

December 9, 1999

FOR: The Commissioners

FROM: William D. Travers /s/
Executive Director for Operations

SUBJECT: THE VISION OF THE OFFICE OF NUCLEAR REGULATORY RESEARCH ROLE

PURPOSE:

To provide for Commission information the vision of the Office of Nuclear Regulatory Research (RES) role.

BACKGROUND:

On Tuesday, May 4, 1999, the staff briefed the Commission on the planning, budgeting and performance management process (PBPM) and institutionalizing change. Subsequently, a Staff Requirements Memorandum (SRM) was issued on June 9, 1999, that in part directed the staff to develop a paper that describes the vision for the Office of Nuclear Regulatory Research, its role, how it complements the front-line regulatory activities involving licensing, inspection, and oversight, how it independently examines evolving technology and anticipated issues, the extent to which a center of excellence is being maintained for regulatory tools, and how these activities flow from the Strategic Plan. This paper was developed in response to that direction.

DISCUSSION:

- RES complements the front-line regulatory activities involving licensing, inspection, and oversight.
- RES independently examines evolving technology and anticipated issues.
- RES as a center of excellence.
- RES activities flow from the Strategic Plan.

RES COMPLEMENTS THE FRONT-LINE REGULATORY ACTIVITIES INVOLVING LICENSING, INSPECTION, AND OVERSIGHT.

RES's primary responsibility is to support the agency's front-line regulatory activities involving licensing, inspection, oversight, and the development of regulatory products. RES does this by performing **user need or confirmatory** research. The value of research lies in its contribution to the quality and technical independence of the regulatory decisions made by the NRC.

Through testing, data collection, analysis, development of regulatory tools, technical evaluations, and support to program offices, RES provides independent technical advice and information for resolving safety issues, confirming or making licensing decisions, and promulgating regulations and guidance.

RES also conducts **anticipatory** research in recognition of future regulatory challenges. Anticipatory research involves research to identify and resolve issues, evaluate uncertainties and to fill gaps in knowledge in the technical bases that the NRC believes will be of significant value for addressing future regulatory needs. RES has a unique role in independently identifying anticipatory research needs. RES is assisted in this through consultation with the program offices, the Commission, and stakeholders. Careful consideration will be given to the importance of considering future challenges and the recognition that the value of research efforts are often not realized for some time (e.g., aging, source term). The conduct of research helps maintain a strong technical agency and RES as a center of technical excellence. The balance between the amount of confirmatory and anticipatory research is an agency decision based on balancing near- and long-term needs and other competing agency priorities.

RES INDEPENDENTLY EXAMINES EVOLVING TECHNOLOGY AND ANTICIPATED ISSUES.

In order to successfully fulfill its role of conducting confirmatory and anticipatory research, RES must maintain cognizance of the state of the art, evaluate new developments, and anticipate where improved knowledge will be needed to inform regulatory decisions for both near- and long-term needs. A key contribution of RES lies in the early identification of potentially important safety matters and the development of the technical basis for resolution of such issues. Past issues have included: aging, source term revision, and probabilistic risk assessment (PRA) methods. Research in such areas has ensured that the agency had the flexibility to evaluate new technologies and different regulatory approaches to support licensing and inspection activities. RES should identify potential confirmatory research needs to the program offices based upon knowledge gained through research programs, operating experience or other sources. In its forward-looking role, RES is responsible for identifying research activities to address issues that could be significant to the future safety of facilities and the regulatory program. RES will consult with the other program offices, the Commission, and stakeholders to ensure that all insights are reflected in anticipatory research recommendations.

RES also has an important role in supporting the agency's regulatory products, such as risk informing Part 50. RES evaluates regulatory products and proposes modifications where warranted. In addition, RES provides independent evaluations of operational experience and develops and maintains indicators of reactor plant performance.

RES AS A CENTER OF EXCELLENCE.

RES strives to be a center of excellence for technical expertise and for developing and maintaining regulatory tools and data bases. The development of improved data and models will support regulatory decisions that are technically sound but are more realistic. An important example of being a center of excellence is the lead role RES plays in coordinating agency efforts to be more risk-informed and performance-based. RES will continue to foster and

participate in cooperative activities with other federal agencies, universities, international organizations, and, where appropriate, industry organizations. RES will also support appropriate national consensus standard activities.

RES ACTIVITIES FLOW FROM THE STRATEGIC PLAN.

RES has been a primary office in developing the revised NRC Strategic Plan. Accordingly, RES activities support the agency's efforts to maintain safety, to increase public confidence, become more effective, efficient and realistic and reduce unnecessary regulatory burden. RES has a major role in every strategic arena in implementing key strategies to achieve the strategic and performance goals.

To achieve the agency's goals to maintain safety while reducing unnecessary burden through realistic assessments, RES will:

- conduct research to improve the agency's knowledge in areas where uncertainties in our knowledge exist where safety margins are not well characterized, and where regulatory decisions need to be confirmed;

- coordinate agency efforts to become more risk-informed and performance-based;

- conduct systematic evaluations of regulatory requirements and propose modifications where warranted;

- conduct technical assessments to identify safety issues associated with licensee activities and regulatory requirements;

- identify to program offices potential emerging safety issues from reviews of operating experience, research results, and other available information;

- prepare the agency for the future by identifying the need for anticipatory research on safety issues involving new designs and new technology, expected industry initiatives, and emerging issues;

- develop and maintain an infrastructure of expertise, facilities, analytical tools, and data to support independent agency decision making;

RES will perform its work in a manner that supports stakeholder confidence in the NRC and improves the agency's efficiency, effectiveness, and realism by:

- ensuring effective processes for meaningful stakeholder participation, including licensees and public-interest groups, in reviewing planned research efforts and the results of research;

- conducting work efficiently, including using leverage in its activities by participation in cooperative research endeavors with other federal agencies, universities, international organizations, industry organizations, where appropriate, and in national consensus standard activities.

Consistent with the above, the vision for the Office of Regulatory Research role is as follows:

The Office of Nuclear Regulatory Research furthers the regulatory mission of the NRC by providing technical advice, technical tools and information for identifying and resolving safety issues, making regulatory decisions, and promulgating regulations and guidance. RES conducts independent experiments and analyses, develops technical bases for supporting realistic safety decisions by the agency, and prepares the agency for the future by evaluating safety issues involving current and new designs and technologies. RES develops its program with consideration of Commission direction and input from the program offices and other stakeholders

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