

Department of Energy
Washington, DC 20585

June 18, 2010

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2010 JUN 18 PM 4: 01
DNF SAFETY BOARD

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

On May 26, 2010, the Defense Nuclear Facilities Safety Board (Board) accepted the Department's revised *Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2009-1, Risk Assessment Methodologies at Defense Nuclear Facilities*. The Implementation Plan deliverables include the establishment of a Risk Assessment Technical Expert Working Group (RWG) to assist in the review and appropriate use of quantitative risk assessment to better inform nuclear safety decisions and the issuance of an Information Notice, *Risk Assessment in Support of Nuclear Safety*. Both of these documents have been previously provided to your staff informally. The purpose of this letter is to formally transmit the signed RWG Charter and the Information Notice as fulfillment of these Implementation Plan commitments.

The Department of Energy (DOE) steering group of the RWG is represented by members from all program offices with defense nuclear facilities, the Office of Health Safety and Security, the Chief of Nuclear Safety and the Chief of Defense Nuclear Safety. A Web Site for the RWG (<http://www.hss.energy.gov/nuclearsafety/ns/rawg/>) has been created, and the Risks Charter and Information Notice have been posted there. Some portions of the Web Site are still under construction and will be completed as the functions of the RWG mature.

The Information Notice, *Risk Assessment in Support of Nuclear Safety*, reiterates the Department's current policy on use of risk assessment in nuclear safety, notifies the field of the ongoing study to determine changes or additions needed to directives or standards to improve the use of risk assessment to better inform nuclear safety-related decisions and announces the availability of the RWG to support DOE line elements in evaluating plans for and the use of quantitative risk assessments.

We also acknowledge the helpful input from members of your staff in our efforts address these and other Recommendation 2009-1 commitments and look forward to



continued coordination with them and their insights as we develop the other deliverables. Please contact me at (202) 586-4996, if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrew Wallo', written in a cursive style.

Andrew Wallo
Deputy Director
Office of Nuclear Safety, Quality Assurance
and Environment
Responsible Manager for Recommendation
2009-1

Attachments

SEPARATION

PAGE



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Washington, DC 20585

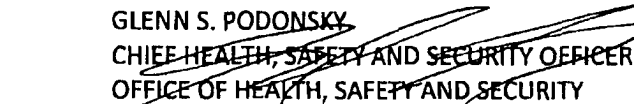
EXEC-2010-005411

March 29, 2010

MEMORANDUM FOR KRISTINA M. JOHNSON
UNDER SECRETARY OF ENERGY

THOMAS P. D'AGOSTINO 
UNDER SECRETARY FOR NUCLEAR SECURITY

STEVEN E. KOONIN 
UNDER SECRETARY FOR SCIENCE

FROM: GLENN S. PODONSKY 
CHIEF HEALTH, SAFETY AND SECURITY OFFICER
OFFICE OF HEALTH, SAFETY AND SECURITY

SUBJECT: Central Technical Authorities Approval of Risk Assessment
Technical Expert Working Group Charter

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2010 JUN 19 PM 11:02
DNFSB SAFETY BOARD

ISSUE: In partial response to the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2009-1, *Risk Assessment Methodologies*, the Department of Energy (DOE) committed to establish a Risk Assessment Technical Expert Working Group (RWG). As the Central Technical Authority (CTA) for your organization, the Charter for the RWG is attached for your approval and signature (see Attachment 1).

BACKGROUND: The DNFSB issued Recommendation 2009-1, which recommended the Department take steps to improve its use of quantitative risk assessment in nuclear safety at defense nuclear facilities. The Secretary accepted the recommendation on November 3, 2009, and submitted an Implementation Plan that committed to establishing a RWG. The Secretary's February 1, 2010, letter reaffirming acceptance of Recommendation 2009-1, also emphasized the importance of the commitment to establish the RWG.

In response to a January 15, 2010, memorandum from the Office of Health, Safety and Security (HSS), all affected offices have named representatives to the RWG Steering Committee (see Attachment 2). The Steering Committee approved the attached Charter and has submitted it for HSS and CTA approval.

The Charter establishes the RWG to assist DOE line management in planning and reviewing quantitative risk assessments that may inform or support nuclear safety decisions and support DOE in the review of the use of quantitative risk assessments and the identification of the need for changes in DOE's policy or directives relating to its use.



