



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

September 27, 2010

MEMORANDUM TO: ACRS Members

FROM: Sherry Meador **/RA/**
 Technical Secretary, ACRS

SUBJECT: CERTIFICATION OF THE MEETING MINUTES FROM
 THE ADVISORY COMMITTEE ON REACTOR
 SAFEGUARDS 570th FULL COMMITTEE MEETING
 HELD ON MARCH 4-6, 2010 IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on May 27, 2010 as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment:
As stated



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

May 27, 2010

MEMORANDUM TO: Sherry Meador, Technical Secretary
Advisory Committee on Reactor Safeguards

FROM: Cayetano Santos, Chief */RA/*
Reactor Safety Branch
Advisory Committee on Reactor Safeguards

SUBJECT: MINUTES OF THE 570th MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),
MARCH 4-6, 2010

I certify that based on my review of the minutes from the 570th ACRS Full Committee meeting, and to the best of my knowledge and belief, I have observed no substantive errors or omissions in the record of this proceeding subject to the comments noted below.

OFFICE	ACRS	ACRS:RSB/Sunsi
NAME	SMeador	CSantos/sam
DATE	05/ 27 /08	05/ 27 /10

OFFICIAL RECORD COPY

CERTIFIED

Date Certified: 05/27/2010

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During its 570th meeting, March 4-6, 2010, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports and memoranda:
REPORTS

Reports to Gregory B. Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS:

- Draft Final Revision 1 to Digital Instrumentation and Control Interim Staff Guidance - 07: "Digital Instrumentation and Control Systems in Safety Applications at Fuel Cycle Facilities," dated March 25, 2010
- Draft Final Revision 1 of Regulatory Guide 1.141, "Containment Isolation Provisions for Fluid Systems," dated March 25, 2010
- Draft Revision 2 to Regulatory Guide 4.11 (DG-4016), "Terrestrial Environmental Studies for Nuclear Power Plants," dated March 25, 2010
- Status of Staff Rulemaking Efforts for Depleted Uranium and Other Unique Waste Streams, dated March 18, 2010
- Draft Final Revision 1 of Regulatory Guide 1.62, "Manual Initiation of Protective Actions," dated March 29, 2010

MEMORANDA

Memoranda to R. W. Borchardt, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Final Interim Staff Guidance ESP/DC/COL-ISG-015, "Post-Combined License Commitments," dated March 11, 2010
- Withdrawal of Regulatory Guide 8.6, dated March 11, 2010
- Draft Final Regulatory Guides 1.11, 1.126, 1.28, 1.65, and 3.39, dated March 11, 2010
- Proposed Revisions to Regulatory Guides 1.152, 2.6, 4.20, 8.10, 8.19, 8.4, and DG-1216, dated March 11, 2010
- Proposed Revision 2 to Regulatory Guide 1.54, dated March 15, 2010

MINUTES OF THE 570th MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ROCKVILLE, MARYLAND

The 570th meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B1, Two White Flint North Building, Rockville, Maryland, on March 4-6, 2010. Notice of this meeting was published in the *Federal Register* on February 23, 2010 (72 FR 8154-8155) (Appendix I). The purpose of this meeting was to discuss and take appropriate action on the items listed in the meeting schedule and outline (Appendix II). The meeting was open to public attendance.

A transcript of selected portions of the meeting is available in the NRC's Public Document Room at One White Flint North, Room 1F-19, 11555 Rockville Pike, Rockville, Maryland. Copies of the transcript are available for purchase from Neal R. Gross and Co., Inc., 1323 Rhode Island Avenue, NW, Washington, DC 20005. Transcripts are also available at no cost to download from, or review on, the Internet at <http://www.nrc.gov/ACRS/ACNW>.

ATTENDEES

ACRS Members: Dr. Said Abdel-Khalik (Chairman), Dr. J. Sam Armijo (Vice-Chairman), Mr. John Stetkar (Member-at-Large), Dr. George E. Apostolakis, Dr. Sanjoy Banerjee, Dr. Dennis Bley, Mr. Charles Brown, Dr. Michael Corradini, Dr. Dana A. Powers, Mr. Harold Ray, Dr. Michael Ryan, Dr. William Shack, and Mr. John Sieber. For a list of other attendees see Appendix III.

I. Chairman's Report (Open)

[Note: Mr. Edwin Hackett was the Designated Federal Official for this portion of the meeting.]

Dr. Said Abdel-Khalik, Committee Chairman, convened the meeting at 8:30 a.m. In his opening remarks he announced that the meeting was being conducted in accordance with the provisions of the Federal Advisory Committee Act. He reviewed the agenda items for discussion and noted that no written comments or requests for time to make oral statements from members of the public had been received. Dr. Bonaca also noted that a transcript of the open portions of the meeting was being kept and speakers were requested to identify themselves and speak with clarity and volume.

II. Draft Final Interim Staff Guidance (ISG) on Fuel Cycle (ISG-7)

[Note: Mrs. Christina Antonescu was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss Draft Final Revision 1 to ISG-07, "Digital Instrumentation and Control (DI&C) Systems in Safety Applications at Fuel Cycle Facilities," the changes made to this Guide since the August 21, 2009, DI&C Subcommittee meeting, and the resolution of public comments.

Guidance for review of licensing applications of fuel cycle facilities consistent with the risk-informed licensing framework set forth in 10 CFR Part 70 is contained in NUREG 1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility." Neither of these documents contains either analog or DI&C design criteria using industry codes and standards. Therefore, ISG-07 was developed in response to industry and NRC concerns regarding the need for consistency of review of fuel cycle facility applications.

ISG-07 provides guidance for reviewing the management measures for Items Relied on for Safety (IROFS) that use DI&C technology. Specifically, ISG-07 provides guidance on the following: (1) the acceptability of management measures regarding how "Cyber Security" is addressed for the protection of digital safety controls; (2) how redundant controls should be maintained "Independent" to prevent criticality events and other hazards; (3) how "Digital Communications" among safety controls should be isolated or protected; and (4) how the design of "High Quality Software" for DI&C safety applications should be ensured.

The Committee issued a report to the NRC Chairman, dated March 25, 2010, recommending that Revision 1 to DI&C ISG-07 not be issued until it is revised to state that any reduction in the level of rigorous management measures applied to redundant IROFS, relative to sole IROFS with the same design requirements, should be justified by a comprehensive analysis. The Committee also recommended that future efforts include the development of a systematic approach for identifying dependencies and common cause failures in IROFS and the development of an approach for structuring the individual scenario results of an Integrated Safety Assessment (ISA) to facilitate review and understanding of the associated risk significance.

III. Draft Final Regulatory Guide (RG) 1.141, "Containment Isolation Provisions for Fluid Systems"

[Note: Mrs. Zena Abdullahi was the Designated Federal Office for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss Draft Final Revision 1 of Regulatory Guide (RG) 1.141, "Containment Isolation Provisions for Fluid Systems." This Guide provides updated guidance on acceptable design, testing, and maintenance requirements for the isolation of fluid systems that penetrate the primary containment. The staff described the specific regulatory positions in the RG as well as the associated industry guidance. The proposed changes to RG 1.141 would allow relief valves to serve as containment isolation valves in the forward direction, provided that the lift setpoint is at least 50 percent greater than the containment design pressure. The use of relief valves in the forward flow direction to perform a containment isolation function poses the risk of creating pathways for bypassing containment.

The Committee issued a report to the NRC Chairman on this matter dated March 25, 2010, recommending that Revision 1 of RG 1.141 be issued after it is revised to include additional provisions similar to those in the 1989 edition of ANSI/ANS 56.2, Section 4.7.5, "Relief Valves in the Forward Flow Direction." The Committee also recommended that appropriate portions of NUREG-0800 be revised consistent with this recommendation.

IV. Draft Revision 2 to Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Plants"

[Note: Mr. Derek Widmayer was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss Draft Revision 2 to RG 4.11 [Draft Guide (DG) - 4016], "Terrestrial Environmental Studies for Nuclear Power Plants." The staff described their basis for revising RG 4.11 and its relationship to other NRC environmental guidance. DG-4016 updates guidance for the conduct of terrestrial environmental studies to support analyses presented in a licensee's environmental report in support of siting new nuclear power plants. DG-4016 addresses siting support, baseline investigations, identification of important species and habitats, impact analyses, monitoring, and decommissioning. The Committee was interested in the guidance because no revisions of the guide have been issued since 1977. The Committee learned that there is no guidance document that addresses aquatic environmental studies.

The Committee issued a report to the NRC Chairman on this matter dated March 25, 2010, recommending that the Guide be issued for public comment after certain revisions are made. The Committee also recommended that the staff develop a complementary guide on aquatic environmental studies.

V. Status of Rulemaking for Disposal of Depleted Uranium and Other Unique Waste Streams

[Note: Mr. Neil Coleman was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss the status of rulemaking for Depleted Uranium (DU) and other unique waste streams. In 2005 the Commission directed the staff to consider whether the quantities of DU in the waste streams from uranium enrichment facilities warrant amending 10 CFR Part 61.55(a)(6) or the waste classification tables of section 61.55(a). The staff conducted technical analyses for a variety of site characteristics and concluded that near-surface disposal of large quantities of DU can be appropriate in some cases, but cannot be done at all sites. The staff recommended a limited rulemaking to revise 10 CFR Part 61 to require a licensee or applicant to conduct site-specific analyses that address.

The characteristics of the site and the proposed waste form prior to disposal of large quantities of DU. In September 2009, the staff conducted workshops in Bethesda, Maryland, and Salt Lake City, Utah, to inform the public about the rulemaking status and the issues regarding unique low-level waste streams, including DU. The staff plans to develop interim guidance for use until the rulemaking is complete and to offer public demonstrations of the models that support their efforts to date. The staff plans to respond to requests for technical assistance from Agreement States.

The Committee issued a report to the NRC Chairman on this matter dated March 18, 2010, recommending that the staff continue their efforts to risk-inform the regulations for disposal of depleted uranium based on site-specific, realistic performance assessments with appropriate consideration of uncertainties.

VI. Draft ACRS Report on the NRC Safety Research Program

[Note: Dr. Hossein Nourbakhsh was the Designated Federal Official for this portion of the meeting.]

The ACRS provides the Commission a biennial report presenting the Committee's observations and recommendations concerning the overall NRC Safety Research Program. During the March 2010 meeting, the Committee completed its biennial review and evaluation of the Reactor Safety Research Program sponsored by the NRC. The Committee will issue its 2010 biennial report to the Commission entitled, "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program," by April 15, 2010. The final report will be published as NUREG-1635, Vol. 9.

VII. Digital Instrumentation and Control Design Acceptance Criteria (DAC) Inspection Methodology

[Note: Mrs. Christina Antonescu was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to review the proposed DI&C Design Acceptance Criteria (DAC) inspection methodology and the plans for piloting this approach at the South Texas Project (STP). The DAC Working Group in NRO has developed a viable methodology for DAC review/inspection/resolution, and the staff plans to apply it to an actual DI&C DAC product at STP Units 3/4. The staff provided an overview of DI&C DAC inspection strategies which generally mirror the digital system/software development lifecycle found in the Standard Review Plan, Branch Technical Position 7-14 (Guidance for Review of Digital I&C Systems). The Inspection Strategy Documents borrow from industry standards, regulatory guidance and staff expertise, and feature descriptions, key attributes, and inspection techniques. These documents are intended to support lifecycle phase-oriented inspection and provide a technical basis for subsequent development of a new ITAAC Inspection Procedure (IP 65000 series) for I&C DAC. Following completion of the pilot effort, the DAC Working Group will identify and incorporate necessary enhancements into a generic methodology for future application.

This was an information briefing. No Committee action was necessary. The Committee plans to continue its review of DAC inspection guidance at a future meeting. The Committee has requested that, upon completion, copies of the Inspection Strategy Documents be provided by the staff for the Committee's review.

VIII. New Advanced Reactor Designs

[Note: Mrs. Kathy Weaver was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss the Agency's Advanced Reactor Program. The reactor technologies addressed by the Advanced Reactor Program include high-temperature gas-cooled reactors (i.e. the Next Generation Nuclear Plant), integral

pressurized water reactors (PWRs), and sodium-cooled fast reactors. The high-temperature gas-cooled reactors are associated with the Energy Policy Act of 2005 and the Next Generation Nuclear Plant (NGNP). The staff's current NGNP activities include evaluating existing requirements and guidance to identify needed changes, identifying significant policy and technical issues, and developing an overall licensing plan. The staff is also reviewing NGNP white papers associated with issues such as defense-in-depth, fuel design, high temperature materials, and analytical code verification and validation. Integral pressurized water reactors are PWRs with nuclear steam supply components (e.g. steam generator, reactor coolant pumps, etc.) housed within the reactor vessel. The staff is in pre-application discussions with vendors regarding the Westinghouse IRIS, NuScale, and B&W mPower designs. The NRC's activities associated with sodium fast reactors are limited, but the staff has had some pre-application interactions with vendors regarding the Toshiba 4S and General Electric PRISM designs.

The staff described some of the policy and technical issues associated with licensing these new reactor designs. The staff concluded their presentation by identifying topics for future ACRS interactions such as the high-temperature gas-cooled-reactor research plan and the resolution of specific policy or technical issues. This was an information briefing. No Committee action was necessary.

VI. Executive Session

[Note: Mr. Edwin Hackett was the Designated Federal Official for this portion of the meeting.]

A. Reconciliation of ACRS Comments and Recommendations/EDO Commitments

- The Committee considered the EDO's response of February 1, 2010, to comments and recommendations included in the December 10, 2009, ACRS report on the draft final Revision 1 of Regulatory Guide 1.151, "Instrument Sensing Lines." The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of December 11, 2009, to comments and recommendations included in the November 13, 2009, ACRS report on the status of the ACRS review of the Westinghouse AP1000 Design Certification Amendment. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of January 13, 2010, to comments and recommendations included in the December 10, 2009, ACRS report on the safety aspects of the license renewal application for the Prairie Island Nuclear Generating Plant, Units 1 and 2. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of December 3, 2009, to comments and recommendations included in the October 22, 2009, ACRS report on the closure of Steam Generator Action Plan Items 3.1k, 3.4, 3.5, 3.10, 3.11, and 3.12 and staff closeout of the Steam Generator Action Plan. The Committee decided that it was satisfied with the EDO's response.

B. Report of the Planning and Procedures Subcommittee Meeting

Review of the Member Assignments and Priorities for ACRS Reports and Letters for the March ACRS Meeting

Member assignments and priorities for ACRS reports and letters for the May ACRS meeting were discussed. Reports and letters that would benefit from additional consideration at a future ACRS meeting were also discussed.

Anticipated Workload for ACRS Members

The anticipated workload for the ACRS members through June 2010 was discussed and the objectives were to:

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate
- Manage the members' workload for these meetings
- Plan and schedule items for ACRS discussion of topical and emerging issues

Regulatory Guides and Interim Staff Guidance

a) Draft Final Regulatory Guide

The staff plans to issue the following Draft Final Regulatory Guides and would like to know whether the Committee wants to review these Guides prior to being issued final.

Draft Final Regulatory Guide 1.11, "Instrument Lines Penetrating the Primary Reactor Containment"

Regulatory Guide (RG) 1.11 has been revised to provide additional wording in Section B, Discussion, and Regulatory Position C.1. The additional wording clarifies that the requirements for redundancy, independence, and testability are for the system to which the instrument lines belonged and not to an instrument line itself. The instrument line design should support achievement of these design requirements for the systems they support.

Based on his review of this RG, Mr. Ray recommends that the Committee review the draft final revision to this Guide.

Draft Final Regulatory Guide 1.216, "Containment Structural Integrity Evaluation for Internal Pressure Loadings above Design-Basis Pressure"

RG 1.216 is a new guide that was issued as DG-1203 for public comments on December 9, 2008. The public comment period closed on February 9, 2009. Comments were received and RG 1.216 was revised accordingly. RG 1.216 describes methods that the NRC staff considers acceptable for (1) predicting the internal pressure capacity for containment structures above the design-basis accident pressure, (2) demonstrating containment structural integrity related to

combustible gas control, and (3) demonstrating containment structural integrity to meet the Commission's performance goals related to the prevention and mitigation of severe accidents. RG 1.216 does not address requirements and guidance for the structural evaluation of containments for design-basis pressure. Since issuance of DG-1203, the scope has been revised to address only new light water reactor designs, Regulatory Position 3 has been changed, Regulatory Position 4 has been eliminated, the title has been changed, and other minor clarifications.

Based on his review of this RG, Dr. Shack recommends that the Committee review the draft final revision to this Guide.

Draft Final Regulatory Guide 1.126, "An Acceptable Model and Related Statistical Methods for the Analysis of Fuel Densification"

RG 1.126 describes an analytical model and related assumptions and procedures that the staff considers acceptable for predicting the effects of fuel densification in light-water-cooled nuclear power reactors. The guide describes statistical methods related to product sampling that will ensure that this and other approved analytical models will adequately describe the effects of densification for each initial core and reload fuel quantity produced.

Based on his review of this RG, Dr. Armijo recommends that the Committee not review the draft final revision to this Guide.

Draft Final Regulatory Guide 1.28, "Assurance Program Requirements (Design and Construction)"

RG 1.28 extends the scope of the NRC's endorsement to include NQA 1, Part II, which contains amplifying QA requirements for certain specific work activities (which had been found in NQA-2) that occur at various stages of a facility's life. The work activities include, but are not limited to, management, planning, site investigation, design, computer software use, commercial grade dedication, procurement, fabrication, installation, inspection, and testing. Regulatory Guide 1.28, Appendix A, "Evolution of Quality Assurance Standards and the Endorsing Regulatory Guides," gives an overview and continuation of the history and consolidation of NRC-endorsed QA standards.

Based on his review of this RG, Mr. Stetkar recommends that the Committee not review the draft final revision to this Guide.

Draft Final Revision 1 to Regulatory Guide 1.65 (DG-1211), "Materials and Inspections for Reactor Vessel Closure Studs"

RG 1.65 has been revised to include a position previously established for license renewal and provided in NUREG/CR-1801, "Generic Aging Lessons Learned." This position is that design conservatism should be exercised in determining the sizing of the studs so that the measured ultimate tensile strength does not reach a level that would make the studs susceptible to stress

corrosion cracking. This revision also addresses the use of lubricants as reflected in NUREG-0800, "Standard Review Plan," Section 3.13, "Threaded Fasteners - ASME Code Classes 1, 2, and 3." The updated guidance incorporates operating experience regarding the types of lubricants that are acceptable and those that have been found to be detrimental. Finally, a number of references that were not cited in the original 1973 Guide have been added so make the guide easier to use.

Based on his review of this RG, Dr. Armijo recommends that the Committee not review this Guide.

Draft Final Regulatory Guide 3.39 (DG-3038), "Standard Format and Content of License Applications for Plutonium Processing and Fuel Fabrication Facilities"

RG 3.39 describes information acceptable to the NRC staff for review of a Safety Analysis Report (SAR) for mixed oxide fuel fabrication facilities. It also provides the standard format and content of an SAR and related documents that may be submitted as part of an application to construct or modify and operate a mixed oxide fuel fabrication facility.

