EDO Principal Correspondence Control

FROM: DUE: 06/04/12 EDO CONTROL: G20120313
DOC DT: 04/27/12
FINAL REPLY:

Senator Mark Udall

TO:

Schmidt, OCA

FOR SIGNATURE OF : ** GRN ** CRC NO: 12-0202

Borchardt, EDO

DESC:

National Technology Transfer and Advancement Act of 1995 (EDATS: SECY-2012-0232)

ROUTING:

Borchardt
Weber
Virgilio
Ash
Mamish
OGC/GC
Johnson, NRO
Leeds, NRR
Greene, ADM
Zobler, OGC
Schmidt, OCA

DATE: 05/10/12

ASSIGNED TO: CONTACT:

EDO Rihm

SPECIAL INSTRUCTIONS OR REMARKS:

Please prepare response in accordance with OEDO Notice 2009-0441-02 (ML093290179). NRO, NRR and ADM to provide input to Roger Rihm, OEDO, if required. Roger Rihm will coordinate response with OGC and OCA.

Template: SECY-017

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# EDATS

Electronic Document and Action Tracking System

**EDATS Number:** SECY-2012-0232 **Source:** SECY

## General Information

**Assigned To:** OEDO
**OEDO Due Date:** 6/4/2012 11:00 PM
**Other Assignees:**
**SECY Due Date:** 6/6/2012 11:00 PM
**Subject:** National Technology Transfer and Advancement Act of 1995
**Description:**

**CC Routing:** NRO; NRR; ADM; OGC; OCA
**ADAMS Accession Numbers - Incoming:** NONE
**Response/Package:** NONE

## Other Information

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**Recurring Item:** NO
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**OCM Concurrence:** NO
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**Special Instructions:** Please prepare response in accordance with OEDO Notice 2009-0441-02 (ML093290179). NRO, NRR and ADM to provide input to Roger Rihm, OEDO, if required. Roger Rihm will coordinate response with OGC and OCA.

## Document Information

**Originator Name:** Senator Mark Udall
**Date of Incoming:** 4/27/2012
**Originating Organization:** Congress
**Document Received by SECY Date:** 5/9/2012
**Addressee:** Rebecca Schmidt, OCA
**Date Response Requested by Originator:** NONE
**Incoming Task Received:** Letter

**OFFICE OF THE SECRETARY**
**CORRESPONDENCE CONTROL TICKET**

***Date Printed: May 09, 2012 10:32***

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| **PAPER NUMBER:** | LTR-12-0202 | **LOGGING DATE:** | 05/08/2012 |
| **ACTION OFFICE:** | EDO | | |
| **AUTHOR:** | SEN Mark Udall | | |
| **AFFILIATION:** | CONG | | |
| **ADDRESSEE:** | Rebecca Schmidt | | |
| **SUBJECT:** | Concerns National Technology Transfer and Advancement Act of 1995 | | |
| **ACTION:** | Signature of EDO | | |
| **DISTRIBUTION:** | RF, OCA to Ack | | |
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| **NOTES:** | | | |
| **FILE LOCATION:** | ADAMS | | |
| **DATE DUE:** | 06/06/2012 | **DATE SIGNED:** | |

MARK UDALL
COLORADO

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SENATE HART OFFICE BUILDING
WASHINGTON, DC 20510
(202) 224-5941

# United States Senate

WASHINGTON, DC 20510
April 27, 2012

Office of Congressional Affairs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Congressional Affairs Officer,

Enclosed please find a letter from my constituent concerning the National Technology Transfer and Advancement Act of 1995. I would appreciate it if you would respond to the constituent's concerns in an expeditious manner and in accordance with all applicable laws and regulations.

Please direct any correspondence concerning this inquiry to the constituent at:

J.K. August
5915 Braun Way
Arvada, CO 80004
303-425-7408

Please also send a copy of your letter to my office at:

Sen. Mark Udall
SH-328
Washington, DC 20510
Attention: Dan Fenn

Thank you for your assistance.

Sincerely,

Mark Udall
U.S. Senator

April 24, 2012

Senator Tom Carper, Chairman
Subcommittee on Clean Air and Nuclear Safety,
Senate Committee on Environment and Public Works
Washington, DC

**Lead, Follow or Get out of the Way**
Reference: Circular A-119 under Section 12(d) of the NTTAA (1995) directs federal agencies to use voluntary consensus standards in lieu of self-written rules, where practical. Some agencies ignore this law, as discussed below.