OPTIONS: Signing the attached RWG Charter will demonstrate that the Department is following through with its commitments. If the Charter is not signed, it will likely result in the DNFSB asserting that DOE is insincere and possibly disingenuous regarding the RWG and the development of a risk policy.

RECOMMENDATION: That the Under Secretaries sign the attached Charter as submitted by the RWG Steering Committee.

CONCURRENCES:

ATTACHMENTS

**RISK ASSESSMENT TECHNICAL EXPERT WORKING GROUP
CHARTER**

March 2010

PURPOSE: To support effective and appropriate utilization of risk assessment tools in nuclear safety applications at defense nuclear facilities.

OBJECTIVES: The Risk Assessment Technical Expert Working Group (RWG) is established to assist the Department of Energy (DOE) with the appropriate and effective use of quantitative risk assessment in nuclear safety-related activities. The activities of the group will help DOE make sure that risk assessments supporting nuclear safety decisions are: conducted in a consistent manner; of appropriate quality; properly documented; and properly tailored to the needs of the decisions they are intended to support. The RWG will also assist DOE in assessing the adequacy of available tools and guidance necessary to support nuclear safety at its nuclear facilities.

ACTIVITIES OF THE RWG:

1. Respond to questions on proper application of risk assessment tools/techniques from DOE site offices and contractors;
2. As requested by field or program offices, perform formal or informal peer reviews of analyses using risk assessment-related tools/techniques at selected sites;
3. Support development of training on the use and performance of risk assessments or techniques;
4. Support DOE's study of the use of risk assessments at DOE sites, facilities, and activities;
5. Evaluate results of DOE's study of risk assessments and use of assessment tools and techniques that is being conducted to support DOE's response to Defense Nuclear Facilities Safety Board Recommendation 2009-1, *Risk Assessment Methodologies*, and recommend follow-on actions; and
6. Support development of risk assessment Policy, Requirements, Guidance, or Technical Standards, as appropriate, to improve or clarify the use of risk assessment to better inform nuclear safety decision making.

ORGANIZATION AND OPERATIONS:

The RWG includes a standing DOE Steering Group responsible for managing and overseeing the work of the RWG and Review Groups that are responsible for implementing tasks and activities defined by the Steering Group. As required, the steering committee will develop protocols necessary to efficiently carry out the function of work activities such as peer reviews.

The membership of the RWG Steering Group will include representatives from the Offices of Health, Safety and Security (HSS), Environmental Management, Science, and Nuclear Energy; and the National Nuclear Security Administration (NNSA); along with representatives for the Chief of Defense Nuclear Safety and the Chief of Nuclear Safety. The Steering Group will select a Chair, Vice-Chair, and appoint an Executive Secretary (non-member) who will be responsible for implementation of administrative functions of the RWG (e.g., organize meetings, maintain records, and maintain a Web site). The list of members is available on the RWG Web Site.

Review Groups will be established to support peer reviews, assist in the planning of risk assessments and complete other tasks or analyses as directed by the Steering Group. The Steering Committee is responsible for designating experts for specific Review Groups based on their relevant expertise. They are selected from a list of eligible Review Group members who are identified by members of the DOE risk assessment community of practice and approved by the Steering Group. Eligible members may include Federal staff, DOE contractors, National Laboratory employees, or external experts under contract to DOE. The approved Review Group members and summaries of their expertise are listed on the RWG Web site.

Meetings of the Steering Group will be held at least quarterly or as necessary to review a request or product or if requested by a member. The Review Groups will meet as required to complete projects, assigned to them by the Steering Group, in a timely fashion.

Resources for accomplishment of the activities of the RWG will be made available by the participating offices represented on the Steering Group. Field or program organizations requesting peer reviews or assistance may be required to fund all or portions of the activities per arrangements made through their respective Steering Group member organization. Each organization represented on the Steering Group should plan to provide for at least one person-month of expert services per year from the list of approved Review Group members. Final requirements will be established based on the demonstrated need.

Assistance Requests for peer review or planning assistance for a nuclear safety related risk assessment should be made to the RWG Program Office representative from the requesting organization or to a representative from the Offices of the Chief of Defense Nuclear Safety, Chief of Nuclear Safety, and HSS, as appropriate, or the office's or site's respective RWG program office representative.

Review Group peer reviews or advice on planning will be submitted to the Steering Group for its endorsement before they are forwarded to the requester. Lessons learned summary reports from the assistance activities are available on the RWG Web site.

Questions regarding the application of risk assessments in nuclear safety may be submitted to an office's or site's respective RWG program office representative or to RWG via the RWG Web site.