Based on his review of this RG, Dr. Powers recommended that the Committee not review this Guide.

b) Draft Regulatory Guides

The staff plans to issue the following Draft Regulatory Guides for public comment and would like to know whether the Committee wants to review these Guides prior to being issued for public comment.

Proposed Revision 1 to RG 4.20 (DG-4018), "Personnel Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees Other than Power Reactors"

DG-4018 is a proposed Revision 1 to RG 4.20, which was issued in 1996. New tools have been developed since the issuance of RG 4.20. Several important changes are being proposed. The method for demonstrating compliance based on a simple ratio to the concentrations in 10 CFR Part 20 Appendix B has been revised from a ratio of less than or equal to 0.2 to be a ratio of less than or equal to 0.1. This is because the concentrations in 10 CFR Part 20, Appendix B for effluents were derived for a 100 mrem exposure and includes a factor of 2 for consideration of sensitive populations. The introductory text to Appendix B states the concentration results in 50 mrem, which does not take into consideration the factor of 2 included in the derivation. This change will allow demonstration that the 10 mrem/yr constraint is met for sensitive populations which is considered consistent with 10 CFR Part 20. The proposed revision has an enhanced discussion of the computer models, allows use of guidance other than ICRP 30, and allows use of site specific meteorological data and physical features. All references were reviewed and revised, as appropriate. The impact of these changes is to make the guidance more consistent with the regulation and incorporate appropriate current industry practice.

Based on his review of this Proposed Regulatory Guide, Dr. Ryan recommends that the Committee review the proposed revision to this Guide before being issued for public comment.

Proposed Revision 2 to RG 8.19 (DG-8034), "Occupational Radiation Dose Assessment in Light-Water Reactor Power Plants Design Stage Person-Sievert (Man-Rem) Estimates"

DG-8034 is a proposed Revision 2 of RG 8.19, which was issued in 1979. This Guide describes a method acceptable to the NRC staff for assessing the occupational radiation dose as part of the ongoing design review process involved in designing a light-water reactor (LWR) to ensure that occupational radiation exposures are as low as reasonably achievable (ALARA). This proposed revision updates the dose assessment based on design changes, e.g., shielding design and layout of equipment. References to 10 CFR 52.47, "Contents of Applications; Technical Information," and Part I, "Standard Format and Content of Combined License Applications," of Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," for certified designs have been added to provide more detail as to the information the NRC staff needs to evaluate applications. The terminology has been revised to be consistent with RG 1.206.

Based on his review of this Proposed RG, Dr. Ryan recommends that the Committee review the proposed revision to this Guide before being issued for public comment.

Proposed Revision 3 to RG 1.152 (DG-1249), "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants"

DG-1249 is a proposed Revision 3 of RG 1.152 which was issued as Revision 2 in January 2006. DG-1249 acknowledges that 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," requires licensees to develop cyber-security plans and programs to protect critical digital assets, including digital safety systems, from malicious cyber attacks. RG 5.71, "Cyber Security Programs for Nuclear Facilities," provides guidance to meet the requirements of 10 CFR 73.54. The combination of DG-1249 and the programmatic provisions under 10 CFR 73.54 should address the secure design, development, and operation of digital safety systems. To address these issues, DG-1249 eliminates all reference to cyber security, malicious activity, or attacks to remove any duplication between the documents. DG 1249 emphasizes RG 1.152's focus on security for the protection of digital safety systems against non-malicious events. DG-1249 deletes Regulatory Positions 2.6 through 2.9, which address security in the operational phases of a system's life cycle. Licensing is complete once the Factory Acceptance Testing is concluded. The licensee's cyber security programs should now address these considerations to meet the requirements of 10 CFR 73.54.

Based on his review of this Proposed RG, Mr. Brown recommends that the Committee review the proposed revision to this Guide after reconciliation of public comments.

Proposed Revision 1 to RG 2.6 (DG-2004), "Emergency Planning for Research and Test Reactors"

ANSI/ANS 15.16-2008, as revised and endorsed by this RG, includes a few key changes and experience accumulated since the issuance of the earlier version (ANSI/ANS 15.16-1982). Primarily, the changes in the standard and the RG are that they are now consistent with the changed dose limits of 10 CFR Part 20, "Standards for Protection against Radiation," and with

enhanced physical security practices for reactor facilities. Additionally, NRC Information Notice 92-79, "Non-Power Reactor Emergency Event Response," describes an event that required interface with the public and highlights the need for licensees to quickly apprise the NRC of the circumstances related to declaring an emergency classification.

Based on his review of this Proposed Regulatory Guide, Mr. Stetkar recommends that the Committee review the proposed revision to this Guide after reconciliation of public comments.

Proposed Revision 1 to RG 8.4 (DG-8036), "Personnel Monitoring Device - Direct-Reading Pocket Dosimeters"

DG-8036 is a proposed Revision 1 to RG 8.4 which was issued in 1973. It updates the ANSI Standard N322-2009 instead of the standard referenced in the previous version (ANSI N13.5-1972). The proposed revision provides guidance on direct-reading pocket dosimeters and excludes the indirect-reading pocket dosimeters which were included in the previous version of this guide. The indirect-reading pocket dosimeters are essentially no longer used. The proposed revision includes guidance for test and calibration frequency, limits for accuracy testing, training of users, and record keeping of the dosimeters testing results.

Based on his review of this Proposed RG, Dr. Ryan recommends that the Committee review the proposed revision to this Guide after reconciliation of public comments.

Proposed Revision 2 to RG 8.10 (DG-8033), "Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable"

DG-8033 is a proposed Revision 2 to RG 8.10. It updates the regulation citation and the supporting ALARA Regulatory Guides, adds a discussion on the ALARA concept, includes worker responsibilities, and emphasizes management commitment to ALARA with the initial design of the facility and its operating procedures. This includes describing management responsibilities related to resources, independent audits, audit recommendations, and training that demonstrate their commitment. Additional processes performed by the Radiation Protection Manager/Radiation Safety Officer and the Radiation Protection staff were added that strengthen their responsibility to maintain ALARA. These processes relate to work plans, procedures, investigation, documentation and exploring, and incorporating best practices.

Based on his review of this Proposed Regulatory Guide, Dr. Ryan recommends that the Committee review the proposed revision to this Guide after reconciliation of public comments.

Proposed DG-1216 (New RG), "Plant-Specific Applicability of Transition Break Size Specified in 10 CFR 50.46a"

DG-1216 is proposed as a new Regulatory Guide. Amendments to 10 CFR 50 are being proposed to establish procedures and criteria for requesting changes in plant design and procedures based on results of the new analyses of emergency core cooling system (ECCS) performance. This proposed RG describes a method that the staff considers acceptable for demonstrating that the generic transition break size specified in 10 CFR 50.46a is applicable to

a specific plant and provides for licensees to implement a voluntary, risk-informed alternative to the requirements for analyzing the performance of the ECCS during loss-of-coolant accidents. The detailed guidance provided in this proposed guide will allow licensees to more easily evaluate the benefits of using the provisions in the proposed 10 CFR 50.46(a) to make plant changes, while allowing the agency to minimize its review efforts of applications submitted for licensees wishing to use the alternative requirements of the rule.

Based on his review of this Proposed RG, Dr. Shack recommends that the Committee review the proposed revision to this Guide after reconciliation of public comments.

Proposed Revision 2 to RG 1.54 (DG-1242), "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants"

DG-1242 is a proposed Revision 2 to RG 1.54. This guide was first issued in June 1973. Revision 1 of RG 1.54 was issued in July 2000 to provide endorsement and regulatory positions on the American Society for Testing and Materials (ASTM) standards as applicable to nuclear power plant (NPP) protective coatings. Since the issuance of RG 1.54, Revision 1, many of the ASTM standards endorsed by RG 1.54 have been updated to reflect the current industry practice. This revision is being developed to provide NRC regulatory positions on the updated ASTM standards for the selection, qualification, application, and maintenance of protective coatings in NPPs.

Based on his review of this Proposed Regulatory Guide, Dr. Armijo recommends that the Committee not review the proposed draft and final revisions to this Guide.

c) Withdrawal of Regulatory Guides

The staff plans to withdraw the following Regulatory Guide and would like to know whether the Committee wants to review this Guide prior to being withdrawn.

Regulatory Guide 8.6, "Standard Test Procedure for Geiger-Müller Counters"

RG 8.6 was issued July 1973 and endorsed the test procedures specified in the American Nuclear Standards Institute (ANSI) N42.3-1969, "Test Procedure for Geiger-Müller Counters." In the 1970s, the Geiger-Müller (GM) counters were the main radiation detection instruments used by licensees. At that time, radiation protection programs needed the guidance included in RG 8.6 because there was limited information available on the use and maintenance of these counters. However, since the 1970s, technology has changed radically, and currently, in addition to GM counters, there are many types of radiation detection and measurement instruments used. Most of them are fairly complex to operate, maintain, and calibrate. Generally, the NRC does not provide specific guidance for the technical testing or calibration of radiation detection and measurement equipment. Any such guidance would soon become outdated, since the development of these instruments is continuously advancing, producing new models tailored to a whole range of specialized clientele. As is evidence of this, the ANSI N42.3-1969 has not been revised and therefore it is outdated and no longer useful. The manufacturers provide instructions and training for testing and calibration of each new

instrument. Also, since the 1970s, the industry has gained extensive experience in the characteristics of the GM counters and other instruments. In addition, organizations such as the National Institute of Standards and Technology and other private groups offer calibration services to those who lack in-house training and experience in testing and calibrating instruments.

Based on his review of the staff's basis for the proposed withdrawal of this Guide, Dr. Ryan recommends that the Committee not object to the staff's proposal to withdraw this Guide.

d) Interim Staff Guidance

The staff issued the following Interim Staff Guidance (ISG) as final and would like to know whether the Committee wants to review this Guidance.

ISG-015, "Post-Combined License Commitments"

The purpose of this ISG is supplement the guidance provided to the NRC staff in Section 1.0, "Introduction and Interfaces," of NUREG-0800, "Standard review Plan for the Review of safety Analysis Reports for Nuclear Power Plants," concerning the review of applications to support early site permit (ESP), design certification (DC) and combined license (COL) applications. In addition, this ISG supplements the guidance provided in Section C.III.4 of regulatory Guide (RG) 1.206, "Regulatory Guide for Combined License Applications for Nuclear Power Plants," June 2007.

Based on his review of ISG-015, Dr. Bley recommends the Committee to review this ISG.

Staff Requirements Memorandum

Attached is the Staff Requirements Memorandum (SRM-M091204) resulting from the ACRS meeting with the Commission on December 4, 2009. In this SRM, the Commission stated that "there were no requirements identified for staff action."

ACRS Meeting With the Commission

The ACRS is scheduled to meet with the Commission between 1:30 and 3:30 p.m., on Thursday, June 9, 2010 to discuss items of mutual interest. A list of topics proposed by the ACRS staff is provided below:

Overview (Abdel-Khalik)

- Accomplishments
- New Reactors Review Activities
- License Renewal/Power Uprates
- Ongoing/Future Activities

Risk-Informed Performance-Based Fire Protection (RG 2.105) (Stetkar)

Safety Research Program (Powers)

BWROG COP Methodology (Shack)

Status of Rulemaking for Disposal of Depleted Uranium (Ryan)

Changes to the Bylaws Regarding Election of Vice Chairman

According to the current bylaws, Chairman and Vice Chairman “shall be elected by a numerical majority of the current membership using a secret ballot.” For Member-at-Large “nominations will be made from the floor and seconded by the Committee Members. Subsequent to the nominations, the Member-at-large shall be elected by a numerical majority of the members attending the meeting using a secret ballot.”

During the December 2009 meeting, the Members discussed possible changes to the bylaws such as requiring nominations prior to the election of the Vice Chairman.

Changes to the bylaws may be proposed by any member. A proposed amendment to the bylaws should be distributed to the members by the Executive Director and scheduled for discussion at the next full Committee meeting. The final proposed amendment is to be voted on not earlier than the first regular meeting after it has been presented to the full Committee. A vote of two-thirds of the current membership is required to approve an amendment.

NRR Regulatory Information Conference

The 22nd Annual Regulatory Information Conference (RIC) will be held at the Bethesda North Marriott on March 9-11, 2010. A draft schedule of the technical sessions is attached (p. 22). The ACRS-sponsored session is scheduled for Thursday, March 11, from 11:00 a.m. to 1:00 p.m. The agenda for this session:

RIC SESSION TITLE: ACRS: The Latest Chapter

- (1) Dr. Said Abdel-Khalik, ACRS Chairman
Presentation Title - ACRS: Who We Are and What We Do
- (2) Frank Akstulewicz, Deputy Division Director, NRC Office of New Reactors
Presentation Title- ACRS Contributions to the New Reactor Licensing Process
- (3) Mark Manoleras, Director, Beaver Valley Site Engineering
Presentation Title- ACRS Interface: Utility Perspective
- (4) Dr. Edwin Lyman, Senior Staff Scientist, Union of Concerned Scientists
Presentation Title- The Role of the ACRS: A Public Interest View

Status of Solicitation for New Members

The ACRS has received permission from the Commission to extend the solicitation for a new member and to solicit for multiple positions. The new solicitation was published in the Federal Register on January 13, 2010, and will close after 90 days.

ACRS Feedback Form

The ACRS Chair is proposing a way for members to provide feedback on how meetings were supported by the technical and administrative staff.

Length and Content of Subcommittee Minutes

Member Dennis Bley is proposing a more straight forward approach for the preparation and certification of subcommittee meeting minutes. At issue is the length of some of the subcommittee minutes currently being generated, the time it takes the staff to prepare such documents, and the overall value added by these documents. After consulting the ACRS bylaws, he is of the opinion that it would seem reasonable for the subcommittee minutes to include a short "SUMMARY OF THE MEETING" documenting who presented what topics and a summary of the most meaningful comments of members. As long as the transcript and presentations are attached, there should be no need for the lengthy minutes to be prepared.

Availability of Committee's Draft Materials Prior to Meetings

Member Dennis Bley has raised the issue of availability and handling of ACRS draft materials.

Under FACA, Committee materials (including drafts) must be made available to the public when requested. However, FACA also provides for "preparatory work" to be performed in a non-public manner.

Annual Visit to a Nuclear Plant and Meeting with the Regional Administrator

Each year, the members visit a nuclear power plant site and meet with the Regional Administrator to discuss items of mutual interest. In 2010, the members plan to visit a plant in Region I.

Proactive Initiatives

Traditionally, Senior Technical Fellows performed special technical reviews for ACRS. In 2002, in order to meet the agency's A-76 goals, the position was outsourced and since then a technical contractor has been available to provide professional engineering and scientific work in support of the ACRS activities. The Committee may assign specific technical work to this contract resource.

C. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 571st ACRS Meeting, April 8-10, 2010.

A list of documents that were provided to the Committee during the 570th ACRS Meeting is listed in Appendix V.

The meeting was adjourned at 7:00 p.m. on March 5, 2010.

Rockville, Maryland 20852. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr.resource@nrc.gov.

Dated at Rockville, Maryland, this 16th day of February 2010.

For the Nuclear Regulatory Commission.

Carl F. Lyon,

*Project Manager, Plant Licensing Branch IV,
Division of Operating Reactor Licensing,
Office of Nuclear Reactor Regulation.*

[FR Doc. 2010-3497 Filed 2-22-10; 8:45 am]

BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards

In accordance with the purposes of Sections 29 and 182b of the Atomic Energy Act (42 U.S.C. 2039, 2232b), the Advisory Committee on Reactor Safeguards (ACRS) will hold a meeting on March 4-6, 2010, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Monday, October 14, 2009, (74 FR 52829-52830).

Thursday, March 4, 2010, Conference Room T2-B1, Two White Flint North, Rockville, Maryland

8:30 a.m.-8:35 a.m.: *Opening Remarks by the ACRS Chairman* (Open)—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

8:35 a.m.-10 a.m.: *Draft Final Interim Staff Guidance (ISG) on Fuel Cycle (ISG-7)* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI) regarding draft final ISG on Fuel Cycle, NRC staff's resolution of public comments, and related matters.

10:15 a.m.-12 p.m.: *Draft Final Regulatory Guide (RG) 1.141, "Containment Isolation Provisions for Fluid Systems"* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding draft final RG 1.141,

"Containment Isolation Provisions for Fluid Systems," NRC staff's resolution of public comments, and related matters.

1 p.m.-2 p.m.: *Draft Final Revision 1 to Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations"* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding draft Revision 1 to RG 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations," NRC staff's resolution of public comments, and related matters.

2 p.m.-3:15 p.m.: *"Status of Rulemaking for Disposal of Depleted Uranium and Other Unique Waste Streams"* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the status of rulemaking efforts addressing disposal of depleted uranium and other unique waste streams, and related matters.

3:30 p.m.-5 p.m.: *Draft ACRS Report on the NRC Safety Research Program* (Open)—The Committee will discuss the draft ACRS Report on Safety Research Program.

5 p.m.-7 p.m.: *Preparation of ACRS Reports* (Open)—The Committee will discuss proposed ACRS reports on matters discussed during this and the previous meeting (February 2010).

Friday, March 5, 2010, Conference Room T2-B1, Two White Flint North, Rockville, Maryland

8:30 a.m.-8:35 a.m.: *Opening Remarks by the ACRS Chairman* (Open)—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

8:35 a.m.-10:15 a.m.: *Digital Instrumentation and Control (I&C) Design Acceptance Criteria (DAC) Inspection Methodology* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding Digital I&C DAC Inspection Methodology.

10:30 a.m.-12 p.m.: *New Advanced Reactor Designs* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding new advanced reactor designs such as NuScale, Iris, Babcock and Wilcox Modular, Hyperion, Toshiba's 4S, and General Electric's Prism.

1:30 p.m.-3 p.m.: *Meeting with the NRC Executive Director for Operations*

(Open)—The Committee will meet with the NRC Executive Director for Operations (EDO) and Deputy EDOs to discuss topics of mutual interest.

3 p.m.-4:30 p.m.: *Future ACRS Activities/Report of the Planning and Procedures Subcommittee* (Open/Closed)—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings, including anticipated workload and member assignments, and related matters. [**Note:** A portion of this session may be closed pursuant to 5 U.S.C. 552b (c)(2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy]

4:40 p.m.-4:45 p.m.: *Reconciliation of ACRS Comments and Recommendations* (Open)—The Committee will discuss the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

5 p.m.-7 p.m.: *Preparation of ACRS Reports* (Open)—The Committee will discuss proposed ACRS reports.

Saturday, March 6, 2010, Conference Room T2-B1, Two White Flint North, Rockville, Maryland

8:30 a.m.-12:30 p.m.: *Preparation of ACRS Reports* (Open)—The Committee will continue its discussion of proposed ACRS reports.

