Test, Research and Training Reactors Community

Dear Colleague:

The final report, "Survey of Non-Power Reactors," is enclosed for your information and use. A draft of this report was prepared by the former Office for Analysis and Evaluation of Operational Data (AEOD) and, in accordance with the AEOD peer review process, provided to the Test, Research and Training Reactors (TRTR) community and cognizant individuals within the NRC in December 1996 for review and comment. This final report replaces the draft report in its entirety.

We are sending this final report to all members of the TRTR community and others who commented on the draft. We thank those who provided comments for their time, insight, and candor. We believe that this final report is responsive to the comments.

The study includes reviews of operating events, inspection findings, National Organization of Test, Research, and Training Reactors feedback to the non-power reactor community, NRC enforcement actions, and visits to representative facilities. The survey was focused on the "higher power" (typically 2 MW or greater) Materials Testing Reactor-fueled facilities because of their relatively higher fission product inventories and TRIGA-fueled reactors because of the number of similar facilities.

Operating experience indicates that non-power reactors have a good overall safety performance. None of the operating events considered in the study resulted in fuel damage or radiation releases in excess of regulatory limits. Except for one event in 1986, personnel exposures have been within 10 CFR 20 limits. No adverse effect on public health and safety was seen.

During the course of performing the non-power reactor survey, many facilities promptly addressed emerging issues or lessons learned that were contained in the draft report. Ongoing findings of the survey were also communicated during NRC presentations at several annual meetings held by the non-power reactor community. Based on our review and the safety performance of non-power reactors, recommendations for specific actions by either licensees or the NRC were not supported. Therefore, the final report is issued for information only. Survey observations in Section 4 of the report suggest some potential areas for improving operational or safety performance.

If you have any questions regarding this study, please feel free to contact me at (301) 415-7499 or John Kauffman at (301) 415-7479.

Sincerely,

/RA/

Charles E. Rossi, Director Division of Systems Analysis and Regulatory Effectiveness Office of Nuclear Regulatory Research Enclosure: As stated

Test, Research and Training Reactors Community

Dear Colleague:

The final report, "Survey of Non-Power Reactors," is enclosed for your information and use. A draft of this report was prepared by the former Office for Analysis and Evaluation of Operational Data (AEOD) and, in accordance with the AEOD peer review process, provided to the Test, Research and Training Reactors (TRTR) community and cognizant individuals within the NRC in December 1996 for review and comment. This final report replaces the draft report in its entirety.

We are sending this final report to all members of the TRTR community and others who commented on the draft. We thank those who provided comments for their time, insight, and candor. We believe that this final report is responsive to the comments.

The study includes reviews of operating events, inspection findings, National Organization of Test, Research, and Training Reactors feedback to the non-power reactor community, NRC enforcement actions, and visits to representative facilities. The survey was focused on the "higher power" (typically 2 MW or greater) Materials Testing Reactor-fueled facilities because of their relatively higher fission product inventories and TRIGA-fueled reactors because of the number of similar facilities.

Operating experience indicates that non-power reactors have a good overall safety performance. None of the operating events considered in the study resulted in fuel damage or radiation releases in excess of regulatory limits. Except for one event in 1986, personnel exposures have been within 10 CFR 20 limits. No adverse effect on public health and safety was seen.

During the course of performing the non-power reactor survey, many facilities promptly addressed emerging issues or lessons learned that were contained in the draft report. Ongoing findings of the survey were also communicated during NRC presentations at several annual meetings held by the non-power reactor community. Based on our review and the safety performance of non-power reactors, recommendations for specific actions by either licensees or the NRC were not supported. Therefore, the final report is issued for information only. Survey observations in Section 4 of the report suggest some potential areas for improving operational or safety performance.

If you have any questions regarding this study, please feel free to contact me at (301) 415-7499 or John Kauffman at (301) 415-7479.