Questions will be evaluated by the Steering Group and, as appropriate, assigned to an expert or experts from the review group members list. A formal response will be provided to the requester. Review Group members may work directly with the persons making requests to obtain clarification or facts necessary to develop a response. The answers or advice provided shall not invoke or be perceived as new requirements, as these must be developed and issued through DOE's Directives system.

The questions and answers are also maintained on the RWG Web site.

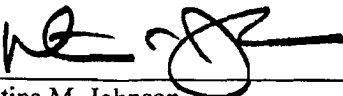
SPONSORSHIP:

The RWG is sponsored by HSS in coordination with Central Technical Authorities (CTA) for NNSA and Energy and the represented program offices. HSS sponsorship includes administrative and logistical support for Steering Group meetings and communications, including management of the RWG Web site. All participating offices sponsor their respective members' actions as they relate to Working Group activities and provide for necessary resources discussed in the Organization and Operations section of the Charter.

TERMINATION DATE:

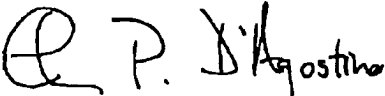
The purpose and objectives for the RWG must be reevaluated within two years of its establishment to determine if its functions are still necessary, require revision, or are no longer needed. Unless renewed (or revised and reapproved) by the Chief Health, Safety and Security Officer, in coordination with the CTAs, the Working Group will terminate on December 31, 2011.

Central Technical Authority Approval:



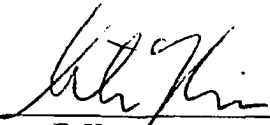
Kristina M. Johnson
Under Secretary of Energy

Date 4/13/10



Thomas P. D'Agostino
Under Secretary for Nuclear Security

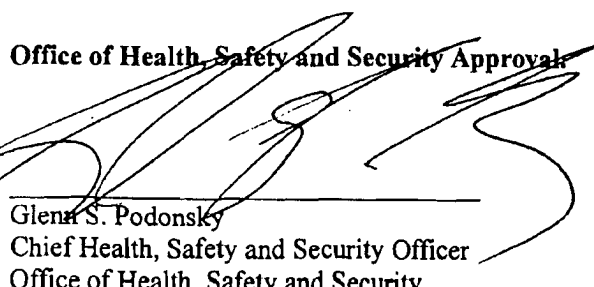
Date APR 13 2010



Steven E. Koonin
Under Secretary for Science

Date 4/14/10

Office of Health, Safety and Security Approval



Glenn S. Podonsky
Chief Health, Safety and Security Officer
Office of Health, Safety and Security

Date 3/29/10

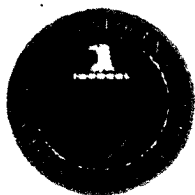
Attachment 2

Risk Assessment Technical Expert Working Group Steering Committee Members

Steven Krahn	EM
Richard Lagdon	CNS
Don Nichols	CDNS
James O'Brien	HSS
Carol Sohn	SC
Richard Stark	NE
Sharon Steele	NNSA

SEPARATION

PAGE



Risk Assessment in Support of DOE Nuclear Safety



BACKGROUND & PURPOSE:

On August 12, 2009, the Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 2009-1, *Risk Assessment Methodologies at Defense Nuclear Facilities*. This recommendation focused on the need for clear direction on use of quantitative risk assessments in nuclear safety applications at defense nuclear facilities. The Department of Energy (DOE) is presently analyzing directives, standards, training, and other tools that may support more effective development and use of risk assessment. Working with the Chief of Defense Nuclear Safety and the Chief of Nuclear Safety, staff from the Office of Health, Safety and Security (HSS) will be seeking input from program and field elements on their needs for and uses of quantitative risk assessments to support a study on use of risk assessment in nuclear safety at DOE. On February 1, 2010, as a follow on to DOE's acceptance of the DNFSB Recommendation, the Secretary committed to the revision of DOE's *Nuclear Safety Policy* to address the use of quantitative risk assessments in nuclear safety.

In light of these actions, HSS is issuing this Information Notice to emphasize that, as with the use of any engineering tool in nuclear safety applications, when risk assessments are employed by DOE or their contractors, they must be used appropriately and in a technically sound manner. This Notice also describes the formation of a technical expert working group established to support appropriate development and use of risk assessment across the DOE complex.

