACRS Full Committee (Davis-Besse [3/2013], Crystal River 3 [schedule TBD, as impacted by containment concrete issues] and Diablo Canyon 1 & 2 [schedule TBD as applicant has requested that renewed license issuance be delayed pending 3-D seismic studies, which is expected prior to December 2015])

- 1 (1 unit) completed initial ACRS Subcommittee (Seabrook [7/2012] - schedule impacted by follow-up meeting on alkali-silica reaction (ASR) issues)
- 3 (4 units) awaiting ACRS Subcommittee (Grand Gulf [3/2013], Callaway [5/2013], South Texas Project 1 & 2 [TBD])
- 1 (2 units) application received (Sequoyah 1 & 2).

- 1 application (4 units) with scheduled submittal date before end of 2013
  - June 2013 – Byron 1 & 2 and Braidwood 1 & 2

- Other scheduled applications:
  - January to March 2014 – Waterford 3
  - April to June 2014 – Fermi 2
  - October to December 2014 – River Bend
  - January to March 2015 – LaSalle 1 & 2
  - September 2015 – Perry
  - July to September 2017 - STARS
  - January to March 2017 – Clinton
  - October to December 2018 - STARS

Seventeen units have entered the operating period beyond 40 years:

- Oyster Creek – April 9, 2009
- Nine Mile Point Unit 1 – August 22, 2009
- Ginna – September 18, 2009
- Dresden Unit 2 – December 22, 2009
- H.B. Robinson – July 31, 2010
- Monticello – September 8, 2010
- Point Beach Unit 1 – October 5, 2010
- Dresden Unit 3 – January 12, 2011
- Palisades – March 24, 2011
- Vermont Yankee – March 21, 2012
- Surry Unit 1 – May 25, 2012
- Pilgrim – June 8, 2012
- Turkey Point Unit 3 – July 19, 2012
- Quad Cities Unit 1 – December 14, 2012
- Quad Cities Unit 2 – December 14, 2012
- Surry Unit 2 – January 29, 2013
- Oconee Unit 1 – February 6, 2033

Nine additional units will enter the operating period beyond 40 years before the end of 2013:

- Point Beach Unit 2 – March 8, 2013
- Turkey Point Unit 4 – April 10, 2013
- Peach Bottom Unit 2 – August 8, 2013
- Fort Calhoun Unit 1 – August 9, 2013
- Prairie Island Unit 1 – August 9, 2013
- Indian Point Unit 2 – September 28, 2012
- Oconee Unit 2 – October 6, 2013
- Brown Ferry Unit 1 – December 20, 2013

*Technical Issues*

- Final LR-ISG-2011-01: Aging Management of Stainless Steel Structures and Components in Treated Borated Water
  - Issued May 11, 2012.
  - ADAMS Accession No. ML12034A047

- Final LR-ISG-2011-02: Aging Management Program for Steam Generators
  - Issued December 1, 2011.
  - ADAMS Accession No. ML11297A085

- Final LR-ISG-2011-03: Generic Aging Lessons Learned (GALL) Report Revision 2 AMP XI.M41, "Buried and Underground Piping and Tanks"
  - Issued August 2, 2012.
  - ADAMS Accession No. ML12138A296

- Draft LR-ISG-2011-04: Updated Aging Management Criteria for Reactor Vessel Internal Components of Pressurized Water Reactors
  - Issued for comment on March 20, 2012; comment period ended May 21, 2012.
  - ADAMS Accession No. ML12004A149
  - Revision 1 of the safety evaluation on the MRP-227 report was issued on December 16, 2011 (ML11308A770).
  - MRP-227-A issued on January 9, 2012.
  - Implements changes to GALL Revision 2 aging management review line items and aging management activities as necessary.
  - A public meeting to discuss the draft LR-ISG was held in late March 2012.
  - Final ISG in preparation.

- Final LR-ISG-2011-05: Ongoing Review of Operating Experience
  - Issued March 16, 2012.
  - ADAMS Accession No. ML12044A215

- Draft LR-ISG-2012-01: Wall Thinning Due to Erosion Mechanisms
  - Issued for public comment July 12, 2012; public comments received August 27, 2012
  - ADAMS Accession No. ML12114A211
  - The LR-ISG describes the following:
    - Allows wall thinning due to erosion mechanisms to be included in the "Flow-Accelerated Corrosion" aging management program as part of the "susceptible-not-modeled" category, and makes minor editorial changes.
    - Revises the definitions of "wall thinning," "erosion," and "flow-accelerated corrosion," in the GALL Report to eliminate potential misinterpretations of these terms, and to align them with accepted industry definitions.
    - Adds aging management review items to include erosion mechanisms in Engineered Safeguards, Auxiliary, and Steam and Power Conversion systems.