12:30 p.m.-1 p.m.: *Miscellaneous* (Open)—The Committee will continue its discussion related to the conduct of Committee activities and specific issues that were not completed during previous meetings.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on October 14, 2009, (74 FR 52829-52830). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Persons desiring to make oral statements should notify Mr. Derek Widmayer, Cognizant ACRS Staff, (Telephone: 301-415-7366, E-mail: Derek.Widmayer@nrc.gov), five days before the meeting, if possible, so that

appropriate arrangements can be made to allow necessary time during the meeting for such statements. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the Cognizant ACRS staff if such rescheduling would result in major inconvenience.

Thirty-five hard copies of each presentation or handout should be provided 30 minutes before the meeting. In addition, one electronic copy of each presentation should be emailed to the Cognizant ACRS Staff one day before meeting. If an electronic copy cannot be provided within this timeframe, presenters should provide the Cognizant ACRS Staff with a CD containing each presentation at least 30 minutes before the meeting.

In accordance with Subsection 10(d) Public Law 92-463, and 5 U.S.C. 552b(c), certain portions of this meeting may be closed, as specifically noted above. Use of still, motion picture, and television cameras during the meeting may be limited to selected portions of the meeting as determined by the Chairman. Electronic recordings will be permitted only during the open portions of the meeting.

ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at pdr.resource@nrc.gov, or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System component of NRC's document system which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> or <http://www.nrc.gov/reading-rm/doc-collections/ACRS/>.

Video teleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301-415-8066), between 7:30 a.m. and 3:45 p.m. (ET), at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the video teleconferencing link. The availability of video teleconferencing services is not guaranteed.

Dated: February 17, 2010.

Andrew L. Bates,
Advisory Committee Management Officer.
[FR Doc. 2010-3489 Filed 2-22-10; 8:45 am]
BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

[NRC-2010-0002]

Sunshine Act; Notice of Meeting

DATES: Weeks of February 22, March 1, 8, 15, 22, 29, 2010.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public and Closed.

Week of February 22, 2010

Tuesday, February 23, 2010

9:25 a.m.

Affirmation Session (Public Meeting) (Tentative).

Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Unit Nos. 1, 2, and 3); Docket Nos. 50-003-LT-2, 50-247-LT-2, 50-286-LT-2, and 72-51-LT-2. (Request for Hearing on Extension of Time to Complete License Transfer) (Tentative).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>

9:30 a.m. Briefing on Decommissioning Funding (Public Meeting) (Contact: Thomas Fredrichs, 301-415-5971).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>.

Week of March 1, 2010—Tentative

Tuesday, March 2, 2010

9:30 a.m. Briefing on Uranium Recovery (Public Meeting) (Contact: Dominick Orlando, 301-415-6749).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>.

Week of March 8, 2010—Tentative

There are no meetings scheduled for the week of March 8, 2010.

Week of March 15, 2010—Tentative

Tuesday, March 16, 2010

1:30 p.m. Joint Meeting of the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission on Grid Reliability (Public Meeting). (Contact: Kenn Miller, 301-415-3152).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>.

Week of March 22, 2010—Tentative

There are no meetings scheduled for the week of March 22, 2010.

Week of March 29, 2010—Tentative

There are no meetings scheduled for the week of March 29, 2010.

* The schedule for Commission meetings is subject to change on short notice. To verify the status of meetings, call (recording)—(301) 415-1292. Contact person for more information: Rochelle Baval, (301) 415-1651.

Additional Information

The Briefing on Regional Programs—Programs, Performance, and Future Plans previously scheduled on Tuesday, February 9, 2010, at 9:30 a.m. has been postponed.

The NRC Commission Meeting Schedule can be found on the Internet at: <http://www.nrc.gov/about-nrc/policy-making/schedule.html>.

The NRC provides reasonable accommodation to individuals with disabilities where appropriate. If you need a reasonable accommodation to participate in these public meetings, or need this meeting notice or the transcript or other information from the public meetings in another format (e.g. braille, large print), please notify Angela Bolduc, Chief, Employee/Labor Relations and Work Life Branch, at 301-492-2230, TDD: 301-415-2100, or by e-mail at angela.bolduc@nrc.gov. Determinations on requests for reasonable accommodation will be made on a case-by-case basis.

This notice is distributed electronically to subscribers. If you no longer wish to receive it, or would like to be added to the distribution, please contact the Office of the Secretary, Washington, DC 20555 (301-415-1969), or send an e-mail to darlene.wright@nrc.gov.

February 18, 2010.

Rochelle C. Baval,
Office of the Secretary.

[FR Doc. 2010-3665 Filed 2-19-10; 4:15 pm]

BILLING CODE 7590-01-P

SECURITIES AND EXCHANGE COMMISSION

Sunshine Act Meeting

Notice is hereby given, pursuant to the provisions of the Government in the Sunshine Act, Public Law 94-409, that the Securities and Exchange Commission will hold a Closed Meeting on Thursday, February 25, 2010 at 2 p.m.

Commissioners, Counsel to the Commissioners, the Secretary to the



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

February 16, 2010

AGENDA
570th ACRS MEETING
MARCH 4-6, 2010

THURSDAY, MARCH 4, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND

- 1) ~~8:30~~ – 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)
1.1) Opening statement
1.2) Items of current interest
- 2) ~~8:35~~ – 10:00 A.M. Draft Final Interim Staff Guidance (ISG) on Fuel Cycle (ISG-7)
(Open) (CHB/CEA)
2.1) Remarks by the Subcommittee Chairman
2.2) Briefing by and discussions with representatives of the
NRC staff and the Nuclear Energy Institute (NEI) regarding
Draft Final ISG-7 on Fuel Cycle, the NRC staff's resolution
of public comments, and related matters

Representatives of the nuclear industry and members of the public
may provide their views, as appropriate.

~~10:00~~ – 10:15 A.M. *** BREAK ***

- 3) ~~10:15~~ – 12:00 P.M. Draft Final Regulatory Guide (RG) 1.141, "Containment Isolation
Provisions for Fluid Systems" (Open) (HBR/ZA)
3.1) Remarks by the Subcommittee Chairman
3.2) Briefing by and discussions with representatives of the
NRC staff regarding Draft Final RG 1.141, "Containment
Isolation Provisions for Fluid Systems," the NRC staff's
resolution of public comments, and related matters

Representatives of the nuclear industry and members of the public
may provide their views, as appropriate.

11:45
12:00 – 1:00 P.M. *** LUNCH ***

4) 1:00 – 2:00 P.M.

1:45

Draft Revision 1 to Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations" (Open) (MTR/DAW)

- 4.1) Remarks by the Subcommittee Chairman
- 4.2) Briefing by and discussions with representatives of the NRC staff regarding Draft Revision 1 to RG 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations," and related matters

Break 1:45-2:00

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

5) 2:00 – 3:15 P.M.

Status of Rulemaking for Disposal of Depleted Uranium and Other Unique Waste Streams (Open) (MTR/NMC)

- 5.1) Remarks by the Subcommittee Chairman
- 5.2) Briefing by and discussions with representatives of the NRC staff regarding the status of rulemaking efforts addressing disposal of depleted uranium and other unique waste streams, and related matters

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

✓ 3:15 – 3:30 P.M.

*** BREAK ***

6) 3:30 – 5:00 P.M.

Draft ACRS Report on the NRC Safety Research Program (Open) (DAP, et al/HPN, et al.)

- 6.1) Remarks by the Subcommittee Chairman
- 6.2) Discussion of a draft ACRS report on the NRC Safety Research Program

7) 5:00 – 7:00 P.M.

Preparation of ACRS Reports (Open)

Discussion of proposed ACRS reports on:

- 7.1) Draft Final Revision 1 to Regulatory Guide 1.62, "Manual Initiation of Protective Actions" (Open) (CHB/CEA/JCA)
- 7.2) Draft Final ISG-7 on Fuel Cycle (Open) (CHB/CEA)
- 7.3) Draft Final Regulatory Guide 1.141, "Containment Isolation Provisions for Fluid Systems" (Open) (HBR/ZA)
- 7.4) Draft Revision 1 to Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations" (Open) (MTR/DAW)
- 7.5) Status of Rulemaking for Disposal of Depleted Uranium and Other Unique Waste Streams (Open) (MTR/NMC)

FRIDAY, MARCH 5, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

8) ✓ 8:30 – 8:35 A.M.

Opening Remarks by the ACRS Chairman (Open) (SAK/CEA)

9) 8:35 – 10:15 A.M.

Digital Instrumentation and Control (I&C) Design Acceptance Criteria (DAC) Inspection Methodology (Open) (DCB/CEA)

- 9.1) Remarks by the Subcommittee Chairman
- 9.2) Briefing by and discussions with representatives of the NRC staff regarding Digital I&C DAC Inspection Methodology

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

off record → 10:00-10:30
harold ray 10: — 10:30
letter
review

10:15 – 10:30 A.M.

Break
*** BREAK ***

10) 10:30 – 12:00 A.M.

New Advanced Reactor Designs (Open) (DCB/KDW)

- 10.1) Remarks by the Subcommittee Chairman
- 10.2) Briefing by and discussions with representatives of the NRC staff regarding new advanced reactor designs such as NuScale, Iris, Babcock & Wilcox Modular, Hyperion, Toshiba's 4S, and General Electric's Prism

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

12:00 – 1:30 P.M.

*** LUNCH ***

11) 1:30 – 3:00 P.M.

Meeting with the NRC Executive Director for Operations (Open) (SAK/EMH)

- 11.1) Remarks by the ACRS Chairman
- 11.2) Briefing by and discussions with the NRC Executive Director for Operations (EDO) and Deputy EDOs on topics of mutual interest

12) 3:00 – 4:30 P.M.

Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed) (SAK/EMH)

- 12.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings
- 12.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments

[NOTE: A portion of this session may be closed pursuant to 5 U.S.C. 552b (c)(2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]

13) 4:30 – 4:45 P.M. Reconciliation of ACRS Comments and Recommendations (Open)
(SAK/CS/AFD)
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

4:45 – 5:00 P.M. *** BREAK ***

14) 5:00 – 7:00 P.M. Preparation of ACRS Reports (Open)
7:40 pm Continue discussion of the proposed ACRS reports listed under Item 7.

SATURDAY, MARCH 6, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

15) 8:30 – 12:30 P.M. Preparation of ACRS Reports (Open)
(10:00-10:15 A.M. BREAK) Continue discussion of the proposed ACRS reports listed under Item 7.

16) 12:30 – 1:00 P.M. Miscellaneous (Open) (SAK/EMH)
Discussion of matters related to the conduct of Committee activities and specific issues that were not completed during previous meetings, as time and availability of information permit.

NOTES:

- During the days of the meeting, phone number 301-415-7360 should be used in order to access anyone in the ACRS Office.
- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
- Thirty five (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACRS in advance of the briefing.
- One (1) electronic copy of each presentation should be emailed to the Designated Federal Official 1 day before the meeting. If an electronic copy cannot be provided within this timeframe, presenters should provide the Designated Federal Official with a CD containing each presentation at least 30 minutes before the meeting.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
570th FULL COMMITTEE MEETING

March 4-6, 2010

PLEASE PRINT

TODAY'S DATE: March 5, 2010

NAME	NRC ORGANIZATION
Denise McGovern	NRO/DNRL
Ian Jung	NRO/DE
Tim Fye	NRO/DCIP
Kevin Mattern	NRO/DCIP
Mohammed Shwarbi	NRO/DCIP
Halbert Li	NRO/DE/ICE2
PAUL PIERINGER	NRO/DCIP/COLP
Jack Zhao	NRO/DE/ICE1
Michael Webb	NRC/NRO
Kimberley Corp	NRO/DE/ICE2
MEM Michael Murray	STP
William Reckley	NRO/ARP
WILLIAM E. KEMPER	NRO/DE
JOSEPH WILLIAMS	NRO/ARP
KAHTAN JABBOUR	Consultant 301-657-3454
Arlon O. Coste	NRO/ARP
TITANUS KENYON	NRO/ARP
Patrick Raymond	RES/DSA/FSTB
Don Carlson	NRO/ARP
GREGORY SUBER	FSME/DWMEP

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
570th FULL COMMITTEE MEETING

March 4-6, 2010

PLEASE PRINT

TODAY'S DATE: March 4, 2010

	<u>NAME</u>	<u>NRC ORGANIZATION</u>
1	CLIFF DOUTH	NRR/DLR
2	Dennis Daman	NMSS/FCSS
3	Patricia Silva	NMSS/FCSS
4	Marissa Bailey	NMSS/FCSS
5	WILKINS SMITH	NRR/DLR
6	Bob Dennis	NRR/DSS/SCVB
7	John N. Ridgely	RES/DE/RGDB
8	Brent Clayton	NRO/DSEB
9	Maice Lee	NMSS/FSME
10	RICHARD LEE	RES/DSA/PSTB
11	Brett Rini	RES/DE
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
570th FULL COMMITTEE MEETING

March 4-6, 2010

PLEASE PRINT

TODAY'S DATE: March 5, 2010

NAME

AFFILIATION

Craig Swanner
Shelby Small
Alan Lewis
Bob Hirmanpour
STEVEN MIRSKY
Kimberly Keithline
Scott Head
Michael Murray
JERRY WILSON
Andrea Sterdis
Mary Pietrzyk
JACK DOWDREW
Susan Vrahovich
SHAWN MARSHALL

MPR Associates/TANE
AREVA
AREVA
NuStart
SAIC
NEI
STPNOC
STPNOC
NRC
TVA
NEI
NRC
NRC
NRC

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
570th FULL COMMITTEE MEETING

March 4-6, 2010

PLEASE PRINT

TODAY'S DATE: March 4, 2010

	<u>NAME</u>	<u>AFFILIATION</u>
1	GORDON CLEFTON	NET
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**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

March 16, 2010

**AGENDA
571st ACRS MEETING
APRIL 8-10, 2010**

**THURSDAY, APRIL 8, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND**

- 1) 8:30 – 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)
 - 1.1) Opening statement
 - 1.2) Items of current interest

- 2) 8:35 – 10:00 A.M. Draft Final Interim Staff Guidance (ISG) DC/COL-ISG-016,
"Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)"
(Open/Closed) (MVB/MB)
 - 2.1) Remarks by the Subcommittee Chairman
 - 2.2) Briefing by and discussions with representatives of the NRC staff regarding Draft Final DC/COL-ISG-016, "Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)"

[NOTE: A portion of this session may be closed to protect unclassified safeguards information pursuant to 5 U.S.C. 552b (c) (3).]

10:00 – 10:15 A.M. * BREAK *****

- 3) 10:15 – 12:00 P.M. Selected Chapters of the Safety Evaluation Report (SER) with
Open Items Associated with the Review of the U.S. Evolutionary
Power Reactor (USEPR) Design Certification Application
(Open/Closed) (DAP/DAW)
 - 3.1) Remarks by the Subcommittee Chairman
 - 3.2) Briefing by and discussions with representatives of the NRC staff and AREVA regarding Chapters 2, 4, 5, 8, 10, 12, and 17 of the SER with Open Items associated with the review of the USEPR Design Certification Application

[NOTE: A portion of this session may be closed to protect information that is proprietary to AREVA NP and its contractors pursuant to 5 U.S.C. 552b (c) (4).]

12:00 – 1:00 P.M. * LUNCH *****

- 4) 1:00 – 4:00 P.M. Supplement 3 to General Electric (GE) Topical Report NEDC-33173PA, "Applicability of GE Methods to Expanded Operating Domains" (Open/Closed) (SB/ZA)
4.1) Remarks by the Subcommittee Chairman
4.2) Briefing by and discussions with representatives of the NRC staff and GE regarding Supplement 3 to GE Topical Report NEDC-33173PA, "Applicability of GE Methods to Expanded Operating Domains"

[NOTE: A portion of this session may be closed to protect information that is proprietary to GE and its contractors pursuant to 5 U.S.C. 552b (c) (4).]

4:00 – 4:15 P.M. * BREAK**

- 5) 4:15 – 7:00 P.M. Preparation of ACRS Reports
Discussion of proposed ACRS reports on:
5.1) Draft Final DC/COL-ISG-016, "Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)" (Open/Closed) (MVB/MB)
5.2) Selected Chapters of the SER with Open Items Associated with the Review of the USEPR Design Certification Application (Open) (DAP/DAW)
5.3) Supplement 3 to GE Topical Report NEDC-33173PA, "Applicability of GE Methods to Expanded Operating Domains" (Open) (SB/ZA)

[NOTE: A portion of this session may be closed to protect unclassified safeguards information pursuant to 5 U.S.C. 552b (c) (3).]

FRIDAY, APRIL 9, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 6) 8:30 – 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)

- 7) 8:35 – 9:30 A.M. Final ISG ESP/DC/COL-ISG-015, "Post-Combined License Commitments" (Open) (DCB/KH)
7.1) Remarks by the Subcommittee Chairman
7.2) Briefing by and discussions with representatives of the NRC staff regarding Final ESP/DC/COL-ISG-015, "Post-Combined License Commitments"

9:30 – 9:45 A.M. * BREAK *****

- 8) 9:45 – 11:15 A.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed) (SAK/EMH)
- 8.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings
 - 8.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments

[NOTE: A portion of this session may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]

- 9) 11:15 – 11:30 A.M. Reconciliation of ACRS Comments and Recommendations (Open) (SAK/CS/AFD)
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

11:30 – 12:30 P.M. * LUNCH *****

- 10) 12:30 – 7:00 P.M. Preparation of ACRS Reports
Discussion of proposed ACRS reports on:
- 10.1) Draft Final DC/COL-ISG-016, "Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)" (Open/Closed) (MVB/MB)
 - 10.2) Selected Chapters of the SER with Open Items Associated with the Review of the USEPR Design Certification Application (Open) (DAP/DAW)
 - 10.3) Supplement 3 to GE Topical Report NEDC-33173PA, "Applicability of GE Methods to Expanded Operating Domains" (Open) (SB/ZA)
 - 10.4) Final ISG ESP/DC/COL-ISG-015, "Post-Combined License Commitments" (Open) (DCB/KH)

There may be a 15 minute break at some point during this activity.

[NOTE: A portion of this session may be closed to protect unclassified safeguards information pursuant to 5 U.S.C. 552b (c) (3).]

SATURDAY, APRIL 10, 2010, CONFERENCE ROOM T-2B1, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 11) 8:30 – 12:30 P.M. Preparation of ACRS Reports (Open/Closed)
Continue discussion of the proposed ACRS reports listed under Item 10. There may be a 15 minute break at some point during this activity.

[NOTE: A portion of this session may be closed to protect unclassified safeguards information pursuant to 5 U.S.C. 552b (c) (3).]

- 12) 12:30 – 1:00 P.M. Miscellaneous (Open) (SAK/EMH)
Discussion of matters related to the conduct of Committee activities and specific issues that were not completed during previous meetings, as time and availability of information permit.

NOTES:

- When appropriate, members of the public and representatives of the nuclear industry may provide their views during the briefings.
- During the days of the meeting, phone number 301-415-7360 should be used in order to access anyone in the ACRS Office.
- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
- Thirty five (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACRS in advance of the briefing.



