

National Aeronautics and Space Administration

Headquarters

Washington, DC 20546-0001



February 19, 2020

Reply to Attn of: Office of Safety and Mission Assurance

Raymond V. Furstenau
Director, Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Intent to Pursue Collaborative Activities in Safety, Reliability, and Risk Analysis
Methods and Applications

Dear Mr. Furstenau:

This letter serves as a Memorandum of Understanding (MOU) to set out the intent of the National Aeronautics and Space Administration (NASA) Office of Safety and Mission Assurance (OSMA) and the U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Regulatory Research (RES) to seek opportunities to pursue and implement collaborative activities related to safety, reliability, and risk analysis methods and applications.

Fundamental to this MOU is the understanding that NASA/OSMA and NRC/RES will define and execute their own focused programs incorporating, as appropriate and as agreed and implemented in the future, common activities covered by this MOU. The general intent of this MOU is for the parties to seek opportunities to share relevant technical information, reliability data, and software technology generated by NASA and NRC programs.

I. BACKGROUND

NASA/OSMA is engaged in activities in the interest of safety and the success of all NASA activities, including innovation and rapid transfer of Safety, Reliability, Maintainability, and Quality Assurance technologies, processes, and techniques to improve safety and reliability and to reduce the cost of space missions.

NRC/RES conducts independent research in all areas regulated by NRC, including ongoing and potential safety issues, risk-informed and performance-based regulation, and operating experience analysis.

NASA and NRC develop and apply safety and risk models in safety-related activities. Because these models are intended to support risk-informed decisions, both agencies need to ensure that risk models are technically sound and robust and are applied appropriately to decision processes.

Accordingly, NASA/OSMA and NRC/RES are motivated to develop advanced risk analysis techniques and tools to support risk-informed decision-making.

Although the safety-related activities of NASA and NRC may be conducted for different purposes, the underlying data and the results obtained have common value to both agencies. In a 2004 meeting, the NASA Administrator and NRC Chairman recognized the potential benefits in sharing pertinent information between agencies in support of Probabilistic Risk Assessment (PRA) applications. Accordingly, to conserve resources and to avoid unnecessary duplication of effort, both NASA/OSMA and NRC/RES agree to seek opportunities to cooperate in selected activities and to share information related to such activities whenever such cooperation is appropriate and mutually beneficial.

This MOU replaces the Memorandum of Understanding between NASA/OSMA and NRC/RES that expired on September 2, 2019. Over the decade, many exchanges of information, training, data, and software were made under that previous Memorandum. Based on this prior experience, NASA/OSMA and NRC/RES agree that continued collaboration in areas of safety, reliability, and risk is beneficial to both agencies.

II. OBJECTIVES

The overall objective of this effort is to enable and expedite the development of risk and reliability analysis methods, tools, data, and applications as well as technical information that are useful to NASA/OSMA and NRC/RES and to avoid unnecessary duplication of tasks between agencies.

Provided below are potential areas of collaborative activities and specific objectives of the MOU.

A. Technical Areas. Both organizations are supporting a number of activities aimed at improving risk and reliability analysis methods and applications. Technical areas for collaboration may include:

- Advanced risk and reliability analysis techniques.
- New generation of risk and reliability software tools and data standards.
- Software (digital instrumentation and control systems) reliability analysis.
- Reliability data collection and analysis.
- Human performance and reliability data collection and analysis.
- Accident precursor analysis and applications.
- Risk-informed decision-making techniques and applications.
- Risk-informed audits and inspections.
- Risk-informed performance management.
- Uncertainty and safety margin analyses and applications.
- Risk-analysis applications in design processes.
- Fire-risk analysis and application.
- Risk-related knowledge management.
- Advance risk data analytics.

- Cyber Risk assessment methods.

B. Specific Objectives. This MOU has the following specific objectives:

1. Timely exchange of information (e.g., objectives, milestones) on planned and ongoing activities.
2. Share reliability and human error data needed by NASA/OSMA and NRC/RES programs.
3. Share risk and reliability analysis methods, tools, and/or data needed to support risk-informed applications.
4. Assess the capabilities of current and advanced risk and reliability analysis methods and tools.