- Socket Welds
  - Status of industry activities to develop non-visual examinations to ensure integrity of small-bore socket welds?

- Metal Fatigue
  - A public meeting was held in early January 2012, in part to discuss methods to identify environmentally-assisted fatigue limiting locations.
  - NRC has reviewed an approach by Columbia, and is/will be evaluating approaches used by other applicants.

- Containment Liner
  - NRC reports issued:
    - ML112070867 - Containment Liner Corrosion Operating Experience Summary Technical Letter Report - Revision 1
    - ML112150012 - Nuclear Containment Steel Liner Corrosion Workshop: Final Summary and Recommendation Report

- Steam Generator Divider Plates and Tube-to-Tubesheet Welds
  - Foreign operating experience with cracking in Alloy 600 divider plates and/or 82/182 welds – concern with cracks extending to the pressure boundary.
  - Interactions with Steam Generator Task Force to provide generic approaches to assure integrity of pressure boundary.
  - Concern with cracking of tube-to-tubesheet welds with chromium content below that of Alloy 690 (consistency of once-through and recirculating steam generators).

*IAEA International Generic Aging Lessons Learned (IGALL)*

IAEA IGALL has three interaction levels – a Steering Group (SG) that provides overall direction for the program (John Lubinski, NRC Director of Division of License Renewal is the US member), a Clearing Group (CG) that ensures that the final products are consistent with SG direction, and three Working Groups (WGs) that are developing the final products. The three WGs (WG1 addresses Mechanical Components, WG2 addresses Electrical and I&C Components, and WG3 addresses Civil Structures and Components) are well along in completing their work; the CG has met multiple times to ensure common approaches and goals for each of the WGs. IGALL is using the basic approach in the US GALL report (NUREG-1801), although the aging management review (AMR) line item tables have a different arrangement from GALL and the aging management program (AMP) descriptions have nine elements. Time-limited aging analyses (TLAAs) are also included in the iGALL report, unlike in the NRC guidance documents where TLAAs are addressed in the License Renewal Standard Review Plan.

The remaining schedule for IGALL includes several meetings of the WGs, the CG and the SG, culminating in issuance of a final report and a Technical Meeting related to IGALL in September 2013. The WGs are meeting this spring to complete their work on AMR tables, AMP descriptions, TLAAs and other relevant parts of the IGALL report.

*Technical and Regulatory Bases for Subsequent Renewal*

NRC has initiated an activity to ensure adequate technical and regulatory bases for review of subsequent license renewal applications for operation to 80 years. Current activities include:

- Annual workshops to monitor industry/international technical progress
- Expand proactive materials degradation assessment to cover 80 years
- Collect/evaluate results from licensee implementation of license renewal aging management programs
- Continue and expand domestic and international partnerships

NRC held a public meeting on May 9, 2012, to receive public input on subsequent renewal, and has begun a series of webinars to solicit public input.

*Research Activities*

The NRC's Office of Nuclear Regulatory Research (RES) is undertaking several activities related to aging degradation and management research, including:

- Expanded Materials Degradation Analysis (EMDA) – In collaboration with and co-funded by the U.S. Department of Energy's Office of Nuclear Energy's (DOE:NE) Light Water Reactor Sustainability Program (LWRSP), the NRC has conducted an expert elicitation employing the Phenomena Identification and Ranking Technique (PIRT) with separate panels of experts for concrete and cable aging to identify the most significant aging degradation phenomena for which low and medium knowledge currently exists and which may need additional technical research. Two other panels on Reactor Pressure Vessel (RPV) and Core Internals and Piping are in the process of conducting the PIRT exercise. This work expands on the original NUREG-6923 (PMDA), and will provide technical insights on challenges for systems, structures, and components (SSC) for reactor operation beyond 40 years to at least 80 years of operating life. The several panels include a diverse body of experts representing regulatory bodies, industry (EPRI, vendors, etc.), U.S. national laboratories, academia, and international organizations. It is expected that, like EPRI's Materials Degradation Matrix (MDM) and associated Issues Management Tables (IMT), this effort will be repeated with some periodicity (perhaps every five years). The technical basis documents of the four volumes of the draft EMDA report are under review by the panel and the staff. A NUREG/CR on EMDA is expected to be published by the end of 2013.