Sincerely, /RA/ Charles E. Rossi, Director Division of Systems Analysis and Regulatory Effectiveness Office of Nuclear Regulatory Research

Enclosure: As stated

Identical letters sent to: See attached list

Distribution: See attached list

C:\04trtr-external3-00.wpd

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RAB	С	C:RAB		D:SPD	
NAME	JKauffman:mmk		JRosenthal		CRossi	
DATE	03/03/00*		03/08/00*		04/18/00*	

Template= ____RES-006____ Accession Number ML003706390___ RES File Code ____RES-7A-1___

Addressees – Memorandum Dated 04/18/2000

Stephen J. LaFlamme, Director Nuclear Reactor Facility Worcester Polytechnic Institute Worcester, MA 01609

Manhattan College Mechanical Engineering Dept. Catherine C. Staton, Acting Reactor Administrator. Riverdale, NY 10471

Scott Lassell, Reactor Supervisor Ward Center for Nuclear Sciences Cornell University 106 Ward Lab Ithaca, NY 14853

Director Radiation Safety Office Catholic University 33 Hannan Hall Washington, DC 20064

Gunter Kegel, Director Radiation Lab University of Mass-Lowell One University Avenue Lowell, MA 01854

James J. McGovern, President Cintichem Inc. P.O. Box 816 Tuxedo, NY 10987

Waltz Mill Nuclear Energy Systems Westinghouse Electric Corp. P.O. Box 355 Pittsburgh, PA 15230

U.S. Maritime Administration N.S. Savannah Senior Technical Advisor Room 7209 400 7th Street SW MAR-800.2 Washington, DC 20590

John A. Bernard, Director MIT Nuclear Reactor Laboratory Massachusetts Institute of Tech. 138 Albany Street NW12-208 Cambridge, MA 02139

Rensselaer Polytechnic Inst. Risk Management William M. Christenson Radiation Sfty/Hlth Specialis 110 8th Streett Troy, NY 12181 Penn State University Dept. of Nuclear Safety Eric J. Boeldt Mgr of Radiation Protection Eisenhower Parking Deck University Park, PA 16802

Dr. Aris Christou, Chairman Dept. of Materials & Nuclear Eng. University of Maryland College Park, MD 20742

Terry N. Tehan, Director Nuclear Science Center Rhode Island Atomic Energy 16 Reactor Road Narragansett, RI 02882

David Vasbinder, Director Buffalo Materials Research Ctr. University at Buffalo 301 Michael Hall — 3435 Main Street Buffalo, NY 14214

Vice President Saxton Nuclear Experimental Company 2574 Interstate Drive Harrisburg, PA 17110

Dr. W. Chappas, Reactor Director Dept. of Materials & Nuclear Eng. University of Maryland College Park, MD 20742

Armed Forces Radiobiological Research Institute Office of the Director Naval Medical Command National Capitol Region Bethesda, MD 20889

Nolan E. Hertel, Director Neely Research Center Georgia Institute of Technology 900 Atlantic Drive Atlanta, GA 30332

Ronald Fleming, Director Ford Nuclear Reactor University of Michigan 2301 Bonisteel Blvd. Ann Arbor, MI 48109

Ward L. Rigot Reactor Supervisor Dow Chemical Company 1602 Bldg. Midland, MI 48667 Richard L. Holm Reactor Supervisor Radiation Science Laboratory 214 Nuclear Reactor Laboratory University of Illinois 103 South Goodwin Avenue Urbana, IL 61801-2984

Kansas State University Dept. of Mech. & Nuclear Eng. Brendan Ryan 112 Ward Hall Manhattan, KS 66506

Thomas L. Bauer Nuclear Engineering Teaching Lab Pickle Research Campus University of Texas R9000 Austin, TX 78712

David M. Slaughter University of Utah Center Room 104 160 South Central Campus Drive Salt Lake City, UT 84112

General Atomics Dr. Keith E. Asmussen, Director License, Safety&Nuclear Compliance P.O. Box 85608. San Diego, CA 92186

Director Reactor Facility Reed College 3203 SE Woodstock Blvd. Portland, OR 97202

University of Virginia Nuclear Reactor Facility Robert U. Mulder Reactor Director & Assoc Prof P.O. Box 3425, University Station Charlottesville, VA 22903

William G. Vernetson, Director Nuclear Engineering Sciences Dept. University of Florida P.O. Box 118300 Gainesville, FL 32611

U.S. Veterans Administration Medical Ctr 41201 Woolworth Avenue Omaha, NE 68105

Director – Nuclear Reactor Facility University of Missouri Rolla, MO 65401 University of Missouri—Rolla Nuclear Reactor Facility 1870 Miner Circle Rolla, MO 65409