RISK ASSESSMENT & RISK MANAGEMENT AT DOE:

DOE uses risk assessments and risk management processes to support various decisions by, for example, helping to prioritize needed actions, to compare alternative actions, and to comply with or demonstrate compliance with requirements. The decisions being supported may be in areas such as nuclear and facility safety, project management, security, environmental management, radiation protection, and waste management.

DOE manages the safety of its nuclear operations by ensuring rigorous implementation of its safety requirements, including those in 10 CFR Part 830, *Nuclear Safety Management*, for identifying and analyzing hazards, and identifying engineering and administrative controls to mitigate the hazards. This is an important part of DOE's safety management programs that also

SYNOPSIS

DOE is in the process of evaluating the use of risk assessment to support nuclear safety at its defense nuclear facilities. In the interim, HSS is issuing this Information Notice to recap existing expectations and inform the DOE complex of the formation of a support group for risk assessments:

- **Risk assessments are activities that address the following questions:**
 - What can go wrong (undesired events)?
 - How likely are the undesired events?
 - What are the consequences of undesired events?
- **DOE uses risk assessment results in many ways, including helping to inform its nuclear safety decisions. Although these may involve the use of quantitative risk assessment tools, the Department's approach to assuring nuclear safety is to conservatively identify and analyze accident scenarios to support the development of subsequent controls to prevent or mitigate their consequences.**
- **Risk assessments that are used to support nuclear safety decisions are subject to DOE quality assurance and oversight requirements.**
- **A technical expert working group is being established to support the DOE evaluation and field implementation of risk assessments.**

Nothing in this Information Notice establishes new requirements; its purpose is to inform DOE elements of existing requirements and guidance and the status of DOE activities.

include: requirements for conduct of operations, maintenance, and training; safety system design (to include establishing safety margins and defense-in-depth); and quality assurance and safety oversight. The identification and analysis of hazards, and selection of engineering and administrative controls must be accomplished consistent with an approved methodology such as the DOE-Standard (STD)-3009¹, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented*

¹ DOE-STD-3009 and others (e.g., STD 1027, *Hazard Categorization*; STD-1189, *Integration of Safety into the Design Process*; STD-3011, *Guidance for Preparation of Basis for Interim Operation (BIO) Documents*; STD-3016, *Hazard Analysis Reports for Nuclear Explosive Operations*; and STD-3014, *Accident Analysis for Aircraft Crash Into Hazardous Facilities*) define safety analysis methodologies that can be described as risk-informed approaches to the safety assurance process for DOE nonreactor facilities. This is because these documents incorporate some of the analytical techniques that are typically used in quantitative risk assessments.

Safety Analysis, which provides clear direction on the analyses that are required to support safety basis decisions. The standard indicates that the Department's approach does not require or expect the additional detail and technically disciplined analysis necessary for a quantitative or probabilistic risk assessment. Nor does the standard provide a basis for using probabilistic risk assessment in place of the hazard analyses prescribed. Although the process is risk informed and risk considerations are integrated in the approach, such considerations are for the most part, qualitative or semi-quantitative.

Nevertheless, to better inform decision-makers, DOE's nuclear safety decision-making processes can be supplemented and strengthened through application of quantitative (including probabilistic) risk assessment methodologies; such risk assessments may be useful in aiding the evaluation of alternatives that comply with DOE nuclear safety requirements and supporting unreviewed safety question determinations for plant modifications or when a potential inadequacy of the safety basis is identified.

Secretary of Energy Notice (SEN)-35-91, *Nuclear Safety Policy*, identified risk-based safety goals but stressed that their adoption was not a requirement for the use of probabilistic risk assessments and they "are not substitutes for compliance with DOE directives and nuclear safety-related rules."

DOE's *Nuclear Safety Policy* directs DOE line managers to provide guidance to their contractors, including the need for line management to maintain a proper balance of safety, production goals, and cost considerations so as to ensure that safety is fully integrated into every level of activity. In this regard, risk assessment (discussed above) can be useful to inform management decisions by providing additional insights to:

- Augment use of traditional safety assessment methods prescribed in DOE Directives and Technical Standards and currently used in the development of safety basis for nuclear facilities and operations, by:
 - prioritizing safety challenges on the basis of risk significance,
 - assessing uncertainties in quantitative analyses, and
 - testing the sensitivity of the results to key assumptions.
- Evaluate changes to safety requirements; and
- Enhance the quality, transparency and credibility of the results and decisions.