Chairman Carper:

**Summary**

Congress has directed federal agencies work with industry, where possible, to use consensus standards in lieu of writing rules. Many federal agencies remain unaware of the "National Technology Transfer and Advancement Act of 1995" (Pub L. 104–113; "NTTAA"), and its associated guidance in OMB A-119. Some ignore it, maybe out of ignorance, others out of habit or perhaps both. That obstructs Congressional intent. Failure to understand this law, its charge or other factors does not excuse agencies from following it.

**Background**

Though they may lack industry experience, federal agencies have highly-educated staffs. They rarely lack an opinion on how to approach rulemaking. They may even initiate rulemaking before seeking industry views, ignoring advice or existing consensus standards. That isn't what Congress intended. The Nuclear Regulatory Commission's (NRC) is no exception. The NRC's rule, 10 CFR 52 ("Part 52")[1] licensing new nuclear plants provides an example. NRC licenses new nuclear plants under its Standard Review Plan (SRP), NUREG-0800. Guidance provides the only way to meet the rule's complex requirements that specify Reliability Assurance Programs (RAP). That does not meet the intent of the NTTAA, or the General Services Administration's OMB, A-119. Section 17.4 of NRC's SRP calls for a "Reliability Assurance Program"[2] Unfortunately, NUREG-0800 is so confused its real meaning remains obscure. Composed largely of reflexive rhetoric, it's extremely complex. First presented in the 1990's, SRP 17.4 RAP remains a vague collection of recursive thoughts, despite better consensus standards adopted by other federal agencies that clearly spell out RAP requirements, like the Federal Aviation Administration (FAA).[3] More than just ignoring the intent of the NTTAA's, NRC staff violates it, as well.

[1] 10 CFR Part 52 , 'Licenses for Nuclear Power Plants'
[2] NRC publication NUREG-0800 and supplemental DC/COL-ISG-018 attempt to explain RAP.
[3] The FAA endorsed the Air Transport Association's standard for RAP, MSG-3.

When presented with that information directly over the past few years,[4] NRC's staff ignored it. Indeed, emails, verbal communications and letters to the staff, its independent reviewers and oversight[5] have failed to produce action -- indeed, any response at all. They have not done anything over the past five years to respond substantially to recommendations. They have not responded *in any way* to repeated requests and calls to clarify new nuclear construction RAP requirements in the SRP. This should concern Congress. Not only does it violate the charge and the intent of the NTTAA, it violates the NRC's own goals of transparency, accountability, cooperation and openness.

**Silence**

NRC doesn't apply the NTTAA to new nuclear plant licensing processes. Rather, the staff continues to promote their own methods, although they are inadequate -- technically incomplete, confusing to follow and impossible to implement. They ignore consensus standards adopted by other federal agencies, even though that has been pointed out.[6] NRC staff has been made aware of superior consensus standards over the past 6 years. NRC staff and their independent reviewer, the Advisory Commission on Reactor Safeguards (ACRS), acted to block their use. In various forums, venues, media seminars and training, through technical papers like the ASME ICONE paper (attached) and even at their own meetings, they continue to excuse themselves from their consideration. NRC has ignored, tabled, dismissed or avoided discussing or entering into any kind of meaningful professional dialogue on the subject of RAP whatsoever, at venues they attended where they could have responded. Rather, they remain silent. Even NRC's independent Advisory Committee on Reactor Safeguards (ACRS) ignored them reviewing the EPR license.[7] This betrays willful ignorance, violating all pretense of professionalism. It violates NRC policy. This is unacceptable; it presents a "for cause" safety concern. Ignorance that puts public health and safety at stake is intolerable. On top of eighteen years ignoring the NTTAA and twenty years of rote confusion, six years of blocking are enough. Congress should intervene to initiate resolution now, rather than letting it deteriorate further.

**Do anything, but Get out of the Way**

The one way 'dialogue' these past seven years would compel any professional to act. Congress should question why the NRC staff cannot respond to simple questions, recommendations or other inquiries on RAP. They should question why the NRC staff and ACRS ignore similar consensus standards sponsored by agencies like the Department of Energy (DOE) or FAA that are superior. They should challenge the NRC to follow their policy for transparency.

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[4] Industry forums -- professional body presentation, interviews, letters to the NRC commissioners and staff, presentations to the NRC's Advisory Committee on Reactor Safety (ACRS), professional journal publications, professional body meetings, and standards organization development review forums

[5] Like the NRC Office of the Judge Advocate General, General Services Administration or ACRS.

[6] Department of Energy-derived ANSI/ANS 53.1, Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants, 2012, for example.

[7] In a meeting of the ACRS Meeting on the Evolutionary Power Reactor (EPR), April 20, 2010, White Flint, Rockville, Md.