- Pilot Assessments of AMP Effectiveness at NPPs during Period of Extended Operation (PEO) – NRC has conducted three AMP effectiveness audits at different reactor types (Westinghouse 2-loop PWR, Westinghouse 3-loop PWR, and GE BWR Mark 1 plant) to review how the AMPs in NUREG-1801 are implemented during the PEO and to gather information for potential revision of license renewal guidance documents (LRGDs) for subsequent license renewal (SLR). A technical letter report (TLR) is expected to be publicly available by the middle of 2013.

- Analysis of Periodic Safety Reviews (PSRs) – NRC conducted a pilot review of selected translated PSR reports and related documentation from foreign nuclear regulatory authorities to identify any potential new regulatory insights regarding license-renewal-related topics and NPP operating experience. A technical letter report (TLR) is expected to be publicly available by the middle of 2013.

- International Forum on Reactor Aging Management (IFRAM) – Monthly conference calls have been ongoing with the IFRAM Global Steering Committee, and a draft Charter, Operations Guidelines, a Proposal to Establish the IFRAM, and Desired Attributes have been developed and agreed upon in principle. The IFRAM members are now working on three tasks:
    - Continuing development of best practices guideline document
    - Pursing development of International Agreement (IA) to fund and coordinate IFRAM activities
    - FY-13 activities will focus on identifying aging management activities being conducted by participating organizations (and/or countries).

8. Regulatory Issue Summary (RIS) 2012-12 – Small Modular Reactor (SMR) Designs

On December 28, 2012, the NRC issued Regulatory Issue Summary (RIS) 2012–12, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs." The intent in issuing the RIS was to obtain new or updated information on the scheduling of a power reactor construction permit (CP), early site permit (ESP), combined operating license (COL), standard design certification (DC), standard design approval (DA), or manufacturing license (ML) application submissions related to SMR designs. The NRC anticipates receiving a number of CP, ESP, COL, DC, DA, and ML applications, starting as early as 2013, for a number of SMR designs. These designs include integral pressurized water reactors, high-temperature gas-cooled reactors, liquid-metal- cooled reactors, and other SMR designs. The purpose of the RIS was to help establish a predictable and consistent method for reviewing applications.

DC applicants form design-centered working groups (DCWGs) to facilitate the standardization of COL applications. The NRC staff also seeks information on potential DCWGs for each of the designs that may interact with the staff on generic or technology-related policy or technical issues. The NRC must identify possible applications and other interactions to formulate resource needs and budget requests for future fiscal years. The NRC encourages potential applicants to provide the agency with design and licensing plans, construction plans, and pre-application activities that will be used to demonstrate compliance with the NRC's safety and environmental requirements. In addition, information that potential applicants submit to the NRC will allow the agency to coordinate pre-application activities and, as appropriate, conduct vendor audits before the submission of applications. Furthermore, it will facilitate a more efficient licensing review of the applications. The RIS included a list of questions that respondents could use to provide the NRC with realistic, best-estimate predictions of applications or other submittals.

9. IN 2012-21 – RPV Head Studs

On December 10, 2012, the NRC issued Information Notice (IN) 2012-21, "Reactor Vessel Closure Head Studs Remain Detensioned During Plant Startup," to inform addressees of an event involving detensioned reactor vessel closure head studs at a boiling-water reactor that resulted in leakage from the reactor vessel during startup operations and a manual scram. Investigation activities determined that the reactor vessel head studs were not fully tensioned during startup operations and therefore, an unanalyzed condition existed. It was determined that none of the 64 reactor vessel head studs were adequately tensioned. The event was the result of errors made while operating the reactor vessel head stud tensioning equipment and during the validation process to ensure the head was properly tensioned. Specifically, the failure to provide proper training and lack of procedure guidance to correctly interpret critical data used to validate that the reactor vessel head studs are properly tensioned.