Digital I&C Systems in Safety Applications at Fuel Cycle Facilities

**Advisory Committee on Reactor Safeguards
March 4, 2010**

David Rahn, Sr. Electrical/I&C Engineer
Division of Fuel Cycle Safety and Safeguards,
Office of Nuclear Material Safety and Safeguards
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Agenda

- Background
- Regulatory Basis
- Review Topics of DI&C-ISG-07
- Public/ACRS Comments Incorporated
- Status/Next Steps

Interim Staff Guidance (ISG) DI&C-ISG-07 on Fuel Cycle Facilities

- Purpose
 - To establish guidance for the consistent review of the availability and reliability of safety-related digital I&C applications in fuel cycle facilities
- Applicability
 - License applications for new facilities; amendments and renewals to facilities for which the digital I&C systems have not been previously reviewed by NRC

Regulatory Background

- Standard Review Plan NUREG-1520 does not contain specific references to design criteria within industry codes and standards for I&C
- 10 CFR Part 70 does not contain I&C or controls design criteria analogous to that of 10 CFR Part 50, Appendix A

Regulatory Background (continued)

- TWG-7 was formed in response to Industry and NRC concerns regarding the need for consistency of review of fuel cycle facility applications

Fuel Facility Risk vs. Reactor Risk

- Fuel facility radiological risk generally lower than that of power reactors
 - Worker radiation exposure low but still possible
 - Potential for criticality accidents poses risk to facility workers
 - Generally low offsite risks
- Differences in emergency shutdown I&C designs:
 - Fuel Cycle Facilities
 - For most applications, active engineered controls stop the process immediately – prevention vs. mitigation--facility placed in a safe condition
 - Light Water Reactors
 - Decay heat removal continues
 - Multiple redundant channels—1002 twice, 2003, etc
 - Inter-channel logic comparisons (newer designs)
 - Significantly higher consequences of accident sequences

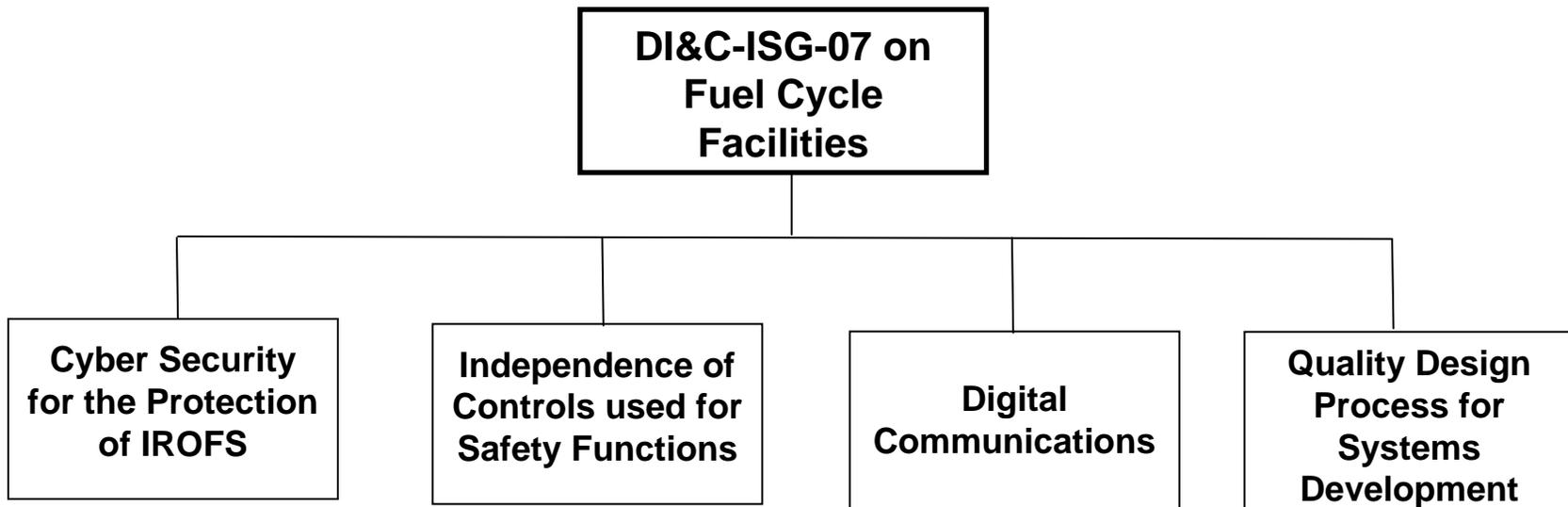
Regulatory Basis of DI&C-ISG-07

- 10 CFR Part 70 Safety Program
 - Conduct an Integrated Safety Analysis (ISA)
 - Identify each Facility Hazard and the Likelihood and Consequence of accident sequences
 - Facility Performance Requirements
 - Items Relied on for Safety (IROFS)
 - Management Measures

Items Relied on for Safety (IROFS)

- IROFS are structures, systems, equipment, components, and activities of personnel relied on to prevent potential accidents at a facility that could exceed the performance requirements in 70.61 or to mitigate their potential consequences.
- IROFS or Systems of IROFS may consist of:
 - Active Engineered Controls
 - Passive Engineered Controls
 - Administrative Controls
 - Combinations of the above

Review Topics DI&C-ISG-07



Cyber Security

- No current NRC policy or rulemaking exists regarding cyber security for fuel cycle facilities
- ISG defines cyber events – challenges to functions of digital IROFS—either deliberate or inadvertent
- ISG identifies good practices which may be programmatically applied to ensure the reliability and availability of digital IROFS. Goal: to protect safety functions from the effects of cyber events

Cyber Security (continued)

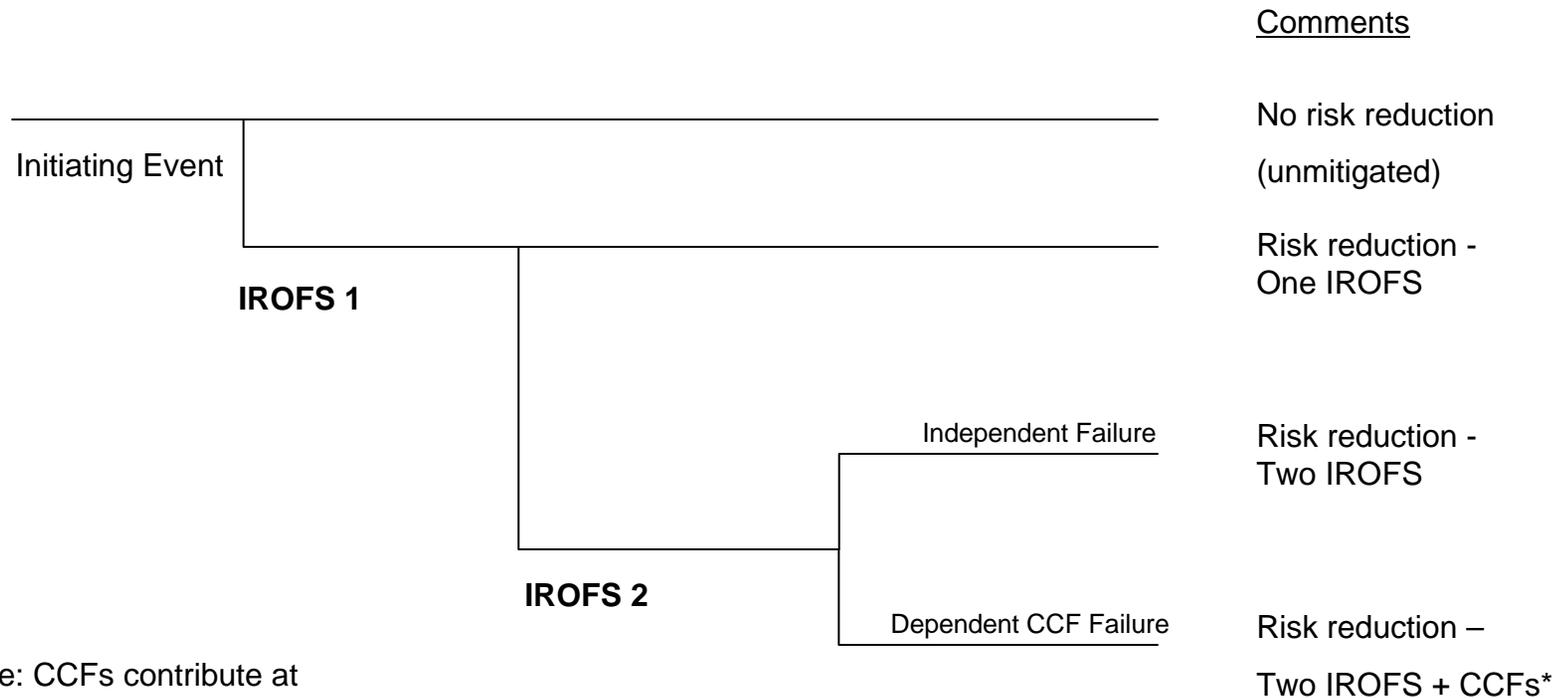
- The ISG provides review guidance in the form of acceptable high-level management measures describing performance goals, elements, and characteristics
- ISG identifies examples of critical tasks performed in fuel cycle facilities by digital systems that could benefit from the establishment of good cyber security practices
- Describes acceptable management measures and good practices which may be applied programmatically

Independence of IROFS

- The ISA identifies events and potential accident sequences to be prevented or mitigated through the application of one or more IROFS
- The likelihood of potential Common Cause Failure (CCF) contributions between two or more IROFS designed to prevent or mitigate a specific event should be minimized

Independence of IROFS (continued)

Simplified Event Tree



*Note: CCFs contribute at most 1% additional risk

Independence of IROFS (continued)

- Acceptance criteria for the likelihood of occurrence of potential Common Cause Failure (CCFs) contributions:
 - The combined likelihood of all potential CCFs must be significantly less than the likelihood of combined failures of all IROFS considered independently.
 - “Significantly less” means at least 2 orders of magnitude smaller than the estimate of independent failures for a system of IROFS. (No more than an additional 1% risk contribution.)

Independence of IROFS (continued)

- The ISG provides practical examples of acceptable designs for digital IROFS considered to be independent
- The ISG also provides guidance for the acceptance of other coping mechanisms for achieving independence when mathematical independence cannot be demonstrated
- The ISG also provides a discussion of acceptable ways of resolving software common cause failure contributions to risk (--use of diversity or 100% testability)

Digital Communications

- Goal is to provide assurance that IROFS are protected against potential digital communications errors
- Guidance is based on DI&C-ISG-04, ISG on Highly Integrated Control Rooms – Communications Issues

Digital Communications (continued)

- Digital Communication Management Measures
 - Protection from Communication Faults
 - Isolation between Safety and Non-Safety
 - Prevention of On-Line Changes to Software
 - Protection of the Integrity of Communications between Field Controllers and Human Machine Interfaces

High Quality Systems Development Process

- Goal is to have reasonable assurance that digital I&C safety systems are designed in a manner that minimizes the likelihood of common cause software failures
- Guidance is provided regarding acceptable graded management measures
 - Guidance addresses acceptable systems development processes for achieving high quality software, and methods for evaluating systems proposed for use in accomplishing safety functions

High Quality Systems Development (continued)

- The graded approach steps considered in the ISG include a range of quality processes:
 - 10 CFR 50 Appendix B software quality life cycle processes developed for use in commercial power reactors
 - Commercial grade dedication processes for Commercial off-the-shelf (COTS) systems
 - IEC 61508/ISA S84.00.01 and IEC 61511 (SIL Levels)
 - Alternative means, including third-party certification processes, for acceptably low-risk applications

High Quality Systems Development (continued)

- Management Measures should be implemented to address:
 - Software Requirements Specifications
 - Software Design
 - System Integration/Installation and Testing
 - Operations and Maintenance

ISG Development Process Used

- Task Working Group 7 had a high level of interaction with stakeholders (NEI and Fuel Manufacturers)
 - 18 Category 2 public meetings held
 - 2 Site visits with licensee engineering staff
- ISG Issued for Public Comments
 - Category 2 Public Meeting held to disposition comments
- ACRS Subcommittee presentation

Public Comments Addressed

- General comment throughout ISG: Clarify that the management measures identified may be applied in a graded manner, commensurate with the level of risk reduction required for the IROFS
- Specific comments regarding:
 - Cyber Security
 - Independence
 - Communications
 - High Quality Systems Development

ACRS Subcommittee Comments

- **Cyber Security:**
 - Refine definition of cyber event: Include both deliberate and unintended events. Exclude bona fide software design errors.
- **Communications:**
 - Clarify applicability of criteria: Focus on architecture typically found in fuel cycle facilities.

ACRS Subcommittee Comments (continued)

- High Quality Development Processes
 - Address adequacy of operating history on which to base conclusions regarding reliability
 - Include criteria regarding precautions for use of third-party certification processes

Status/Next Steps

- Public comments incorporated as appropriate and ACRS Subcommittee comments addressed.
- Next step: Digital I&C Steering Committee concurrence/Issue ISG for use
- Ultimate goal: Incorporate DI&C-ISG-07 guidance into the fuel cycle licensing standard review plan, NUREG-1520



Regulatory Guide 1.141 Revision 1

Containment Isolation Provisions For Fluid Systems

Briefing Objectives

- Identify pertinent:
 - Regulatory requirements
 - Industry guidance
 - Additional NRC guidance
- Provide a summary of the changes made from the initial issue of RG 1.141 to Revision 1.

Regulatory Requirements

- 10 CFR 50 Appendix A, GDC 54, 55, 56, & 57 requires licensees to provide isolation capabilities to piping systems that penetrate the primary containment to reflect the importance to safety of isolating these piping systems

Regulatory Requirements

- *Criterion 54--Piping systems penetrating containment.* Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

Regulatory Requirements

- *Criterion 55--Reactor coolant pressure boundary penetrating containment.* Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:
 - (1) One locked closed isolation valve inside and one locked closed isolation valve outside containment;
or

Regulatory Requirements

- *Criterion 55 (cont'd)*

- (2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or
- (3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or
- (4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Regulatory Requirements

- *Criterion 55 (cont'd)*

Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

Regulatory Requirements

- *Criterion 56--Primary containment isolation.* Each line that connects directly to the containment atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:
 - (1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or
 - (2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

Regulatory Requirements

- *Criterion 56 (cont'd)*

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

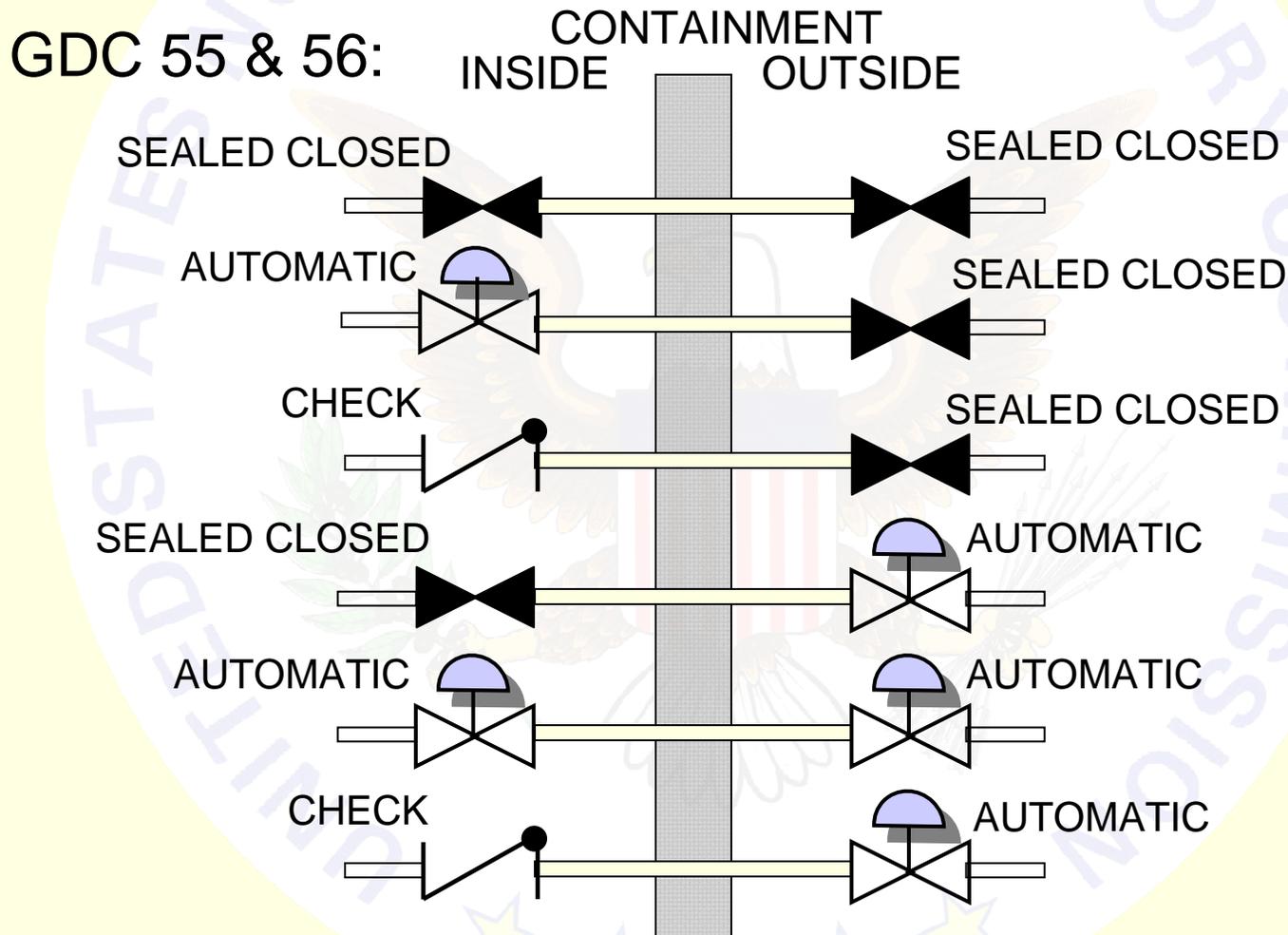
(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to the containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Regulatory Requirements

- *Criterion 57--Closed system isolation valves.* Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

Regulatory Requirements



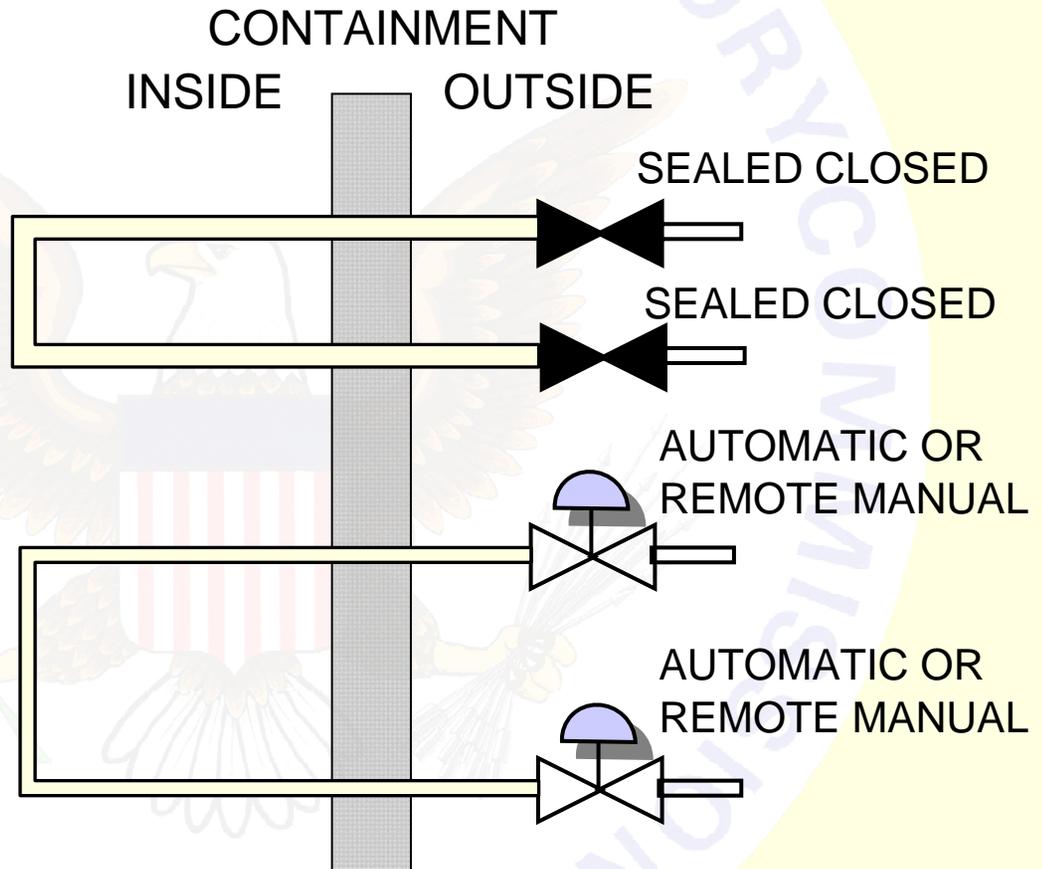
March 4, 2010

Regulatory Guide 1.141 Revision 1

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Regulatory Requirements

GDC 57:



Industry Guidance

- The American Nuclear Society (ANS) Standards Committee ANS-50, Nuclear Power Plant Systems Engineering, formed a Working Group (ANS-56.2) which in April, 1973 initiated preparation of an industry standard to cover in one document the requirements for containment isolation provisions for fluid systems. The American National Standards Institute, Inc. approved that standard June 28, 1976 as N271-1976, Containment Isolation Provisions for Fluid Systems.