The parties intend that detailed agreements between NASA and NRC will be established to implement these collaborative activities in the future as the need arises. These agreements will address issues such as technical objectives and personnel. To the extent that any activities require NASA or the NRC to provide funding to the other Party, any such arrangements will be provided for under a separate agreement and funding instrument.

III. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the pursuit of this MOU.

Frank J. Groen
Deputy Chief, Safety and Mission Assurance
Office of Safety and Mission Assurance
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Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
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IV. SCOPE AND PLAN

This MOU may result in a variety of collaborative activities (including information exchange meetings, support of expert panels, establishment of an advisory group composed of government civil servants, and jointly sponsored activities) aimed at achieving the preceding objectives from Article II above. The potential means for collaboration include:

- A. Methods and Techniques for Risk-Analysis Applications. Participate in collaborative activities to develop practicable and technically sound methods and techniques for risk-analysis applications in the technical areas identified in Article II.
- B. Programmatic Information Exchange. Exchange information concerning the objectives, milestones, and planned approaches in ongoing activities.
- C. Technical Information Exchange. Facilitate the exchange of technical information between technical staff and project managers. This technical exchange is particularly important in cases where, to avoid unnecessary duplication of effort, NASA/OSMA and NRC/RES agree to a division of effort on the basis of complete exchange of results. It also includes support of working meetings between staff (on an agreed-upon as-needed basis).
- D. Workshops/Training/Seminars. Provide opportunities to attend workshops, training classes, and technical seminars on relevant topics of interest. NASA/OSMA and NRC/RES may collaborate in the development of new training materials and courses on topics of mutual interest.
- E. Formal Reviews. Provide independent reviews of the other agency's draft technical reports, policies, guidance, and plans, where appropriate. These reviews may be provided on an agreed-upon as-needed basis involving relevant topics of interest.
- F. Advisory Group. NASA/OSMA and NRC/RES will establish an advisory group to provide advice and assistance in:
- Fostering an effective NASA/NRC collaboration in mutual activities.
 - Ensuring that activity planning is coordinated between the agencies, when appropriate.
 - Monitoring progress toward the objectives as described in Article II above and proposing adjustments in the organizations' plans, as necessary.
 - Proposing changes to program goals and plans based on changing organizations' requirements.

V. MISCELLANEOUS

This MOU is strictly for the management and planning purposes of each of the Parties. This MOU does not support an obligation of funds, nor does it constitute a binding commitment upon either Party or create any legal rights or obligations for either Party. Nothing in this MOU shall be interpreted as limiting, superseding, or otherwise affecting a Party from conducting normal operations or making decisions in carrying out its mission and duties. This MOU does not limit or restrict the Parties from participating in similar activities or arrangements with other entities.

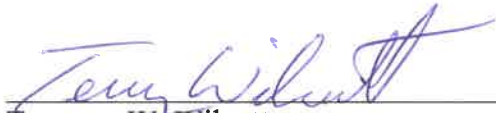
Each Party shall be responsible for any and all expenses incurred by that Party relating to this MOU, and neither Party will be responsible for any expense incurred by the other Party unless specifically agreed to in a writing separate from and independent of this MOU.

In the event the Parties wish to conduct additional activities under this MOU, or enter into binding obligations in connection with the activities described in this MOU, the Parties will negotiate and enter into separate agreements fully independent of this MOU and as permitted by and in accordance with law and the respective Parties' policies and processes.

Either Party may unilaterally terminate this MOU by providing written notice to the other Party. This MOU becomes effective upon the date of the last signature below and will remain in effect for 5 years unless terminated by the written request of either Party.

VI. SIGNATORIES

The Parties hereto have executed this MOU on the dates shown below; this MOU will take effect on the last date of signature.



Terrence W. Wilcutt
Chief, Safety and Mission Assurance
National Aeronautics and Space Administration

19 Feb 2020
Date

Raymond V. Furstenau
Director, Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

Date