

June 28, 2000

Dr. Dana A. Powers, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: ACRS COMMENTS ON SECY-00-0053, "NRC PROGRAM ON HUMAN PERFORMANCE IN NUCLEAR POWER PLANT SAFETY"

Dear Dr. Powers:

Thank you for your letter of May 23, 2000, to Chairman Meserve regarding the NRC's Program on Human Performance in Nuclear Power Plant Safety (PHP). The staff is incorporating your observations and recommendations into their continuing planning and implementation efforts.

#### ACRS Observations and Recommendations

1. The staff has started to develop a framework for coordinating the agency's activities in this important area. The relevant activities of other agencies have been reviewed and operating experiences have been analyzed.

#### Response

The staff will continue to build on the framework described in SECY-00-0053. As indicated in SECY-00-0053, the framework was established based on risk and operating experience information, user needs, activities in the nuclear industry, and human performance programs in other applications. Efforts to assess risk and operational experience information will continue as a part of the program. NRR will continue to assess the regulatory experience and identify research user needs as appropriate. The staff will continue to monitor nuclear and other industry experiences to identify emerging issues and technology. In addition, RES is planning a subject matter expert workshop for Fall of 2000, which will focus on future and expanded efforts for the PHP. The general purpose of the workshop will be to build on the framework by assessing the risk information and other supporting materials and by aggregating the information to identify the need for and prioritization of future activities for the PHP. The intent is to identify the scope of information needed and, when appropriate, use existing sources of information to achieve program goals. Participants will be human factors specialists, probabilistic risk assessment, and reliability analysts, and individuals with applications experience from research institutions, other agencies, academia, and industry. The specific details of the workshop are under development by the staff.

2. The analysis of operating experience to identify latent conditions resulting from organizational and programmatic deficiencies and to assess their risk significance is an important element of the Program and should be expanded.

Response

The revised reactor oversight process (RROP) emphasizes licensee corrective actions and encourages identification of root causes and assessment of risk significance for revealed latent errors. As indicated above, operational experience assessment by NRC will continue as part of the human performance program. Information from these assessments will be provided to and discussed with the risk assessment staff for their use in developing improved probabilistic risk assessment/human reliability analysis (PRA/HRA) methods that address the latent and programmatic issues identified. The staff described to the ACRS its methods for assessing the conditional core damage contribution in operational events attributable to human performance including latent and active contributions. The staff is formulating an approach to evaluate these latent and human performance issues in a unified PRA context. In addition, the subject matter expert workshop discussed above will focus on future and expanded efforts in this area.

3. Activities under the Program should focus on supporting the two major agency initiatives to risk inform the regulations and to revise the reactor oversight process.

Response

There is a focus on these areas since they are both new, high-priority Agency programs. Within RES, there is an effort to identify the areas where human performance efforts can support risk informing NRCs regulatory processes and activities. Both RES and NRR human performance staff are involved with direct support and user need work for the reactor oversight process. NRR is developing a human performance significance determination process, currently related to the operator requalification program, and RES is responding to an NRR user need to characterize the extent to which human performance is captured in the RROP.

4. The coordination between A Technique for Human Event Analysis (ATHEANA) project and the analysis of operating experience project should be improved. ATHEANA's data needs should be considered in the analysis of operating experience. The analysis could, in turn, suggest areas of possible improvements in human reliability analysis models such as ATHEANA.

Response

Staff from the RES human performance team and the human reliability assessment team are working together to define ATHEANA/HRA data needs and needs to enhance HRA techniques to better account for operational experience findings. Topics of current interest include data needs for the application of HRA techniques to the fire and pressurized thermal shock (PTS) issues and enhanced modeling of personnel issues. Some of the data needs may also be met through review of data from past Halden experiments or through design of specific experiments that could be part of Halden's

Human Error Analysis Project. An HRA program plan is being developed which will explicitly address the modes and means of coordination between the human performance and HRA research activities. It is expected that the subject matter expert workshop discussed in item 1 will provide important input to the plan development.

5. The work proposed in the Program to characterize the extent to which human performance is captured in the Revised Reactor Oversight Process (RROP) should be pursued. The validity of the assumption that the impact of cross-cutting issues on plant safety will be reflected in the performance indicators, and the baseline inspection findings should be tested.

Response

RES received a formal user need from NRR, March 17, 2000, and has initiated work with INEEL to address this issue. The work will involve the comparison of operational experience information with the elements of the RROP. It will characterize any type of human performance issue not accounted for and assess the significance of its effects. In addition, NRR is considering using the Human Factors Information System (HFIS) to determine if any significant changes in HFIS are reflected in changes to the performance indicators .

The staff will keep the ACRS informed of progress on this program.

Sincerely,

***/RA by Frank J. Miraglia Acting For/***

William D. Travers  
Executive Director  
for Operations

cc:  
Chairman Meserve  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan  
Commissioner Merrifield  
SECY

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cc:  
 Chairman Meserve  
 Commissioner Dicus  
 Commissioner Diaz  
 Commissioner McGaffigan  
 Commissioner Merrifield  
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Dr. Dana Powers

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