*NRC Special Inspection Team Findings*

An NRC special inspection team reviewed the licensee's actions prior to the event and identified examples of improper procedure adherence that contributed to the inadequate reactor vessel head stud tensioning. Specifically, the team determined that licensee personnel failed to properly pressurize the reactor vessel head stud tensioning equipment to the value specified in Procedure 0SMP-RPV502 because the tensioning equipment operators did not know how to correctly interpret the hydraulic pressure reading on the tensioning equipment display. The inspection team also determined that quality control personnel failed to verify proper reactor vessel stud elongation in accordance with stud elongation values specified in Procedure 0SMP-RPV502. Further, the inspection team determined that nine of the twelve refuel floor personnel performing reactor vessel reassembly did not have the necessary refuel floor support training, as required by Procedure TRN-NGCC-1000, "Conduct of Training." Finally, based on its review of Procedure 0PLP-20, "Post Maintenance Testing Program," which specifies "plant equipment shall be tested consistent with their safety functions following maintenance activities that may have impaired proper functioning of the components," the inspection team determined that the licensee failed to specify an adequate post maintenance test to verify the pressure retaining capability of the reactor vessel following a mid-cycle maintenance outage.

Section 50.120, "Training and qualification of nuclear power plant personnel," of 10 CFR states, in part, that the training program must incorporate the instructional requirements necessary to provide qualified personnel to operate and maintain the facility in a safe manner in all modes of operation. Criterion V, "Instructions, Procedures, and Drawings," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 states, in part, that instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

This event also highlights the importance of human performance and oversight of maintenance activities. For example, operators of the stud tensioning equipment were not familiar with the pressure display, yet they proceeded with tensioning based on an incorrect interpretation of indicated tensioner pressure. In addition, a licensee lead mechanic and a quality control inspector signed a procedure checklist for stud elongation measurements using flawed data, based on

incorrect explanations by other members of the maintenance crew. Other findings related to human performance can be found in the April 20, 2012, inspection report.

10. IN 2012-23 – Recent Radiography Events

On December 26, 2012, the NRC issued IN 2012-23, "Recent Radiography Events Resulting in Exposures Exceeding Regulatory Limits," to alert the industry of recent events that resulted in radiography workers receiving occupational doses in excess of the dose limits specified in 10 CFR 20.1201.

Over the past year, NRC has received four radiography event reports of radiography workers having received occupational whole body doses in excess of the 0.05 sievert (5 rem) limit or the 0.5 Sv (50 rem) to the skin of any extremity. All events involved a QSA Global radiography camera, Model 880 Delta. NRC is highlighting these occurrences as a reminder to workers of the limits of personal dosimetry, even when properly working and worn. In instances when overexposure is possible and the dose on the dosimetry is questionable, licensees are encouraged to assess the situation to see if a re-enactment of the event would be prudent.

In most of these events, a functioning survey and/or rate meter was available, but was not properly utilized in a preventive capacity. Also, some type of inattention to detail was a factor in all of these events. Because of the high potential doses associated with radiography, licensees should always have calibrated, functioning survey meters that are used when approaching the radiography camera or guide tube after an exposure. Likewise, calibrated, functioning personal rate alarms should always be utilized. NRC understands that survey instruments and alarming rate meters can fail to work for a variety of reasons, or the meter may appear to be working, but may respond slowly to initially indicate a lower incorrect dose-rate reading. Because of this, and because of the serious dangers involved in using radiography sources, both instruments are required to be used during radiography. Radiographers are reminded to follow proper safety procedures when using radiography equipment. It should also be noted that in three of the four events discussed, re-enactments were necessary to estimate a more accurate dose although dosimetry was worn. In fact, in one event, the dosimetry severely underestimated the radiographer's dose.

11. Doel 3

Representatives of the NRC attended several working group meetings hosted by the Federal Agency for Nuclear Control (FANC) in Brussels, Belgium. The purpose of these trips was to support a FANC request for NRC participation on three technical expert working groups in support of Belgian nuclear safety authority's assessment of the quasi-laminar indications detected during examinations performed in June and July 2012 in the beltline shell region of the Doel Unit 3 reactor pressure vessel (RPV). Similar indications were also found later at Tihange Unit 2. The objectives of these working group meetings were:

- Share information and experience between nuclear safety authorities on regulatory approaches and actions in relation with the Doel 3 issue.