When using such risk assessment tools to support nuclear safety decisions, the application of risk assessment is subject to: 1) DOE quality assurance requirements set forth in 10 CFR Part 830 and DOE O 414.1C, *Quality Assurance*; 2) DOE line management (including the Central Technical Authorities and their respective Chief of Nuclear Safety and Chief of Defense Nuclear Safety)

review; and 3) Office of Health, Safety and Security independent oversight. Although quantitative risk assessments may be used to better inform nuclear safety decisions, DOE does not support the application of quantitative risk assessments in a manner that is contrary to the established safe harbor methodologies of 10 CFR Part 830. If quantitative or probabilistic risk assessments are used in an alternative approach instead of safe harbor methods, they are subject to review and approval as an equivalent method or in some cases may require evaluation under DOE's exemption process.

The primary safety analysis methodologies that are pre-approved by the Department conservatively identify and analyze potential accident scenarios to support the development of subsequent controls to prevent the accident or mitigate the consequences. This approach provides assurance that the public, workers and environment are protected.

The Department does not endorse any pre-approved quantitative risk acceptance criteria. Although quantitative risk assessment results are sometimes evaluated against metrics to support relative comparisons of alternative approaches or assess the effectiveness of the approach, quantitative risk assessments demonstrating conformance with, for example, the SEN-35-91 risk goals, or evaluation criteria (contained in DOE standards) do not necessarily indicate whether the associated risks are acceptable or unacceptable. Such decisions must consider many factors and in most situations, the risk information cannot be the sole basis for a decision to proceed with (or not proceed with) an activity; it is only one element of a fully informed decision. As noted previously, the Department does not support the use of quantitative risk assessment in place of the approved methodology for developing Documented Safety Analysis.

DOE has established a risk assessment technical expert working group to provide DOE line elements assistance in determining when and how risk assessment can be used effectively to better inform nuclear safety decisions.

TECHNICAL EXPERT WORKING GROUP:

In the past, DOE has employed risk assessment tools in a variety of activities. Although application of risk assessments may be appropriate for these areas, the formality and quality of the assessments performed varied considerably. Furthermore, as observed in DNFSB Recommendation 2009-1, no consistent framework was used to employ risk assessment results in the decision-making process.

In order to support programs and field organizations, DOE has established a Risk Assessment Technical Experts Working Group (RWG). The purpose of the Group is to support effective and appropriate utilization of risk assessment tools in nuclear safety applications at defense nuclear facilities. The RWG includes a

DOE Steering Group composed of DOE nuclear safety managers and experts supported by review teams of technical experts. The RWG is available to provide advice on the use, and to assist in the planning and in the peer review of nuclear safety-related risk assessments. DOE site offices or program offices may obtain access to the group's planning or peer review services by contacting the appropriate RWG Steering Group member (i.e., the program office representative or the CDNS for NNSA activities, or the CNS for other DOE activities). Questions related to the application of nuclear safety related risk assessment at DOE can be asked through the RWG Web site forum page or by contacting program office RWG members. The RWG charter, its members and other data are available on the Web. When fully operational, the RWG Web Site will list tools and documents (and DOE lessons learned) that may be useful to those wishing to employ risk assessment to better inform decisions. The RWG Steering Group members are listed below.

RWG STEERING GROUP MEMBERS:

Health Safety and Security:

James B. O'Brien
U.S. Department of Energy
Office of Nuclear Safety Policy and Assistance
James.o'brien@hq.doe.gov

National Nuclear Security Administration Central Technical Authority:

Don F. Nichols;
Chief of Defense Nuclear Safety
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Office of the Under Secretary Central Technical Authority:

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Office of Nuclear Energy:

Richard M. Stark
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Office of Science:

Carol L. Sohn
Office of the Deputy Director for Field Operations
carol.sohn@pnso.science.doe.gov

REFERENCES:

DOE Directives and Standards discussed which are the basis for this information notice are available at:

- DOE Directives - <http://www.directives.doe.gov/>
- DOE Technical Standards - <http://www.hss.energy.gov/nuclearsafety/ns/techstds/>

Correspondence related to and the Implementation plan for the DNFSB Recommendation 2009-1, *Risk Assessment Methodologies*, - <http://www.hss.energy.gov/deprep/archive/rec/2009-1.asp>

RWG Web Site – <http://www.hss.energy.gov/nuclearsafety/ns/rawg/>

Other useful risk assessment and risk management resources will be posted at the RWG Web Site.

CONTACTS:

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