Industry Guidance

- Reg Guide 1.141, April 1978 (original issue) endorsed N271-1976 as being generally acceptable subject to 6 regulatory positions.
- The ANS-56.2 working group responsible for ANS N271-1976 disbanded in the mid-1980's.

Additional NRC Guidance

- The Three Mile Island accident occurred in March 1979.
- NUREG-0737, Clarification of TMI Action Plan Requirements, was published in November, 1980. Clarification Item II.E.4.2, Containment Isolation Dependability, identified recommended positions on containment isolation system designs. These were incorporated into 10 CFR 50.34(f)(2) and Section 6.2.4, Containment Isolation System, of the July, 1981, reissue of the Standard Review Plan as NUREG-0800.

Additional NRC Guidance

- NUREG-0800, Standard Review Plan, Section 6.2.4, Containment Isolation System, Revision 3 was issued in March, 2007.

Regulatory Guide 1.141, Revision 1

- The substance and regulatory positions identified are essentially intact from the existing (original issue) version of RG 1.141.
- Includes improved regulatory guidance as a result of the NRC staff's review of the lessons learned from the accident at Three Mile Island Nuclear Generating Station, Unit 2
- Provides updated NRC guidance on acceptable design, testing, and maintenance requirements that licensees may use to comply with GDC 54, 55, 56, & 57 of Appendix A to 10 CFR Part 50 for the isolation of fluid systems that penetrate the primary containment of light-water-cooled reactors.

Regulatory Guide 1.141, Revision 1

- Similar to the original issued in April, 1978, RG 1.141, Revision 1 endorses the provisions of industry standard ANSI N271-1976, “Containment Isolation Provisions for Fluid Systems” subject to certain regulatory positions.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 1 (Carry-over from original Reg Guide issue.):

Section 3.6.4 of ANSI N271-1976 states, “The closed system shall be leak tested in accordance with 5.3 of this standard unless it can be shown by inspection that system integrity is being maintained for those systems operating at a pressure equal to or above the containment design pressure.” The system integrity inspections may be applied to closed systems inside the containment in lieu of leak testing.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (Brought in from SRP 6.2.4. It modifies provision of N271-1976 by restricting relief valves used as containment isolation valves to having a set point of at least 1.5 times containment design pressure.):

Section 3.6.6 of ANSI N271-1976 states “Relief valves in the backflow direction may be employed as isolation valves provided they satisfy the requirements of this standard.” The licensee may use relief valves in the backflow direction or the forward (relief) flow direction as isolation valves

Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (cont'd):

provided that the relief set-point is greater than 1.5 times the containment design pressure in a manner consistent with NRC SRP 6.2.4, Subsection SRP Acceptance Criteria Item #7.

Review of historical documents shows the limitation to “greater than 1.5 times the containment design pressure” appeared in the May 1980 LWR Edition of NUREG-75/087, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants. A former NRC employee familiar with review

Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (cont'd):

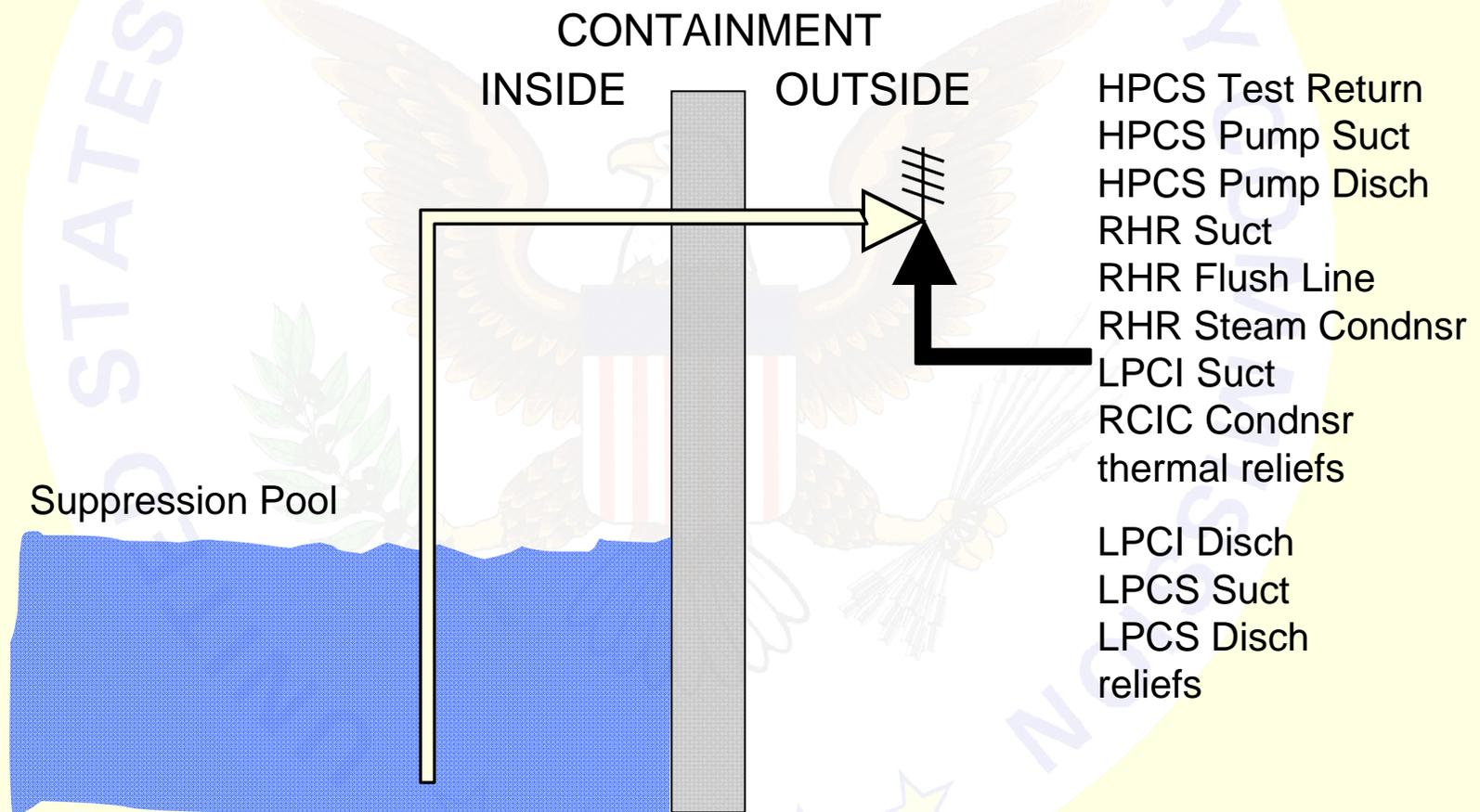
of containment isolation provisions at that time indicated a general recollection that the “1.5 times” restriction was being used as early as 1978. No documented basis for exactly when or how the “1.5 times” was arrived at was found. Most systems penetrating containment were designed for 125 psig or greater and with most containment design pressures 75 psig or less, a relief valve setpoint of at least 1.5 times containment design pressure should be readily achievable to allow proper pressure

Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (cont'd):
protection of the affected systems (while avoiding gross pressure over-design) and a reasonable margin for setpoint drift to ensure post-accident containment integrity.

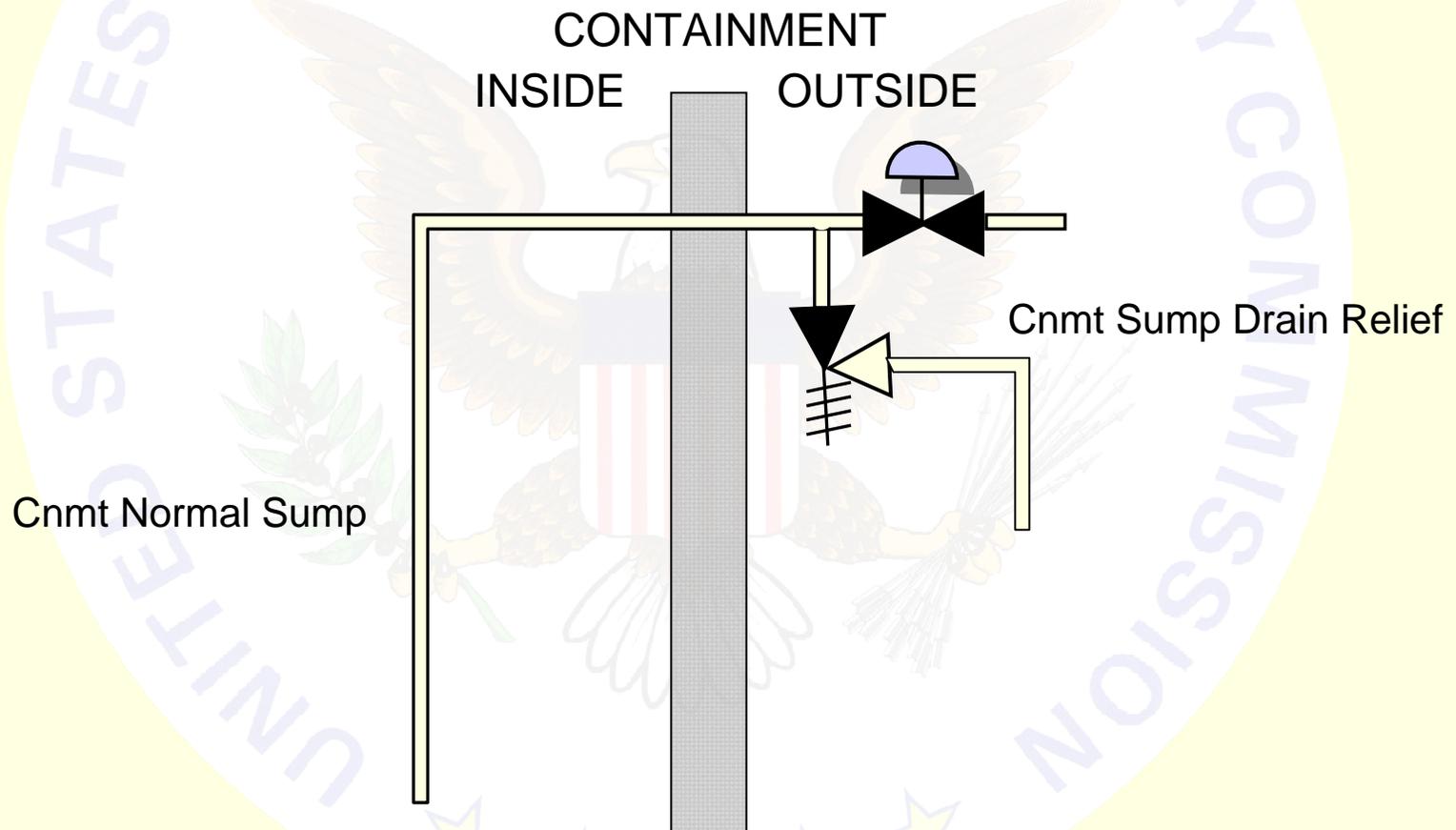
Regulatory Guide 1.141, Revision 1

■ Regulatory Position 2 (cont'd):



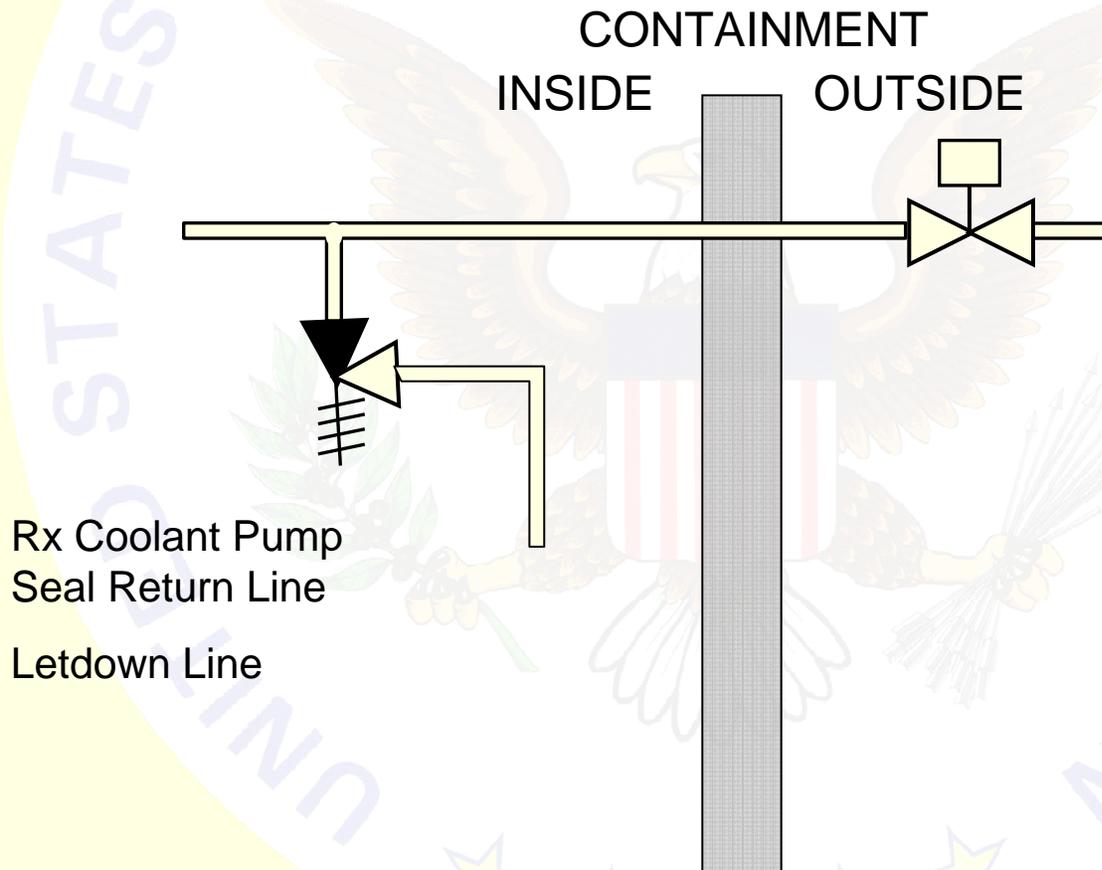
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- Regulatory Position 2 (cont'd):



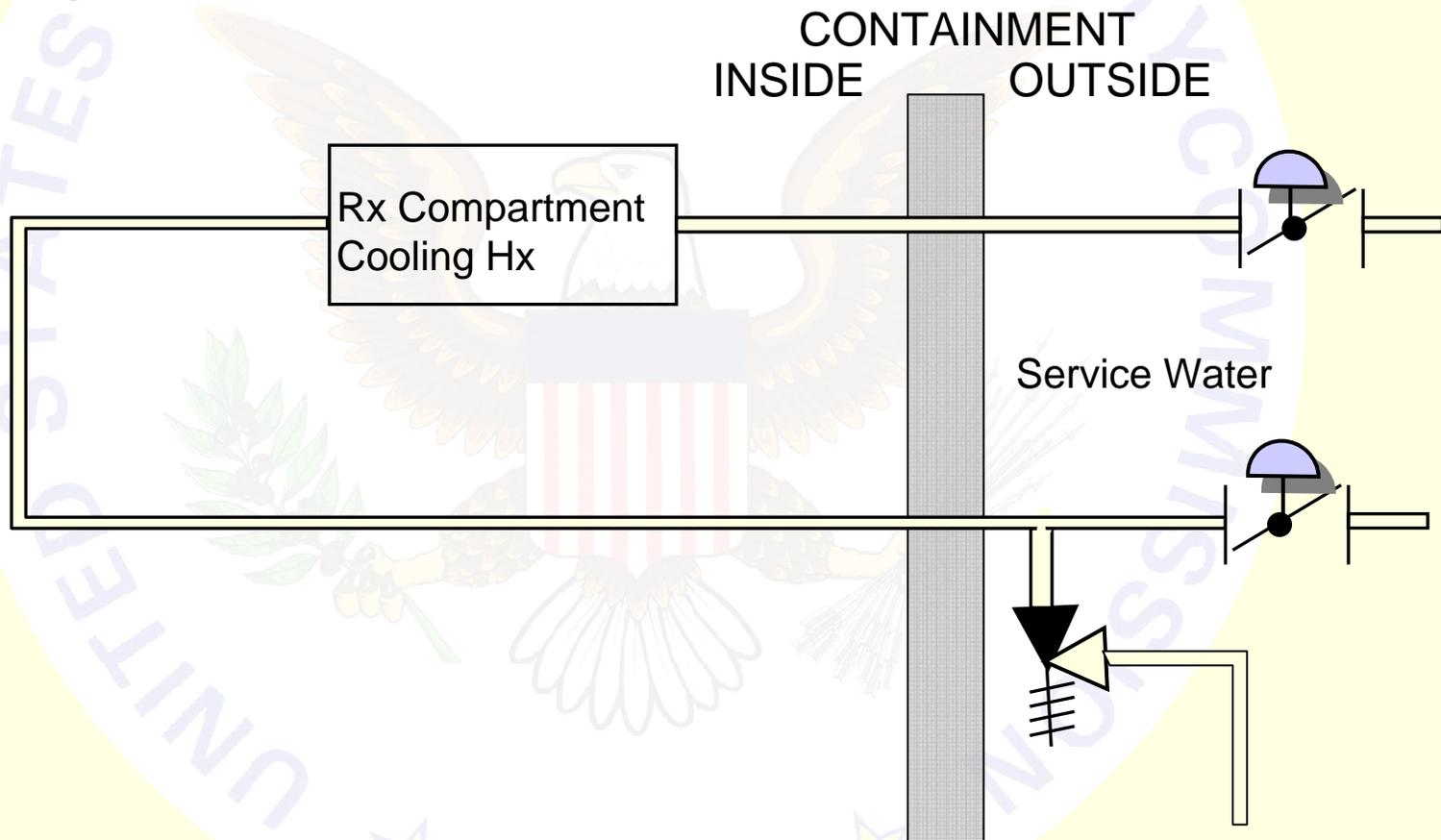
Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (cont'd):