- Taking into account the lessons learned from the Doel 3 issue, discuss actions to be considered in other countries.
- Provide technical advice to Belgian nuclear safety authorities (FANC, Bel V, AIB Vinçotte) on specific topics / questions related to the Doel 3 & Tihange 2 RPV issue (note, however, that the actual evaluation of potential continued operation of the Doel 3 and Tihange 2 reactors remains the responsibility of the Belgian nuclear safety authorities).

The meeting consisted of three expert working groups composed of expert members of foreign nuclear safety authorities or related organizations (NRC, IAEA, NEA, JRC Petten, etc.) that were willing to participate in this issue. The three expert working groups were as follows:

- Expert Working Group 1 - Non-Destructive Examination Techniques
- Expert Working Group 2 - Metallurgical Origin / Root Causes of the Flaw Indications
- Expert Working Group 3 - Structural Mechanics and Fracture Mechanics – Approach for Justification

In addition to the working groups, an NRC staff representative served on an international expert review panel that provided a comprehensive third party review of all aspects of the Doel and Tihange licensee analyses related to the indications.

FANC's desired outcome for the working group meetings was to provide support to the Belgian nuclear safety authorities for defining essential questions that the Belgian licensee must address to satisfy safe continued operation of the Doel 3 plant.

For the NRC, the desired outcome of attendance at the working group meetings was to obtain information such that the NRC can determine the importance of the flaws detected at Doel 3 and Tihange 2 that can be used to assess the importance of this issue on the U.S. fleet of reactors.

Belgian authorities have provided information summaries on their public website: http://www.fanc.fgov.be/page/homepage-federaal-agentschap-voor-nucleaire-controle-fanc/1.aspx" In February, FANC released a summary report of their conclusions related to the licensee analyses and stated: **"In the current state of knowledge and given the available data, these open issues do not represent conditions that require a definitive shutdown of the Doel 3 and Tihange 2 reactor units."**

**The staff is planning to host a public meeting with U.S. industry at NRC headquarters on March 5, 2013 to discuss the potential for similar quasi-laminar indications to exist in U.S. reactor pressure vessel forgings.**

Releases in Entirety ASME Code Meeting information - public



**ASME Standards Committee Ballots – Voting Period 12/28/2012 - 01/11/2013**

| Ballot | BC # | Subgroup | Subject | Description | Vote |
|---|---|---|---|---|---|
| 12-520RC203 | 09-22 | SG WCS | Code Case N-716-1 | Revised Code Case to provide alternative requirements to IWB and IWC and potentially additional requirements for Class 3 and Non-Class piping and components using risk insights and extend to the applicability to the New Build fleet (10 CFR Part 52). | Y (see Note 1) |

Notes:

1. This item was disapproved 30-5-1-0-0 on Ballot #12-520RC202, which closed on 9/13/2012. Gary APPROVED this item based on the following:
   **Input from Wally**: I am disapproving this item. The Code Case would apply to new plants, and the Office of New Reactors does not believe that this is appropriate for the new plants at this time. In addition, the staff continues to assess the issue of plant specific submittals and the application of Revision 2 of RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," which expands the scope of initiating events whose evaluation is required to be consistent with the ASME/ANS RA-Sa-2009 PRA Standard. Also, the staff continues to review EPRI Topical Report 1018427, "Nondestructive Evaluation: PRA Technical Adequacy Guidance for RI-ISI Programs." Finally, a staff endorsed document describing acceptable PRA quality requirements for RI-ISI will be necessary for the staff to endorse some version of Code Case N-716 in Regulatory Guide 1.147.
   **Additional Input from Wally and Keith Hoffman**: The Code Case would apply to new plants, and the Office of New Reactors does not believe that this is appropriate for the new plants at this time. In addition, the staff continues to assess the issue of plant specific submittals and the application of Revision 2 of RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," which expands the scope of initiating events whose evaluation is required to be consistent with the ASME/ANS RA-Sa-2009 PRA Standard. When developing a relief request to use RI-ISI instead of the conventional ISI program, licensees must use a plant-specific PRA as an input. Since this will require case-by-case NRC approval, the staff is disapproving this item to ensure that licensees are aware that there are issues that must be addressed in order to implement this Code Case.
   **Input from Eric Reichelt/David Terao**: Enclosed please find some extra fuel which I provided to the NRR guys as to why NRO would not entertain RI-ISI for new reactors. I think this will help if you need it for note 4 of your vote to the Standards committee ballots you just sent out:
   (2/16/11 e-mail to S. Dinsmore) As requested I am providing you with reasons why NRO will not entertain reviewing RI-PSI:
   1. The reactor designs which are under review are all new and have not been built in the U.S.
   2. Since the reactor designs are new a baseline inspection needs to be performed to support future ISI, repairs etc.
   3. There is no operating experience for most of new-reactor designs and no compelling basis for accepting RI-PSI.
   4. ~~GDC 1 of Appendix A to part 50 states that structures, systems, and components important to safety shall be designed, fabricated, erected and tested to quality standards commensurate with the importance of the safety functions to be performed.~~
   5. Lessons learned from operating reactors provided NRC with difficult and often more conservative decisions when a baseline inspection (i.e., radiograph) was not able to be provided.