Should the NRC lead, follow or simply get out of the way of progress? The NRC says the staff responds to public concerns. To provide effective oversight, Congress should review NRC new nuclear plant RAP performance. They should question whether the NRC staff responds to public concerns, effectively. New nuclear energy development makes this more urgent than ever before. Combined, these problems only reduce nuclear safety effectiveness, while raising nuclear costs.

Sincerely,
J.K. August, PE
Individual[8]
303-425-7408

Attachments:

1. American Society of Mechanical Engineers, ICONE20POWER ICONE2012-54092, "Developing the Initial Reliability Assurance Program (RAP) FOR Maintenance in New Nuclear Plants," 2012, a peer-reviewed technical paper on NRC's RAP under Part 52.
2. DC/COL-ISG-018 Analysis, "Reasons to Support Consensus Standard Development (in lieu of DC/COL-ISG-018, Interim Staff Guidance (ISG) on Standard Review Plan (SRP), NUREG-0800, Section 17.4, 'Reliability Assurance Programs,' RAP)" a white paper review of NRC staff RAP 'clarifications.'
3. "Follow the Jumbo Jet, J.K. August, Nuclear Engineering International, May 2010, an article in the technical publication on nuclear power plant reliability programs, and NRC's RAP.
4. [Page 4] 'National Technology Transfer and Advancement Act of 1995' (Pub L. 104–113; 'NTTAA'), and associated guidance, OMB A-119, excerpt from Federal Resister Notice, Federal Register 11414 Vol. 77, No.38 1CFRPart51 [NARA 12–0002] Monday, February 27, 2012, "Incorporation by Reference"

Distribution:

1. Senate EPW CA&NS Committee
2. Ed Whitfield, Chairman, House Energy & Commerce Committee, Subcommittee on Energy and Power
3. Commissioner William Ostendorff, USNRC
4. Annie Caputo, Senate Minority EPW liaison
5. Sam Armijo, Chairman ACRS, c/o Derek Widmayer, staff liaison
6. Lynn Mrowka, NRC Staff

[8] Chairman, ASME Power Division Reliability Maintainability and Availability Committee; Vice Chairman, American Nuclear Society (ANS) Standards Board; Chair, ANS Advanced Gas Reactors (Committee 28), Member, ANS Nuclear Facilities Standards Committee

Attachment 4

**'National Technology Transfer and Advancement Act of 1995' (Pub L. 104–113; 'NTTAA'), and associated guidance, OMB A-119**

Refs: NTTSA; OMB A-119; ASME paper ICONE2012-54092

Excerpt from FRN, Department of Commerce's National Institute of Standards and Technology (NIST):

In the "National Technology Transfer and Advancement Act of 1995" (Pub L. 104–113; hereinafter "the NTTAA"), Congress stated that Federal agencies "shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities," except when an agency determines that such use "is inconsistent with applicable law or otherwise impractical.'

Summary of Comments

**Reasons to Support Consensus Standard Development**

**(in lieu of DC/COL-ISG-018, Interim Staff Guidance (ISG) on Standard Review Plan (SRP), NUREG-0800, Section 17.4, "Reliability Assurance Programs" -- RAP)**

To support a nuclear plant's PRA[1] – its safety design basis, Part 52 requires a RAP to assure SSC reliability. DC/COL-ISG-018 addresses guidance for developing the SRP RAP. The ISG is open ended -- it implies every SSC should be evaluated for RAP. The ISG jumps directly to RAP Operations Phase 2 without explaining the intermediate development steps. Industry must fill a missing part of RAP, an incomplete element or gap. The end objective of a RAP is a reliability plan to startup and run the plant. The circular logic here will not meet that goal, but simply addressing how to develop an effective RAP could. That would not only make the ISG much clearer, it would also make it much more effective.

The first stage of RAP identifies the SSC scope; the second covers transition to operations per this guidance. This is incomplete to develop RAP; a middle stage, 'development,' is missing. The first stage should not only completely identify the scope of RAP SSCs to develop the RAP program; it should provide the process that does. The ISG attempts to say SSCs in the RAP must be consistent with the design, only it doesn't. Trying to say this it's unclear; it beats around the bush. Stating that RAP has to address all SSC requirements supporting the design's licensed safety functions would be clearer.

The DC application proposes an ITAAC[2] for (1) a RAP process, and (2) the SSC list. The RAP ITAAC for a DC/COL license should provide the exact inspections, tests and analyses that confirm the RAP, e.g., the functionality of the in-scope components, over the life of the plant. This ISG does not provide that. The RAP it develops cannot be complete for its stated purpose of assuring SSC performance. At best it provides an intermediate step. 'Essential elements' remain unclear, even though the ISG identifies some, eventually. Since requirements are unclear, verification of the ITAAC will be indeterminate. The ISG criteria don't develop an effective RAP. It is impossible to verify RAP effectiveness with this guidance. Much of the guidance here addresses metadata, not actionable requirements.