Regulatory Guide 1.141, Revision 1

- Regulatory Position 2 (cont'd):



Regulatory Guide 1.141, Revision 1

- Regulatory Position 3 (Brought in from Generic Letter 96-06, “Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions.” Provision for accident related thermally induced overpressure protection for containment penetration piping if that pressure would exceed the design pressure of the containment barriers and piping.):

The licensee should provide thermally induced overpressure protection for liquid-filled piping between containment isolation barriers inside containment to prevent damage when the piping is isolated unless

Regulatory Guide 1.141, Revision 1

■ Regulatory Position 3 (cont'd)

the licensee can demonstrate that the pressure between the isolation barriers cannot exceed the design pressure of the isolation barriers or the design pressure of the piping. Any thermally induced overpressure protection method that the licensee uses should provide such protection inside containment at the maximum back-pressure condition that could exist during a loss-of-coolant accident.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 4 (Carry-over from original Reg Guide issue.):

Section 4.2.3 of ANSI N271-1976 states, “Sealed closed isolation valves are under administrative controls and do not require position indication in the control room for valve status.” Because the containment isolation valves are components of the containment isolation system, which is an engineered safety feature system, all power-operated valves should have position indication in the control room.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 5 (Brought in from SRP Section 6.2.4.):

Section 4.2.4 of ANSI N271-1976, “Isolation valve closure shall be completed when an isolation signal is received, and the valve shall not be opened until the signal is removed and deliberate operator action is taken (reset switch).” The reactor operator should not be able to override a containment isolation signal in such a way that would return any isolation valve to its normal (pre-accident) condition by a single action. More specifically, neither the reset/override of the safety injection actuation signal nor the reset/override of a containment isolation

Regulatory Guide 1.141, Revision 1

■ Regulatory Position 5 (cont'd)

actuation signal for a group of valves should cause the reopening of any isolation valve. The licensee should not consider the use of procedural controls to prevent the reopening of a valve upon reset/override as an acceptable design alternative. The design of the reset/override capability should require a deliberate separate operator action, in addition to the reset/override of the signal, reopening of each containment isolation valve. Reg Guide 1.33, "Quality Assurance Program Requirements (Operation)," provides additional guidance on procedures.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 6 (Carry-over from original Reg Guide issue with expanded detail.):

Section 4.2.5 of ANSI N271-1976 states, “Diversity in means of actuation of automatic isolation valves in series should be considered to preclude common mode failure.” The NRC staff’s position is that the licensee should provide diversity in the parameters sensed (i.e., types of isolation signals) for the initiation of containment isolation. The licensee may design the containment isolation logic to automatically initiate containment isolation upon the

Regulatory Guide 1.141, Revision 1

- Regulatory Position 6 (cont'd):

occurrence of an isolation signal derived from the individual coincidence logic of any of the continuously monitored parameters, such as those given in Section A.2 of Appendix A to ANSI N271-1976 for boiling-water reactors or in Section B.2 of Appendix B to ANSI N271-1976 for pressurized-water reactors. As a minimum, the licensee should monitor the following parameters, each with the capability of initiating containment isolation:

Regulatory Guide 1.141, Revision 1

- Regulatory Position 6 (cont'd):
 - a. *high containment pressure;*
 - b. *high radiation level within containment; and*
 - c. *any manual, automatic, or coincident actuation of an engineered safety feature system or subsystem.*

Regulatory Guide 1.141, Revision 1

- Regulatory Position 7 (Brought in from SRP Section 6.2.4. Added stipulation that a containment isolation signal should automatically isolate all nonessential systems.):

Section 4.4.2 of ANSI N271-1976 states, “For power-operated isolation valves, which do not receive a containment isolation signal, the primary mode shall be a remote manual initiation signal from the main control room.” However, a containment isolation signal should automatically isolate all nonessential systems, as required in 10 CFR 50.34(f)(2)(xiv).

Regulatory Guide 1.141, Revision 1

- Regulatory Position 8 (Carry-over from original Reg Guide issue.):

Section 4.4.8 of ANSI N271-1976 gives general design requirements for closed systems. In addition, all branch lines and their isolation valves in closed systems both inside and outside the containment should meet the design criteria of Section 3.5 or Section 3.6.7 of ANSI N271-1976 if the branch line constitute one of the containment isolation barriers.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 9 (Carry-over from original Reg Guide issue with expanded detail.):

Section 4.6.3 of ANSI N271-1976 cites Reg Guide 1.7, “Control of Combustible Gas Concentrations in Containment following a Loss-of-Coolant Accident”, for guidance in determining radiation exposures for a loss-of-coolant accident. Reg Guide 1.89, “Qualification of Class 1E Equipment for Nuclear Power Plants”, gives more appropriate guidance to determine radiation exposures for a loss-of-coolant accident.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 9 (cont'd)

For plants that have amended their licensing basis to use an alternative source term, see Appendix I of Reg Guide 1.183.

Regulatory Guide 1.141, Revision 1

- Regulatory Position 10 (Carry-over from original Reg Guide issue.):

Section 4.14 of ANSI N271-1976 states, “The piping between isolation barriers or piping, which forms part of isolation barriers, shall meet the requirements of 3.7 and applicable requirements for isolation barriers.” Piping between isolation barriers should meet the applicable requirements of Section 3.5 or Section 3.7 of ANSI N271-1976.

Regulatory Guide 1.141, Revision 1

- No public comments received.
- No reduction in or lessening of regulatory positions.
- No back-fit intended in connection with issuance of Revision 1.

Proposed Revision 2 to RG 4.11 Terrestrial Environmental Studies for Nuclear Power Stations



J. Peyton Doub, PWS, CEP
Environmental Scientist (Terrestrial Ecologist)
NRO-DSER-RENV
March 4, 2010 Presentation to ACRS

Regulatory Guides

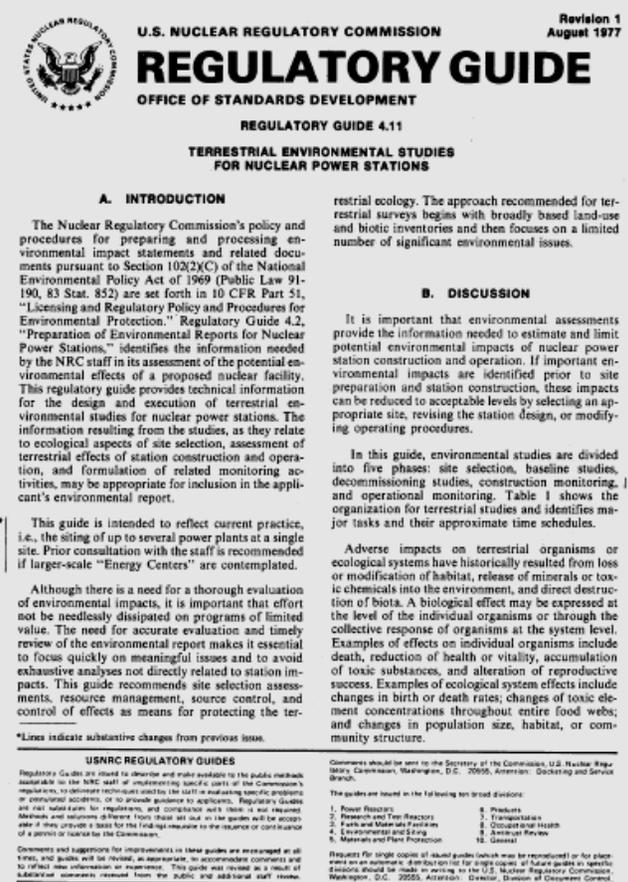
From NRC Website:

The Regulatory Guide series provides guidance to licensees and applicants on implementing specific parts of the NRC's regulations, techniques used by the NRC staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits or licenses.



Regulatory Guide 4.11 History

- First published: July 1976
- Revision 1 (latest): August 1977
- Addresses terrestrial ecological studies over life cycle of nuclear power plants
- Does not address aquatic ecological studies
- Proposed Revision 2: Internally drafted in 2009 as Draft Guide (DG) 4016.
- Presentation to ACRS Radiation Protection and Nuclear Safety Subcommittee December 16, 2009



December 16, 2009 Presentation

- Requested by ACRS Radiation Protection and Nuclear Materials Subcommittee
- Overview of history of RG 4.11
- Objectives for Revision 2 to RG 4.11
- Detailed summary of Revision 2 (DG 4016)
- Copies of Revision 2 (DG 4016) made available
- Answered questions from Subcommittee
- Received oral comments from Subcommittee



U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REGULATORY RESEARCH

October 2009
Division 4

DRAFT REGULATORY GUIDE

Contact: P. Doub
(301) 415-6703

DRAFT REGULATORY GUIDE DG-4016 (Proposed Revision 2 of Regulatory Guide 4.11, dated August 1977)

TERRESTRIAL ENVIRONMENTAL STUDIES FOR NUCLEAR POWER STATIONS

A. INTRODUCTION

This guide provides technical guidance that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for terrestrial environmental studies and analyses supporting its licensing decisions. The NRC issued Regulatory Guide (RG) 4.11, Revision 1, in August 1977 before the implementing of many environmental regulations affecting its licensing decisions. For the purposes of DG-4016, the term "terrestrial" encompasses permanently dry lands (uplands) and those wetlands and other aquatic features supporting emergent (not submerged) vegetation. DG-4016 does not address aquatic features containing only submerged aquatic vegetation.

DG-4016 defines general objectives for terrestrial analyses but does not provide stepwise instructions or technical protocols. Professional judgment is necessary when identifying analytical methods appropriate to each licensing decision and when collecting the associated data. Various agencies and universities are continually refining terrestrial ecology protocols and developing new approaches to achieve regulatory objectives. Analysts using this guidance should contact appropriate Federal and State environmental regulatory agencies and search recent scientific literature for specific data collection protocols and analytical processes. Analysts should justify the methods selected.

This regulatory guide is being issued in draft form to involve the public in the early stages of the development of a regulatory position in this area. It has not received final staff review or approval and does not represent an official NRC final staff position.

Public comments are being solicited on this draft guide (including any implementation schedule) and its associated regulatory analysis or value/impact statement. Comments should be accompanied by appropriate supporting data. Written comments may be submitted to the Rulemaking, Directives, and Editing Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; e-mailed to nrcprep_resource@nrc.gov; submitted through the NRC's interactive rulemaking Web page at <http://www.nrc.gov>; or faxed to (301) 492-3446. Copies of comments received may be examined at the NRC's Public Document Room, 11555 Rockville Pike, Rockville, MD. Comments will be most helpful if received by **[insert date - 60 days from issuance]**.

Electronic copies of this draft regulatory guide are available through the NRC's interactive rulemaking Web page (see above); the NRC's public Web site under Draft Regulatory Guides in the Regulatory Guides document collection of the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/doc-collections/>; and the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>, under Accession No. ML092660571.

Regulatory Guide 4.11

- Does not **directly** address terrestrial ecology sections in Environmental Reports (ERs) prepared by Industry (included in RG 4.2)

However, RG 4.11 does serve to:

- **Indirectly** improve ERs prepared by Industry by identifying improved terrestrial supporting studies



Yellow-Crown Night Heron
Peyton Doub 2008

Relationship of RG 4.11 to Other NRC Environmental Guidance

Document	Title	Function	Principal User
RG 4.11	Terrestrial Environmental Studies for Nuclear Power Stations	Provide guidance to Industry on the conduct of terrestrial ecology technical surveys and studies	Applicants
RG 4.2	Preparation of Environmental Reports for Nuclear Power Stations	Provide guidance to Industry on preparation of ERs submitted as part of applications	Applicants
NUREG 1555	Standard Review Plans for Environmental Reviews for Nuclear Power Plants	Provide guidance to NRC staff reviewing applications and preparing NEPA documents	NRC Staff

Why Revise RG 4.11

- Changes since 1977 in terrestrial ecology knowledge base
- Changes since 1977 in Federal and state regulatory policy for terrestrial ecology
- Changes since 1977 in terrestrial ecology survey methodologies
- Staff has recognized variability in how COL and ESP applicants have investigated terrestrial ecology
- Need consistent terminology with RG 4.2 and NUREG 1555
- Need to define terrestrial-aquatic boundary
- Need to address wetlands



Reddish Egret
Peyton Doub 2008

Objectives for Rev. 2 to RG 4.11

- Update RG 4.11 to reflect current scientific knowledge and analytical practice.
- Make RG 4.11 consistent with other NRC environmental guidance, including RG 4.2 and NUREG 1555.
- Not outline step-by step procedures, but identify sources of terrestrial ecology data and analytical methodologies.
- Be specific enough to be useful but general enough to avoid need for frequent revision.
- Reflect the need for adequate terrestrial ecology data to support use of RG 4.2 and NUREG 1555.
- Not imply a need for greater effort beyond that currently needed for successful use of RG 4.2 or NUREG 1555.



Part of Proposed Site for CCNPP Unit 3
Peyton Doub 2006

Terrestrial

- Encompasses normally dry lands (uplands)

Plus

- Wetlands supporting emergent (not submerged) vegetation



Planted Pine Forest
Peyton Doub 2008



Tidal Marsh
Peyton Doub 2008

Overall Organization of Rev. 2 to RG 4.11 (DG 4016)

- Siting Support
- Baseline Investigations
- Identifying Important Species and Habitats
- Impact Analyses
- Monitoring
- Decommissioning



Red-winged blackbirds
Peyton Doub 2008

Baseline Investigations

Investigation	Calvert Cliffs Example
Terrestrial Habitat Identification, Mapping, and Description	Included in Flora Survey Report
Flora Study	Flora Survey Report
Fauna Study	Faunal Survey Report
Wetland Delineation	Wetland Delineation Report
Wetland Functional Assessment	Included in Wetland Delineation Report
Identification of Important Species/Habitats	Rare Plant Survey Report Current Status of Two Federally Threatened Tiger Beetles at Calvert Cliffs Nuclear Power Plant

FINAL RARE PLANT SURVEY REPORT

For

Proposed UniStar Nuclear Project Area
Calvert Cliffs Nuclear Power Plant Site
Calvert County, Maryland



Prepared by:
Tetra Tech NUS
20251 Century Blvd., Suite 200
Germantown, Maryland 20874

Principal Investigator: J. Peyton Doub, PWS, CEP

Prepared for:
UniStar Nuclear Development, LLC

May 2007

Identifying Important Species

- Defined using specific criteria from NUREG 1555
- Focuses scope of subsequent terrestrial ecological studies
- Focuses scope of applicant's Environmental Report (ER)
- Focuses scope of NRC's Environmental Impact Statement (EIS)
- Assists applicant and NRC with environmental regulatory compliance
- May serve as basis for terrestrial ecological monitoring



American crocodile
Federal Endangered
Peyton Doub 2008



Great White Heron
FL Sp, Special Concern
Peyton Doub 2008



Phragmites australis
Invasive plant species
Peyton Doub 2008

Impact Analyses

- Habitat Loss Analyses
- Wildlife Noise Impact Analyses
- Wildlife Displacement Analyses
- Bird and Bat Collision Analyses
- Avian Electrocution Analyses
- Cooling Tower Drift Analyses

Note: Specific needs for impact analyses are highly project-specific.



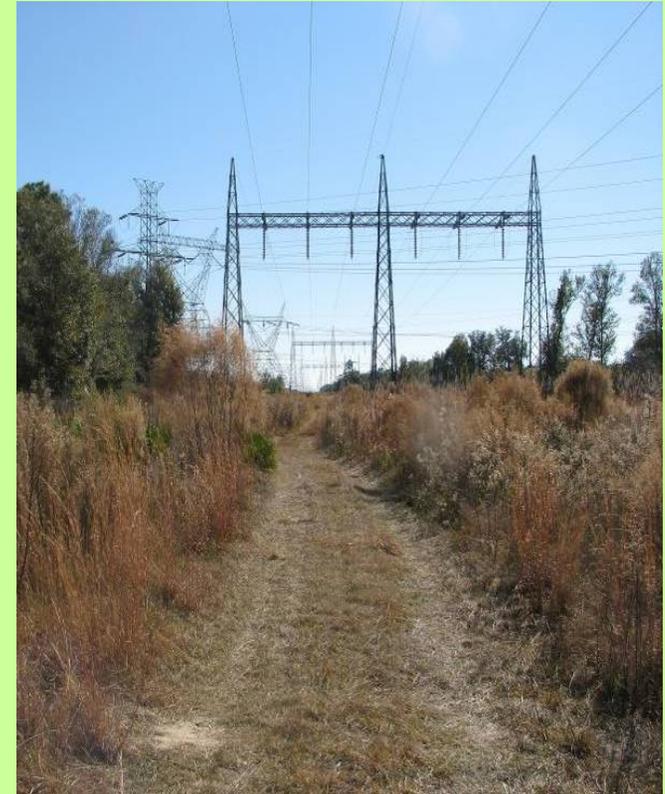
Site Preparation Work for Proposed New Vogtle Reactor

Photo Source:

<http://www.internal.nrc.gov/news/nrcreporter/2009/slide-show/summer-progress.html>

Monitoring

- Need for monitoring of terrestrial ecological conditions over construction and operations period can be based on:
 - Conditions in permits under Section 404 of Clean Water Act (U.S. Army Corps of Engineers)
 - Conditions in Biological Opinions under Section 7 of the Endangered Species Act (U.S. Fish & Wildlife Service)
 - Conditions in other Federal and state natural resources permits
 - Mitigation measures in EIS (which licensee commits to implement)
 - NRC license conditions (expected rarely)
- Most terrestrial ecological monitoring requirements will be established and overseen by the U.S. Fish & Wildlife Service and state and local natural resource agencies



Transmission Line Right-of-Way
Peyton Doub 2008

Decommissioning

- Long-term planning
- Restoration of site to functioning terrestrial habitats
- Need for baseline data prior to initial site disturbance
- May require disturbance of naturally vegetated land areas outside of former operational area



Black Vulture
Peyton Doub 2006

Subcommittee Comments

- Be sure Revision 2 calls out RG 4.2 (on Environmental Report preparation)
- Specificity in Revision 2 is desirable – It should be roadmap for applicants to minimize potential for RAIs
- Include a discussion of how products produced following RG 4.11 will be used by NRC to comply with NEPA
- Clearly state that RG 4.11 is specific to nuclear power station licensing and does not apply to other NRC licensing such as for fuel cycle activities
- Be careful in use of words such as “may”, “can”, “recommend”, and “encourage”.