Reactor Manager U.S. Geological Survey Denver Federal Center P.O. Box 25046 MS 974 Denver, CO 80225

Dr. John G. Williams, Director Nuclear Reactor Lab University of Arizona P.O. Box 210020 BLDG 20 Tucson, AZ 85721

G.L. Stimmell, Manager Vallecitos Nuclear Center GE Nuclear Energy 6705 Vallecitos Road Sunol, CA 94566

Director 100 Radiation Center Oregon State University Corvallis, OR 97331

Pedro B. Perez, Chairman National Organization of Test, Research, and Training Reactors North Carolina State University Box 7909 Raleigh, NC 27695-7909

David B. Ashley, Director Engineering Experiment Station Ohio State University 167 Hitchcock Hall Columbus, OH 43210

Dept. of Mechanical Engineering Nuclear Engineering Program Iowa State University 2025 HM Black Engineering Bldg. Ames, IA 50011

J.C. McKibben Research Reactor Facility University of Missouri Columbia, MO 65211

University—Texas A&M Dept of Nuclear Engineering John W. Poston, Sr., Professor & Head 129 Zachry Engineering Center College Station, TX 77843

Tawfik Raby, N.I.S.T. 100 Bureau Drive Stop 8561 Gaithersburg, MD 20899-8561 Idaho State University College of Engineering John S. Bennion Reactor Administrator P.O. Box 8060 Campus Pocatello, Idaho 83209

Chief Reactor Supervisor Dept. of Chemical and Nuclear Eng. University of New Mexico FEC 209 Albuquerque, NM 87131

Ray R. Tsukimura, President Aerotest Operations, Inc. 3455 Fostoria Way San Ramon, CA 94583

Office of the Dean College of Engineering University of Washington P.O. Box 352180 Seattle, WA 98195

University of N. Carolina State Director-Nuclear Reactor Prog. Nuclear Engineering Dept. 141178 7909 Room 2116 Burlinton Raleigh, NC 27695

Edward Merritt, Reactor Supervisor School of Nuclear Engineering Purdue University 1290 Nuclear Engineering Bldg West Lafayette, IN 47907

R.J. Cashwell, Reactor Director Nuclear Engineering Department University of Wisconsin 1513 University Avenue Madison, WI 53706

Texas Engineering Exper Station Nuclear Science W.D. Reece, Director 1095 Nuclear Science RD #3575 College Station, TX 77843

Francis F. Paul Idaho Brain Tumor Center P.O. Box 2827 Idaho Falls, ID 83403

T. Schoone University of Missouri Research Reactor Facility Columbia, MO 65211 Dr. J. Razvi, General Mgr. General Atomic Company 10240 Flanders Court MS: SE/TRIGA San Diego, CA 92121

Dr. Wade J. Richards, Director MNRC Department of the Air Force U.S. Department of Defense SM-ALC/TI-1 McClellan AFB, CA 95652

Gerald E. Tripard, Director Nuclear Radiation Center Washington State University P.O. Box 641300 Pullman, WA 99164

Mr. Neal T. Saunders Director of Aeronautics NASA Lewis Research Center 21000 Brookpark Road M.S. 3-8 Cleveland, OH 44135

Dr. J. Michael Rowe, Chief Reactor Radiation Division N.I.S.T. Gaithersburg, MD 20899-0001

Dennis Smith Executive Chancellor Department of Chemistry University of California, Irvine Irvine, CA 92717

Lester A. Slaback, Jr. 122 East Deer Park Drive Gaithersburg, MD 20877-2013

Brian Dodd OSU Radiation Center Oregon State University 100 Radiation Center Corvallis, OR 97331-5903

Westinghouse Electric Company – NSD Wayne D. Vogel P.O. Box 158 MS: 16 Madison, PA 15663

Korea Electric Power Corporation Windsor Office Heeyong Lee Nuclear Engineering Director 2000 Day Hill Road Windsor, CT 06095 Memorandum Dated 04/18/2000

Distribution w/att.: Public File Center REAHFB R/F DSARE R/F AThadani AMohseni, NMSS KBrockman, R-IV JMurphy, RES RLloyd PNorian SRubin RSpence

Distribution w/o att.: BSheron, NRR DMathews, NRR TMarsh, NRR