The ISG falls back on processes under Part 50, like the ASME's Section 11 and OM Series test standards. However, these historical Part 50 processes are incomplete with respect to all SSC requirements. Part 50 fails to provide a general process for developing a complete RAP. Furthermore, legacy requirements under Part 50 are prescriptive, not process-oriented. Thus they are harder to implement, presenting a disjoint approach. Using them provides little assurance that the process identified will deliver a complete RAP – its stated goal.

Other consensus standards develop effective maintenance programs. They require (1) failure cause(s); (2) failure symptoms or aging progression (identifiable as objective criteria); and, (3) effective tasks based upon proven technology. The tasks proposed here for RAP are not actionable. If selected they

[1] Probabilistic Risk Assessment

[2] Inspections Tests Analyses and Acceptance Criteria; NRC's term for objective performance measurement criteria



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will be arbitrary, lack traceability to a preventable cause and incomplete. They would not generate a closed solution, guaranteed to manage SSC aging deterioration, effectively. Furthermore, because they will need to be reworked many times, they will increase nuclear costs. Though critical of licensee submittals, this ISG doesn't clearly tell how to improve their responses. Guidance in the ISG should identify the exact scope required and specific requirements. It should reference other standards for developing effective maintenance programs that tell how to that do that. Nuclear standard, ANS 53.1, Safety Design Process for Modular Helium-Cooled Reactors, for example, in one standard that does. Without reference to specific processes to identify RAP SSC, and specific examples of considered incomplete submittals, explaining what is expected from licensees is unclear. The critical observation that [licensees] "...limited the scope of the RAP to only risk-significant SSCs modeled in the PRA," suggests a need for a consensus standard approach. Suggesting that PRA should not be a basis to exclude SSC consideration for inclusion in RAP (identification of in-scope SSC) is arbitrary. Other specific recommendations for considering SSC for RAP should be specifically provided.

If the NRC doesn't find licensees' approaches adequate, it should identify what it wants. Since guidance fails to define essential elements of RAP clearly, industry should define them with a consensus standard. Someone must establish what the essential elements of RAP are. Any RAP process needs an effective partitioning[3] process, complementary to its methods of SSC identification tagging. The two go together. This guidance does not provide anything, clearly. It doesn't reference other standards and processes that would. Consensus standard development would be the most effective way to address DC/COL-ISG-018 incompleteness. That could specifically consider all aspects of D-RAP and development into operations. Since the staff can't specifically propose a process, industry should. Otherwise, unclear requirements will result in tentative, open responses. Neither will meet the goals of Part 52, which are to promote nuclear safety and control costs. Consensus standard development could clearly address both issues.

Reviewers must have the technical skills required to perform RAP reviews. They must understand how RAP was developed in the past at nuclear plants, how that worked or fell short and what was done about it, then. They should know how other similar high-risk industries do the same thing, now. Though roles and responsibilities changed[4], neither PRA nor QA staff at the NRC has the expertise to review RAP submittals under the SRP. Reviewers lack the technical skills to perform the required reviews, based on this guidance. PRA may be a useful mathematical exercise to reveal risk – but that doesn't tell how to implement actionable field guidance. PRA experts who've never set foot in a plant will not be able to develop scheduled maintenance requirements, much less its review processes. QA activities, likewise, mostly control new equipment. RAP, on the other hand, manages aging. QA alone cannot address time-dependent SSC aging issues that affect reliability, performance and maintenance. For RAP to yield reliability, it must consist of actionable tasks. The approach in this guide does not develop actionable tasks, nor does this guidance address maintenance expertise. Two ways have been

[3] A process for differentiating SSC into parts

[4] The ISG announced a change in NRC staff review responsibilities.



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suggested to identify the SSC covered by RAP – use those identified in the PRA augmented by ones that experts identify. NRC should reference standards or guidance that clearly explains the use of both.

Confusing, complex statements in the SRP and ISG should be translated into simple English. Responding to abstract statements is very difficult. This ISG develops information about information – metadata. Standards developers recognize metadata use should be avoided. Metadata leads to confusion, arbitrary unactionable guidance that generates unnecessarily complex results. Developing metadata often requires opinions. It adds layers between real information, guidance and requirements to infer, translate or otherwise develop intermediate indirect information.