Future Direction

- Incorporate Subcommittee comments from December 16, 2009.
- Incorporate comments received from today's presentation.
- We are still waiting for internal review and possible comments from NRR.
- Issue proposed Revision 2 to RG 4.11 (as DG 4016) for public comment.
- Revise DG 4016 to incorporate public comments.
- Publish Revision 2 to RG 4.11.
- Encourage future applicants to use Revision 2 to RG 4.11.
- Evaluate how well Revision 2 to RG 4.11 improves terrestrial ecological data included in future application packages.
- Consider development of companion RG addressing aquatic ecological studies.



Bald Eagles mating
Peyton Doub 2008

Status of Rulemaking for Depleted Uranium and Other Unique Waste Streams

Presented to Advisory Committee on Reactor Safety
570th Meeting, March 4-6, 2010

Patrice Bubar, Deputy Director
Division of Waste Management and Environmental Protection



Overview

- Background
- Commission Direction
- Rulemaking
- Summary of Workshops
- Next Steps

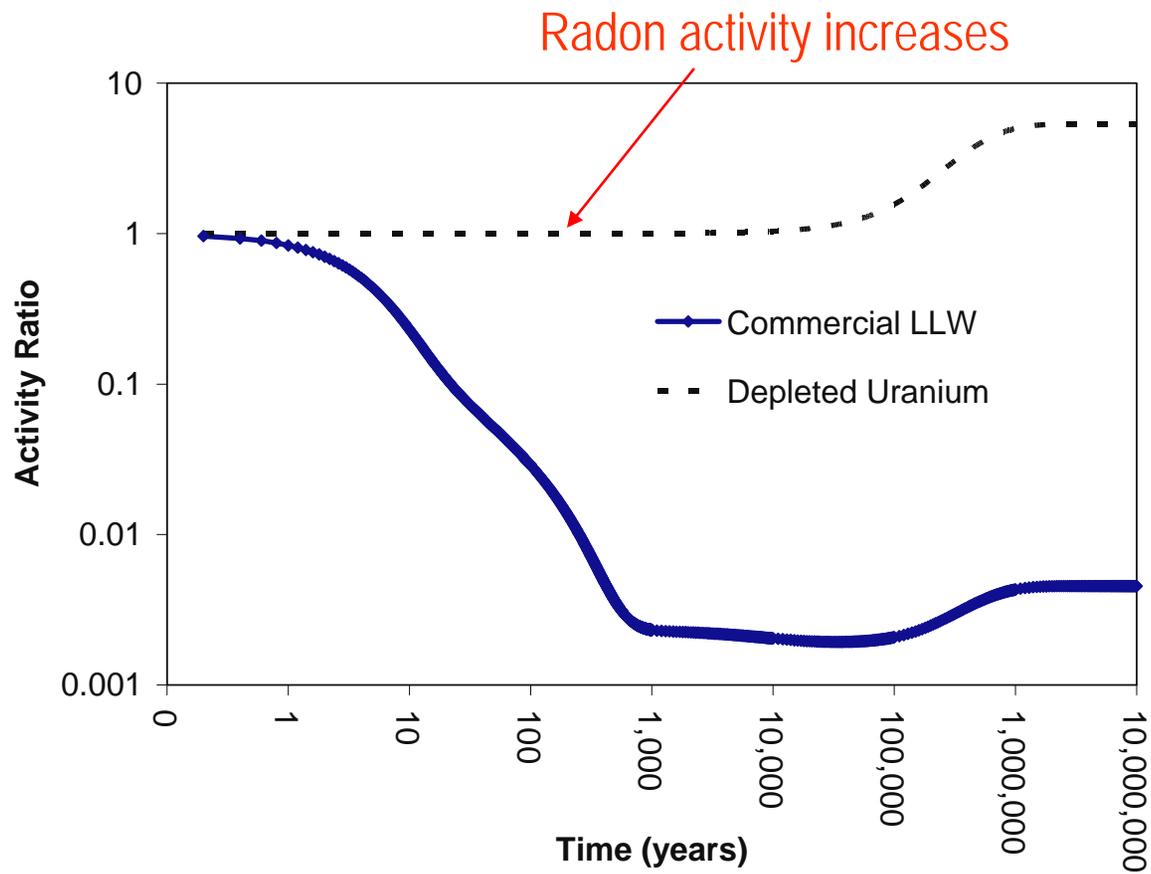
Background

- Depleted Uranium (DU):
 - Limited consideration in 10 CFR Part 61
 - Concentrations and quantities generated today exceed earlier Part 61 considerations
 - “Unique waste stream”
 - Concerns:
 - Behavior over time
 - Mitigation possible

Increase burial depth

Install robust radon barrier

DU vs. Typical LLW



Commission Direction

- Memorandum and Order CLI-05-20
(dated 10.19.05)
 - Commission directed staff, “outside of the LES adjudication, to consider whether the quantities of depleted uranium (DU) at issue in the waste stream from uranium enrichment facilities warrant amending section 61.55 (a)(6) or the section 61.55 (a) waste classification tables.”

SECY-08-0147

- Prepared in response to Commission Order CLI-05-20
- Content
 - Technical analysis evaluating impacts of near-surface DU disposal
 - Provided four possible regulatory approaches
 - Identified preferred option

Staff Analysis

- Screening model for unique waste streams developed for SECY-08-0147
- Analysis methodology consistent with original Part 61 analysis
- Examined key variables:
 - Period of performance
 - Disposal depth
 - Receptor types and scenarios
 - Site characteristics
- Performed probabilistic assessment

Results

- If radon gas is included, shallow disposal at an arid site is challenging
- For humid sites, the groundwater pathway can exceed the performance objectives
- Greater consideration of long-term stability needed
- Site-specific conditions can result in large variance in dose impacts

Options Evaluated



- Generic Communication
- Require site-specific analysis
- Classification of DU within existing Part 61 framework
- Re-examine existing Part 61 waste classification framework

SRM-SECY-08-0147



- In SRM dated 3.18.09, Commission approved Staff Option #2
 - Amend Part 61 to require site-specific performance assessment for DU disposal
 - Develop PA guidance document and obtain public input
- In the longer-term, Commission also directed staff to budget to re-examine Part 61 waste classification framework
 - Updated waste stream assumptions concerning LLW
 - Conformance with ICRP methodologies

Public Workshops



- Promptly conduct public workshop to discuss:
 - Issues associated with DU disposal
 - Potential issues to be considered in rulemaking
 - Technical parameters of concern in the PA
- Two Workshops Completed
 - September 2-3, 2009, Bethesda, MD
 - September 23-24, 2009, Salt Lake City, UT
 - Attendance exceeded 160 participants

Public Comments

- Rule should ...
 - Specify time period of regulatory concern (period of performance)
 - Requirement to perform and update PA
 - Specify intruder dose limit of 500 mrem/yr
- Guidance should ...
 - Specific details about exposure scenarios
- No need to define threshold for “significant quantities”

Comments (con't.)



- No need to define the term “unique waste streams”
 - Address on a case-by-case basis through PA
 - Do not “overreach” during the initial rulemaking

Guiding Principles

- Risk-Informed/Performance-Based Regulation
 - 1995 PRA *Policy Statement*
 - Direction-Setting Initiative 12 (COMSECY-96-061)

PA Rulemaking Time Table



- Public workshops
 - *September 2009*
- Technical/regulatory basis document
 - *September 30, 2010*
- Proposed rule and draft guidance
 - *September 30, 2011*
- Final rule and guidance
 - *September 30, 2012*

Long-Term Rulemaking



- Risk-inform Part 61 waste classification framework
- Change conforming legislation as needed
- Evaluate and revise waste classification tables
 - Explicitly address classification of DU
 - Consider full range of alternatives

Public Concerns

- Shallow land burial may not be appropriate
 - Deep geologic disposal may be more appropriate
 - Disposal in salt domes may be more appropriate
- Public release of the SECY-08-0147 screening model and regulatory basis document
- Compatibility assignment and implementation

Next Steps ...

- Development of PA guidance for interim use
- Offer to demonstrate/explain SECY-08-0147 model to public
- Respond to any requests for technical assistance to States
 - Increased communication with stakeholders and public on LLW management issues

Next Steps (con't.)



- Incorporate public comments into development of technical/regulatory basis document
- Issue key messages from September 2009 workshops on website

LLW/DU Resources



- Visit the NRC unique waste stream website at ...
<http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams.html>
- Commission's 1995 PRA *Policy Statement*
<http://www.nrc.gov/reading-rm/doc-collections/commission/policy/60fr42622.pdf>

LIST OF DOCUMENTS FROM THE
570th MEETING MARCH 3-4, 2010

Agenda Item 2:

Draft Final Interim Staff Guidance (ISG) on Fuel Cycle (ISG-7)

1. Table of Contents
2. Proposed Agenda
3. Background Material

Agenda Item 3:

Draft Final Regulatory Guide (RG) 1.141, "Containment Isolation Provisions for Fluid Systems"

4. Table of Contents
5. Purpose
6. Discussion
7. Conclusion
8. Reference
9. Regulatory Guide 1.141, "Containment Isolation Provision for Fluid Systems," June 2009 (After Public Comments)
10. Compare RG 1.141 June 2009 and RG 1.141 1
11. Applicable General Design Criteria for Containment Isolation
12. Subcommittee Status Report

Agenda Item 4:

Draft Revision 1 to Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations"

13. Proposed Agenda
14. Status Report
15. Draft Regulatory Guide 4016, "*Terrestrial Environmental Studies for Nuclear Power Stations*"
16. Consultant Report – comments on DG-4106, "*Terrestrial Environmental Studies for Nuclear Power Stations.*"

Agenda Item 5:

Status of Rulemaking for Disposal of Depleted Uranium and Other Unique Waste Streams

17. Proposed Schedule
18. Status Report

LIST OF DOCUMENTS FROM THE
570th MEETING MARCH 3-4, 2010

Agenda Item 9:

Digital Instrumentation and Control (I&C) Design Acceptance Criteria (DAC) Inspection Methodology

- 19. Table of Contents
- 20. Proposed Agenda
- 21. Status Report

Agenda Item 10:

New Advanced Reactor Designs

- 22. Proposed Schedule
- 23. Status Report

Agenda Item 11:

Meeting with the NRC Executive Director for Operations

- 24. Proposed Schedule
- 25. Status Report
- 26. Background Material

Objectives

Provide the Committee:

- **Details of proposed Digital I&C (DI&C) Design Acceptance Criteria (DAC) inspection methodology**
- **Overview of staff approach and plan for conducting pilot DAC inspection for South Texas Project 3&4 (ABWR Design)**
- **Summary of long-term goals for integrating pilot lessons learned and DAC inspection process enhancements with ITAAC Closure process**

Background

- **Staff initiated complex ITAAC/DAC inspection framework development in mid-2009**
- **South Texas Project (STP) requested staff verification/audit of early DI&C DAC elements in 6/09 letter**
- **Staff commenced development of DAC inspection methodology that would be “piloted” with STP**

Pilot DAC Inspection Benefit

- **Staff gains confidence in STP processes at early stages of design & implementation effort**
- **Informs NRC DAC inspection process**
- **Enables optimization of process and resources for future DI&C DAC inspection**

DAC Working Group Overview

- **Chartered 11/09 to develop and implement DAC inspection methodology in test case (pilot) with STP**
- **Collaborative effort between NRO divisions, RII/CCI, OGC and NRR**
- **Primary focus is DI&C DAC (piping and HFE DAC efforts also initiated)**
- **Charter later modified to include integration with ITAAC Closure process**

Working Group Activities

- **Development and refinement of DAC inspection process (framework) that coordinates staff expertise**
- **Development of inspection strategies and procedures**

DI&C DAC Inspection Considerations

- **Scope and depth of inspection**
- **Not a licensing review**
- **Focus on the licensee's process and the Acceptance Criteria**

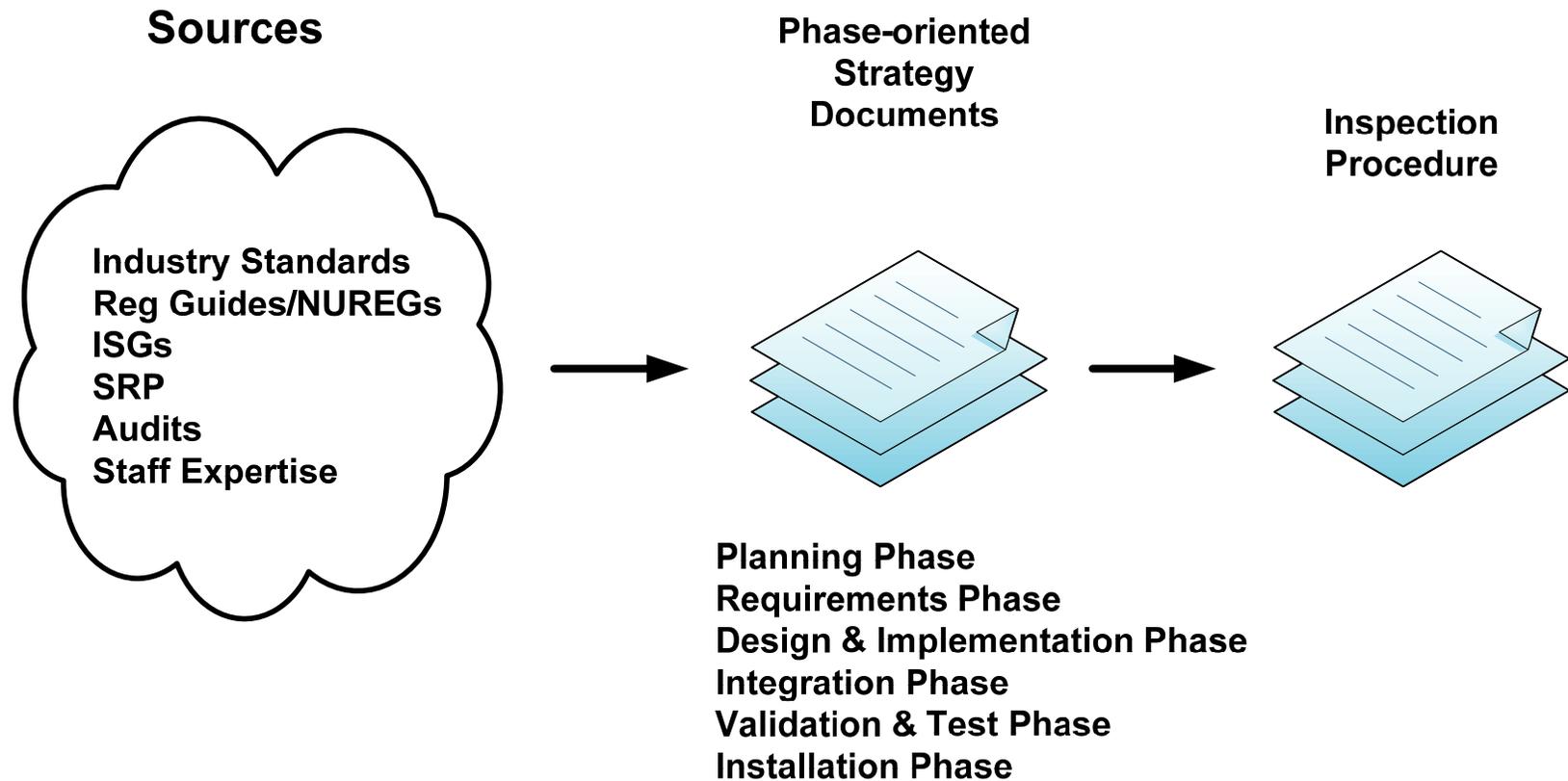
DAC Inspection Objective

**Verification that the design detail
will meet the acceptance criteria
(complies with licensing basis)**

DI&C DAC Inspection Strategies

- **Planning tool for DI&C inspection activity**
- **Technical information and insight for the inspector**
- **Generic for any DI&C DAC inspection**

Inspection Tool Development



Strategy Documents

- **Input from industry standards, guidance, staff expertise, etc.**
- **DI&C system/software lifecycle phase-oriented**
- **Feature key attributes, acceptance criteria, inspection techniques**
- **Precursor to the DAC inspection procedure**

DI&C Lifecycle Phase-oriented Inspection

- **Focus:**
 - **process and technical activities within each lifecycle phase**
 - **transition activities between phases**
- **Phase inspection typically starts when activities for a given phase are complete**

Lifecycle Phase Inspection

- **Assessment of design processes and documentation**
- **Sampling of attributes within the phase**
- **Thread audits (where appropriate);**
 [Requirements-Design-Code-Testing]
- **Assessment of Software QA processes and activities**
- **Assessment of Independent V&V activities**

Inspection Level of Effort

- **Front-loaded effort for the Planning and Requirements phases**
- **Effort is scalable based on early findings**
- **Inspection will be conducted for each safety-related DI&C platform and software application**

South Texas Pilot

- **Schedule driven by availability of STP DAC products**
- **Originally, pilot inspection planned for 2nd Qtr 2010**
- **Based on STP schedule, a two-part pilot inspection is more appropriate**

Two-Part Pilot Inspection

- **Part 1: Program inspection of high-level DI&C lifecycle planning and process (June 2010)**
- **Part 2: Implementation inspection of selected DI&C platform planning phase activities (Nov 2010 (tentative))**

Planned Pilot Activities

- **Complete Inspection Strategies**
- **Develop new DAC inspection procedure**
- **Select DAC product for inspection**
- **Tabletop process with STP**
- **Identify inspection staff**
- **Conduct the Pilot Inspection**

Pilot Inspection

- **Governed by IMCs 2503 (ITAAC Inspection) and 0613 (Inspection Documentation)**
- **Inspection issues will be screened and documented in a docketed Inspection Report**
- **Inspection Report will be used as applicable to support closure verification for related ITAAC**

Post-Pilot

- **Compile and incorporate lessons learned**
- **Modify, refine and enhance process as necessary for generic industry applicability**
- **Integrate with ITAAC Closure process**