## ASME Standards Committee Ballots – Voting Period 12/28/2012 - 01/11/2013

~~6. RI-PSI is not practical for NRO to review because it would delay the COL application.~~

**Input from Steve Dinsmore:** Assuming they made the changes in footnote 1 in Pat O'Regan's email included in the stream below, I recommend that the NRC vote affirmative without comment because the final product complies with all relevant NRC PRA related guidance. **09/02/2012**: I recommend that the NRC vote affirmative without comment because the final product complies with relevant NRC PRA related guidance.
**Additional Input from Keith Hoffman:** I believe they have addressed the concern dealing with new plants by adding a requirement for plants that receive a licensee after 1/1/12 to submit the application to the regulatory authority having jurisdiction at the plant site. Based on Steve Dinsmore's comment I believe the PRA Technical Adequacy issues have also been resolved. Therefore, I believe we can now vote affirmatively on this case.
**Additional Input from Tim Lupold:** I have no objections to voting yes for the three recirculation ballots.
**For this ballot:**
**Input from David Terao**: The description for Ballot 12-520RC203 is not totally accurate. Currently, it states:

> Revised Code Case to provide alternative requirements to IWB and IWC and potentially additional requirements for Class 3 and Non-Class piping and components using risk insights and extend to the applicability to the New Build fleet (10CFRPart50 and Part52).

My understanding in working a resolution out with Pat O'Regan (EPRI) was that he was going to add a statement in N-716-1 that read:

> *Plants issued a combined operation license after January 1, 2012, shall submit the results of the application of the Code Case to the regulatory body having jurisdiction at the plant site for review and approval.*

If this statement was put into N-716-1, then NRO has no concerns with the Code case. However, you might want to revise the highlighted text above to clarify its applicability to new reactors licensed under Part 52.

**Gary's Response to David**: Thanks for your input. My description is a duplicate of the description included on C&SConnect by Pat O'Regan. I just checked that description to see if it had been changed based on our recent correspondence. It is still the same, as shown in the screen shot below under Item 4, Summary of Changes.

I checked the latest action file, and the statement you requested below has been added to the action as promised – refer to the second screen shot below.

Based on the foregoing, unless I hear differently from others, I will continue to vote to APPROVE this item, but will request that the PM modify the summary on C&SConnect to state "...and extend to the applicability to the New Build fleet (10CFRPart50 and Part52) subject to regulatory review and approval."

**Input from Keith Hoffman**: According to the attachment to the email I received from the Secretary of the Working Group Risk Informed Activities (see attached) and what is in C&S Connect the only change to N-716-1 was to make sure that the scope statement had a sentence that read exactly like David's italicized sentence.

**ASME Standards Committee Ballots – Voting Period 12/28/2012 - 01/11/2013**

**David's Response**: The only question I have is whether the statement "subject to regulatory review and approval" applies to Watts Bar 2 since WBN2 is a New Build plant under Part 50. I would expect that this statement should not apply to WBN2. Perhaps, the summary to state:

"...and extend to the applicability to the New Build fleet (10 CFR Part52) subject to regulatory review and approval."

Based on the foregoing, Gary APPROVED this item with the following comment:

"I maintain my approval of this item. Thank you for addressing NRC concerns with this action. Based on the recent change to this item and previous correspondence with the NRC, the Summary for this item on C&SConnect should be modified (to eliminate Part 50) to state, "...and extend to the applicability to the New Build fleet (10 CFR Part 52) subject to regulatory review and approval."