NRC has not specified acceptance criteria for integrating RAP into COL operating plans. The product would be a scheduled maintenance plan including planned replacements, scheduled inspections and performance tests to determine performance capability over time (surveillance tests) – the actionable part of a RAP program. So far, this ISG and its SRP (NUREG-0800) avoid addressing specific content integrating RAP into operational programs. Part of any integrating effort must be developing the actual RAP itself as actionable tasks. Only real programs can lead into the Maintenance Rule (O-RAP) for 'monitoring,'[5] under the SRP. That requires an objective, effective scheduled maintenance plan at the start of operations for the Maintenance Rule, 50.65.

RAP quality requirements should not differ from other forms of design quality control required for nuclear plants established under Parts 50, 50 Appendix A, B and Part 21. The key additional requirement is including the PRA into the controlled design for identifying in-scope SSC. Derivative requirements that follow also require control. A consensus standard like ANS 53.1 that spells those out should be used. RAP QA is no different from other forms of nuclear plant design control. QA program controls in place should cover the RAP. It should identify the procedures and instructions that identify those processes. For the past twenty years NRC SECYs[6] and the SRP pointed to the need for a consensus standard that addresses missing guidance. Without processes to develop the RAP (D-RAP through to O-RAP), RAP QA processes will be incomplete. Processes should be standard for all new Part 52 plants. A consensus standard would provide them. ANS has initiated a project for such a standard under its Nuclear Facilities Standards Committee. Guidance is already provided in ANS 53.1, also.

'Expert panel' experts should be people with hands-on experience – reliability engineers, augmented by senior craftspeople who actually know how equipment works. Only these experts can develop detailed SSC requirements below the PRA level. American Nuclear Society Standard ANS 53.1 describes the skills required for such a complete process. Experts must know critical reliability support skills, like how the equipment works, its operating context and use so they can project aging and how SSCs are expected to

[5] 'Monitoring' is a special term under the Maintenance Rule Process, Part 50.65. Plants start under 'monitoring' and progress into compliance as they successfully demonstrate adequate processes in operations.
[6] Commission policy documents


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fail, based on physical design. Understanding the safety roles SSC provide ('safety functions') helps clearly define their 'critical characteristics' required by Part 21. Clearly identifing critical characteristics means they can be specified, evaluated, inspected and verified.

The single most important expert qualification is familiarity with how the SSC works – the systems, structures, and components (SSC), their parts and failure modes. Experts must know time-dependent failure mechanisms SSC encounter; its failure causes, the technologies and tools known that can identify, diagnose and treat failure mechanisms. PhD mathematicians who do PRA are not failure experts. Dominant failure modes occur at the part subcomponent level, at least one level below that level specified in the PRA SSC description, beyond their scope. DC/COL-ISG-018 requirements are repetitive, obvious to experts and based on its abstract general statements. Furthermore, task development methods vary, particularly on new equipment where little operating experience is known. For completeness RAP must address those still. This guidance does nothing to address that. Under Part 52, a common process should govern virtually every design. Effective development requires a consensus process.

RAP engineering translates high-level reliability and availability goals into performance level tasks that achieve them. DC/COL-ISG-018 guidance should actually address developing the RAP — but it doesn't. It must to support the eventual use of the Maintenance Rule. The Maintenance Rule (50.65) specifies performance monitoring. Two measures have evolved into practical use. These are (1) maintenance preventable function failures and (2) system unavailability. Neither directly prevents failures. Both are "lagging" indicators for high-level monitoring overall program health. They have no direct value developing scheduled maintenance, surveillance or operations monitoring programs that are required to start up the plant. The RAP program should provide the tasks that directly prevent failure.

The nuclear industry limits itself to its own experience. It fails to identify other methods available that have been successfully used when considering reliability assurance. Other standards and processes describe the roles of dominant failure modes in reliability programs. To prescribe effective tasks that control them requires identifying their failure cause(s). Several consensus standards describe this process. In addition to DOE-sponsored ANS nuclear standard ANS 53.1, other standards applicable include SAE JA-1011 (for industry) and ATA MSG-3 (for commercial aircraft maintenance program certification).

The RAP program is basically a generalized scheduled maintenance monitoring program. NRC should return to the fundamental premise of Part 52. That is objectively licensing new nuclear plants – not deterministically imposing inappropriate, nonsafety enhancing historical programs from the past to all new designs, based on their limited experience and familiarity with LWRs. Forty years has yielded the current complex nuclear plant maintenance program requirements. Indiscriminate application of those to all designs with this ISG will return to the "golden" nuclear maintenance programs reminiscent of the past. That is contrary to the intent of Part 52 – risk-informing nuclear operations for safety. It would only not impose well-meaning but arbitrary, expensive requirements.


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