Long-Term DAC Inspection

- **STP provided a schedule for DAC availability through factory testing**
- **Staff working on identifying DAC inventory among all designs**
- **Staff will plan accordingly to accommodate DAC inspection**

Future Activities

- **Post-Pilot, work with NEI to modify NEI 08-01**
- **Reg Guide 1.215 will be updated accordingly**

Discussion/Committee Questions

Advanced Reactor Program



ACRS Meeting

March 5, 2010

Advanced Reactor Organization

Michael E. Mayfield, Director

Advanced Reactor Program

Office of New Reactors

Background

- Pre-application interactions with potential domestic suppliers increasing
- Energy Policy Act of 2005 established Next Generation Nuclear Plant Project
- Significant global interest

Background

- Established the Advanced Reactor Program
- One of three subprograms in NRO
- Lead licensing project management organization for all advanced reactors

Background

■ Advanced Reactor Program

■ Priorities to:

- Building organization (staffing, resources)
- Developing regulatory infrastructure and addressing generic policy issues for SMRs
- Preparations for Next Generation Nuclear Plant (NGNP)
- Preparations for other near-term SMR applications (e.g., integral PWR designs)

Background

- Office of Nuclear Regulatory Research
 - Current RES focus is related to high temperature gas-cooled reactor technology (NGNP)
 - Coordination of research activities with DOE
 - Development of analytical models and tools
 - Materials and high temperature environments
 - Currently developing research plans for integral PWRs and for sodium-cooled fast reactors

Advanced Reactor Program

- Program addresses four technology groups
 - High Temperature Gas-Cooled Reactors (i.e., Next Generation Nuclear Plant (NGNP))
 - Integral pressurized water reactors
 - Sodium-cooled fast reactors
 - Other Designs

Next Generation Nuclear Plant (NGNP)

William Reckley, Branch Chief

Advanced Reactors Branch 1

Advanced Reactor Program

Office of New Reactors

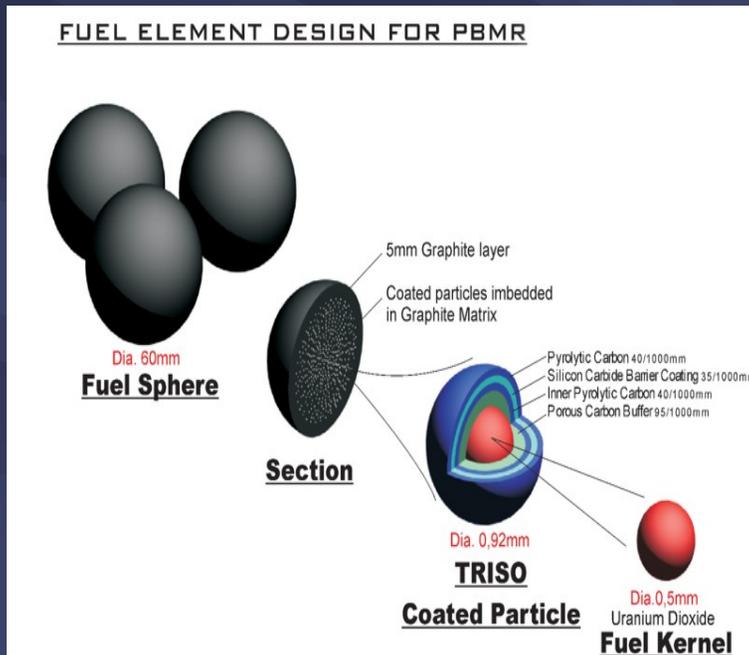
NGNP-Overview

■ Energy Policy Act of 2005

- The NRC shall have licensing and regulatory authority....
- The DOE and NRC shall jointly submit ...a licensing strategy for the prototype nuclear reactor...
 - August 2008 report states success depends on:
 - Productive use of pre-application period (now to 2013)
 - Meeting major milestones, including supporting research and code development
 - Developing supporting regulatory infrastructure
- No later than September 2021, complete construction and begin operation...

NGNP - Technology

FUEL ELEMENT DESIGN FOR PBMR

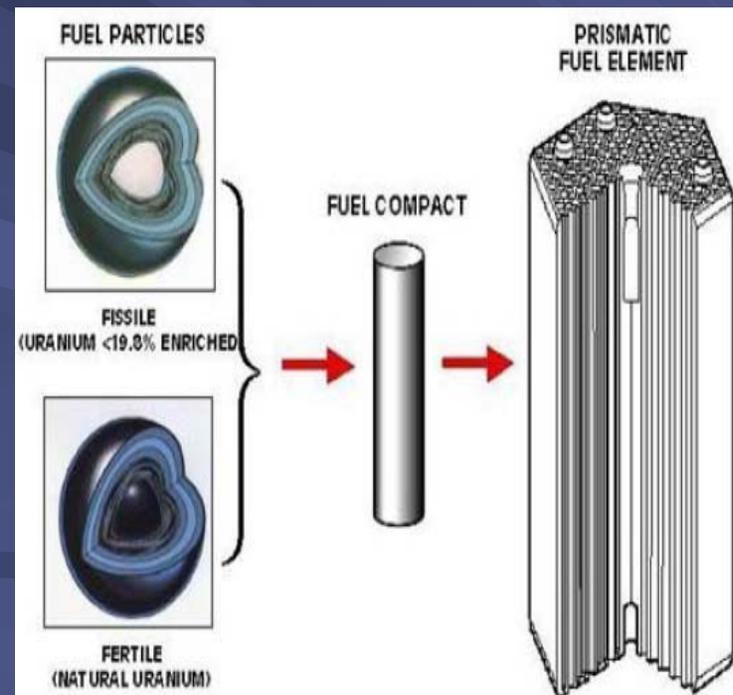


Pebble

(e.g., Pebble Bed Modular Reactor (PBMR))

Prismatic

(e.g., Areva Antares & General Atomics Modular Helium Reactor (MHR))



NGNP Reactor Designs

Fuel: Triso Fuel Particles

Power Level: ~ 250 MWt

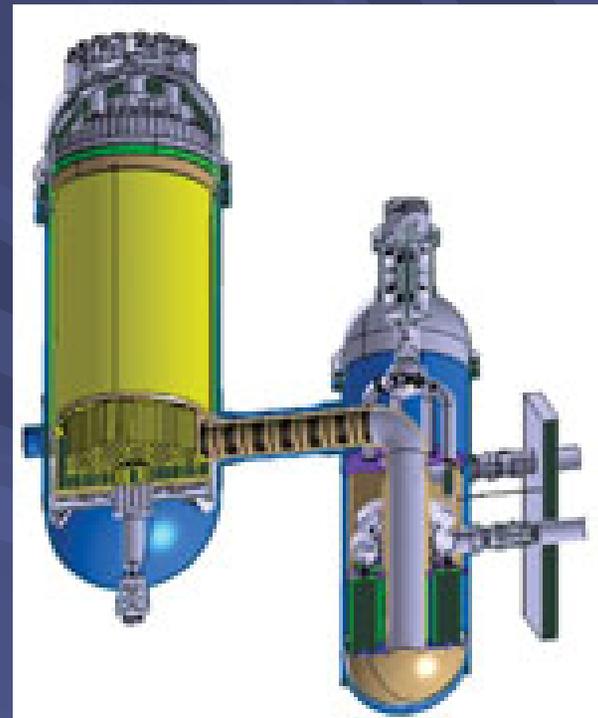
Outlet Conditions: ~ 750°C

Coolant: Helium

Power Cycle: Steam Turbine

Phase 1 – conceptual designs (Aug 2010)

Phase 2 - decision point – early 2011



NGNP – Current Activities

- Evaluating existing requirements and guidance to identify needed changes (gaps)
- Identifying significant policy and key technical issues
- Developing overall licensing plan that coordinates:
 - DOE/vendor research and development
 - NRC confirmatory research & development of evaluation tools
 - Required changes to regulations, policies and guidance
 - Development of infrastructure and technical expertise for new technology

Near Term Reviews

■ NGNP White Papers

- Defense-in-depth
- Fuel design and qualification
- Mechanistic source term
- High temperature materials
- Licensing basis event selection
- Safety classification of systems, structures, and components
- Analytical code verification and validation

Integral Pressurized Water Reactors

Stewart Magruder, Branch Chief

Advanced Reactors Branch 2

Advanced Reactor Program

Office of New Reactors

Integral Pressurized Water Reactors

■ Technology

- Pressurized Water Reactors with nuclear steam supply components (e.g., steam generator, control rods, reactor coolant pumps) within the reactor vessel

■ Current pre-application discussions regarding:

- Westinghouse IRIS
- NuScale
- B&W mPower

Westinghouse IRIS

Reactor Power: 1000 MWt

Electrical Output: 335 MWe

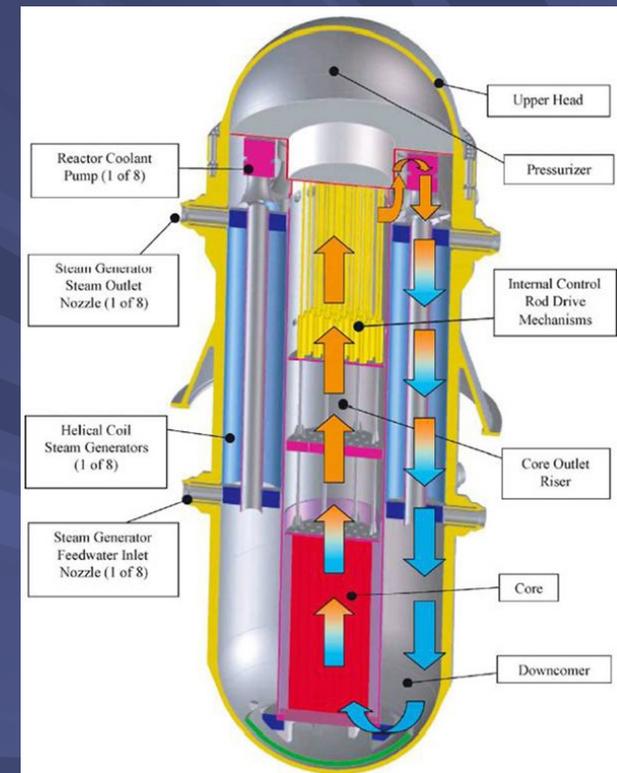
Outlet Conditions: 330°C

Coolant: Light water

Fuel Design: 17 x 17 assemblies
4.95% enrichment UO₂

Refueling: 3-3.5 years

Licensing Plan: Design Certification



Westinghouse IRIS

- Engagement with NRC began in 2003
- International effort
- Report on Emergency Planning
- Report on Seismic Isolators
- Minimal recent interactions

NuScale

Reactor Power: 150 MWt

Outlet Conditions: 150 psig, 575°F

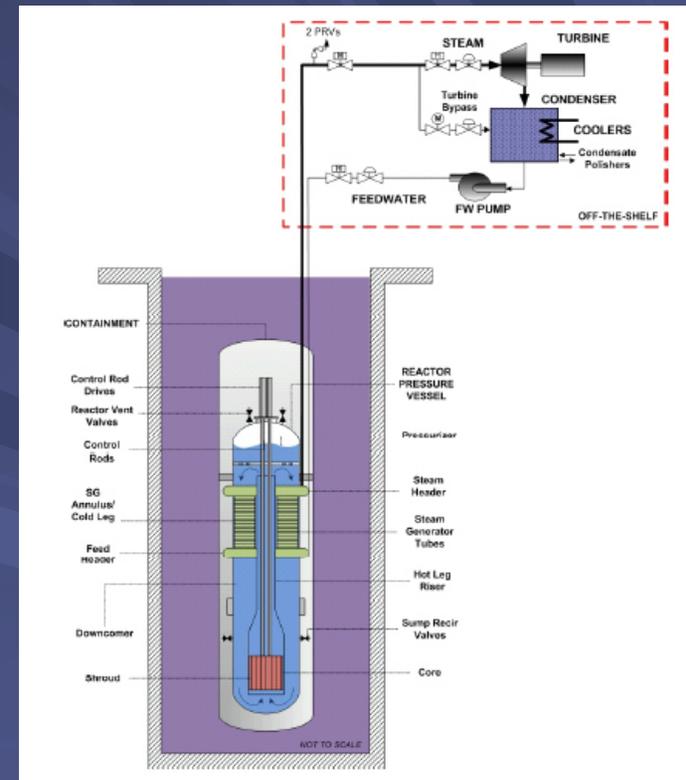
Electrical Output: 45 MWe

Coolant: Light Water

Fuel Design: 17 x 17 fuel bundles,
6', 4.95% enrichment

Refueling: 24 months

Licensing Plan: Design Certification



NuScale

- Began interaction with NRC in 2008
- Based on Oregon State University MASLWR design
- Report on codes and methods
- Report on refueling operations
- Significant recent interactions

B&W mPower

- Began interaction with NRC in 2009
- Based on German ship *Otto Hahn* design
- Air cooled condenser
- Significant recent interactions

Integral PWRs – Current Activities

- Evaluating existing requirements and guidance to identify needed changes (gaps)
- Identifying significant policy and key technical issues
- Developing overall licensing plan that coordinates:
 - NRC confirmatory research & development of evaluation tools
 - Required changes to regulations, policies and guidance
 - Development of infrastructure and technical expertise for new technology

Other Technologies

William Reckley, Branch Chief

Advanced Reactors Branch 1

Advanced Reactor Program

Office of New Reactors

Sodium Fast Reactors (SFRs)

- Limited NRC activities
- Knowledge management
- Some pre-application interactions regarding:
 - Toshiba 4S
 - General Electric PRISM
- International interactions

Other Technology Groups

- Some interactions and/or aware of efforts related to various other designs:
- Generation IV
 - Gas-Cooled Fast Reactor (GFR)
 - Very High Temp Reactor (VHTR)
 - Supercritical-Water Cooled Reactor (SCWR)
 - Sodium-Cooled Fast Reactor (SFR)
 - Lead-Cooled Fast Reactor (LFR)
 - Molten Salt Reactor (MSR)
- Hyperion Power Module
- Accelerator-Driven System (ADS)
- Fusion & Fission-Fusion Hybrids

Infrastructure & Generic Issues

■ Infrastructure

- Organization & Staffing
- Contracting Strategy
- Training, Tools & Guidance

■ Generic Issues

- Address generic issues identified by NRC, industry, or other stakeholders
 - Generic to SMRs
 - Generic to a technology group or other subset of SMR technologies

Policy and Technical Issues

■ Generic issues

- Emergency Planning
- Physical Security
- Staffing requirements
- Financial requirements (e.g., fees, Price-Anderson)
- Modular/expandable facilities

■ Technology specific

- Fuel qualification
- Materials qualification

Prioritization Factors

- Safety significance
- Affected technology groups/designs
- Impact on design
- Method of resolution
 - (research, legislation, rulemaking)
- Industry participation
- Schedule for prototype/commercial deployment
- Dependencies on other policy/technical issues

Future ACRS Interactions

- HTGR Research Plan (April 2010)
- Resolution of specific policy or technical issues
- Design or application briefings
 - pre-application/application
- Design or licensing reviews
 - SER with open items, draft final SERs
- Specific topics identified by ACRS or staff



Briefing for ACRS on Topics of Mutual Interest

Office of the Executive Director for Operations

Bill Borchardt

Bruce Mallett

Marty Virgilio

Darren Ash

March 5, 2010

Overview

- Agency Overview – Bill Borchardt
- Reactor & Preparedness Programs – Bruce Mallett
- Materials, Waste, Research, State, Tribal, and Compliance Programs – Marty Virgilio
- Corporate Management Programs – Darren Ash

Agency Budget Priorities & Trends

- FY2010 Budget
- Breakdown Across Programs
- Budget Trends
- Agency Priorities

NRC Staffing

- Changing Workforce
- Knowledge Management
- Three White Flint North (3WFN)
- Collective Bargaining Agreement
- Future Challenges

International Activities

- Bilateral Activities
- Multinational Design Evaluation Program (MDEP)
- Integrated Regulatory Review Service (IRRS) Mission

Operating Reactors - Licensing

- Power Uprates
- Non-Power Reactors
- License Renewal Beyond 60 Years
- Medical Isotopes

Operating Reactors - Oversight

- Inspection Program
- Buried Piping
 - Tritium
- Underground Cables
- Aging Management

Operating Reactors – Oversight (Cont.)

- Reactor Security Rule
- Emergency Response Data System
- Cybersecurity Plans

Operating Reactors – Oversight (Cont.)

- Operating Experience
 - Trends
 - Analysis
- Safety Culture

New Reactors – COLA Reviews

- Applications
 - Status and Progress
- Challenges

New Reactors – Design Certifications

- Applications
 - Status and Progress
- Challenges

New Reactors – Vendor/Construction Inspection

- Vendor Inspection
- Construction Inspection
- Operator Licensing/Simulators
- Challenges

New Reactors – Advanced Reactors

- Building Regulatory Framework and Infrastructure
- Potential Application Reviews
- Challenges

New Fuel Cycle Facilities

- AREVA
- GE-Hitachi
- International Isotopes (INIS)

Operating Fuel Cycle Facilities

- Integrated Safety Analysis Framework
- Development of New Oversight Program

Integrated Spent Fuel Management Plan

- Extended Storage of Spent Nuclear Fuel
- High Level Waste Disposal
- Reprocessing

Integrated Spent Fuel Management Plan (cont.)

- Near-term actions for Spent Fuel Storage and Transportation
 - Research to Support Long-Term Storage
 - Enhancements to Licensing Process

Nuclear Material Users

- Source Security
 - Chairman's Task Force: 2010 Report to President and Congress
 - Part 37: Byproduct Material Security Proposed Rule
 - Policy Statement on CsCl

Nuclear Material Users (cont.)

- Integrated Source Management Portfolio
 - National Source Tracking System (NSTS)
 - Web-based Licensing
 - License Verification System
- Revision to Radiation Protection Regulations

Decommissioning and Low Level Waste

- Decommissioning
- Uranium Recovery
- Low Level Waste Disposal
 - Significant Quantities of Depleted Uranium Rulemaking
 - Blending of Low-Level Radioactive Waste
 - Revisions to Part 61

Reconsolidating and Modernizing

- Three White Flint North (3WFN)
 - Status, Progress, and Opportunities
- Modernization of Existing Infrastructures
- Physical Access Upgrades

Enhancing Public Participation

- Open Government Initiative
- Website Redesign
- Modernization of ADAMS
- Multi-Media Excellence Plan

Managing Information Technology

- Sustaining Current Operations
 - Need for Balance
- Introduction of New Technology
 - Status, Progress, and Opportunities

Working from Anywhere

- Staff Can Securely Access and Use the Systems and Information They Need, Regardless of Where They are Located
- Proven and To-Be Discovered Benefits

Supporting Mission Performance

- Other Management Improvements
 - Strategic Approach to Contracting
 - Modern Approach to Training Techniques
 - IT Security
 - Disaster Recovery
- Measuring Success

- Questions ???