



RIL-138

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 11 1984

R-2611.01
R-2611.04
B-7491
RIL-138

MEMORANDUM FOR: Edward Podolak, Chief
Program and Administrative Services Branch
Administration and Resource Control Staff
Office of Nuclear Regulatory Research

Return to
PASB, RES

FROM: Zoltan R. Rosztoczy, Chief
Research and Standards Coordination Branch
Division of Safety Technology
Office of Nuclear Reactor Regulation

SUBJECT: COMPLETED RESEARCH RESULTS UTILIZATION FROM FOR RIL 138,
"NUCLEAR POWER PLANT CONTROL ROOM TASK ANALYSIS"

This memorandum transmits a completed Research Results Utilization Form for the subject RIL. The results have thus far been used in the current development of operator examinations. Furthermore, the Control Room Design Review process has especially profited from insights gained into human factors operational problems. As computer terminals become available to DHFS to provide data access, more effective use of the task analysis data is expected.

Zoltan R. Rosztoczy
Zoltan R. Rosztoczy, Chief
Research and Standards Coordination Branch
Division of Safety Technology
Office of Nuclear Reactor Regulation

cc: D. B. Jones
J. A. Norberg

Enclosure:
Official Program Office Comments on
Utilization or Value of RIL To The
Regulatory Process

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Completion of Research Results Utilization Form

A. Application to Regulatory Process

This section should contain a brief technical discussion of the purpose of the research and how the research relates to regulatory requirements. The discussion should contain sufficient detail so that reference to supporting documentation is not needed to understand the main aspects of these points. However, the NRR research request numbers and FIN numbers applicable for this research should be given for convenient reference if further details are needed.

B. Impact of Results

This section should describe the impact of the research results, and it should include appropriate characterizations such as: (1) the results were used in a particular environmental or safety review, a safety evaluation report, or a hearing; or (2) the results either confirmed or showed a need to revise our technical basis used in licensing reviews, regulations, regulatory guides, SRP's, technical specifications, etc.; or (3) the research produced a code, seismotectonic province map, etc. to be used in licensing reviews and provides the staff independent audit capability; or (4) the results added to the general knowledge of the staff, even though they may not be directly applicable to the licensing process; or (5) the results led to a relaxation of an existing requirement or showed there is additional margin in the operating limits of certain reactors; or (6) the results led to a new requirement or the tightening of an existing requirement. For those cases which lead to a change in our requirements, the magnitude of the change should be specified, if possible.

C. Comments and Remarks

This section should include a summary of the status of the research program, indicating whether the project has been completed and whether further work is scheduled or recommended. This section should also specify whether the research results contain information that should be considered for Board notification.

D. Comments on Style

In completing these forms it should be remembered that they represent NRR's comments on the research results. Therefore, they should be objective and technical in nature and be written in a tone which applies generally to NRR. Personal references should be avoided.

OFFICIAL PROGRAM OFFICE COMMENTS ON UTILIZATION OR VALUE OF RIL TO THE REGULATORY PROCESS

(Research Results Utilization Form)

RIL #: 138 Date Issued: 1/31/84 RRG:

RRG Chair:

RIL Title: NUCLEAR POWER PLANT CONTROL ROOM CREW TASK ANALYSIS

Program Office: Division of Human Factors Safety

Contact Name: D. B. Jones

Date: 3-8-84

Application to Regulatory Process:

The control room task analysis data will provide information on which to base a determination of control room staffing requirements, training criteria, examination content and evaluate examination validity, emergency procedure validation and an estimate of the man-machine interface requirements and operations, for those sequences evaluated in the task analysis.

Impact of Results:

The results have been used in current examination development. The results have not yet been applied in other areas although a better understanding of NPP control room problems has provided the staff an insight into human factors operational problems. The Control Room Design Review process has especially profited from this research insight.

Comments/Remarks:

Analysis of the data is dependent upon the computer programs required to provide data access. NRR experience and lack of availability of computer terminals has limited use at this time. As computer terminals become available more effective use of the research data is expected. Based upon use of the data to date, DHFS agrees with the value of the research as applied to Human Factors considerations.



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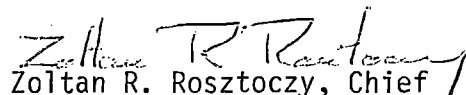
APR 3 1984

MEMORANDUM FOR: Edward Podolak, Chief
Program and Administrative Services Branch
Office of Nuclear Regulatory Research

FROM: Zoltan R. Rosztoczy, Chief
Research and Standards Coordination Branch
Division of Safety Technology
Office of Nuclear Reactor Regulation

SUBJECT: COMPLETED RESEARCH RESULTS UTILIZATION FORM FOR RIL 130,
"EXPERIMENTAL VERIFICATION OF COMPUTER SIMULATIONS OF
PIPING RESPONSES USING HEISSDAMPFREATOR (HDR) SEISMIC
TESTS"

This memorandum is to transmit a completed Research Results Utilization Form for the subject RIL. While the work provides useful insight into the capability of piping dynamic analysis, the results of this work will have no current impact on the licensing process. If generic conclusions are intended, completion of additional work of this nature, including the planned additional studies at the HDR, will have to be accomplished. We also note and discuss that the HDR program may also have application to benchmarking of soil-structure interaction analyses.


Zoltan R. Rosztoczy, Chief
Research and Standards Coordination Branch
Division of Safety Technology

cc: John O'Brien, RES

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OFFICIAL PROGRAM OFFICE COMMENTS ON UTILIZATION OR VALUE OF RIL TO THE REGULATORY PROCESS
(Research Results Utilization Form)

RIL #: 130 Date Issued: 3/16/82 RRG:

RRG Chair: John O'Brien

RIL Title: Experimental Verification of Computer Simulations of Piping Response using Heissdampfreactor Seismic Tests

Program Office: NRR

Contact Name: S. Hou/P. Williams

Date: 11/4/83

Application to Regulatory Process:

This work provides some useful insight to the capability of piping dynamic analysis, especially the accuracy of analytical results in comparison with directly measured response dates. The results confirm the general belief that modal frequencies and mode shapes of a pipe run can be more correctly predicted than the support motions and piping strains. Modeling techniques and damping values used are essential to accuracy and magnitude of calculated responses.

Not reported by the RIL but an application to the regulatory process, is the use of the Heissdampfreactor (HDR) tests in the study of soil structure interaction. A Technical Memorandum ANL-CT-81-39 was prepared by Argonne National Laboratory which reported an investigation using the TRANAL code, a 3D, nonlinear analysis method developed by the weapons program. The TRANAL calculations gave results similar to those observed in the test but differences in the early-time transients and phasing between experiment and computation are not explained.

Impact of Results:

Results of this work have no current impact on the licensing process due to the following reasons:

1. Rules of current piping Code are intended to bound the stress resultants under most adverse event combinations instead of predicting actual vibration motions or strains under a single dynamic loading. Our separate assessment on piping design margin concludes that current piping design rules are adequately conservative to accommodate amount of uncertainties presented in this work.
2. Design limits set by current piping code are stress oriented, which can be calculated more accurately than piping strains and support motions.

Comments/Remarks:

This work represents a special case evaluation. More samples are needed if generic conclusions are intended to impact regulatory processes. Investigation on broader sampling basis is recommended, including completion of the additional experiments at the HDR.

A current contract at BNL is reviewing available soil-structure interaction data, including the HDR tests, with the aim of establishing benchmarks for standard problems. It is not believed likely that the HDR data will be useful, however, since the reactor is located on miscellaneous fill material which is difficult to characterize.