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MINUTES OF ACNW WORKING GROUP MEETING HELD AT THE CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES, NOVEMBER 30, 1989, SAN ANTONIO, TEXAS

A Working Group Meeting of the Advisory Committee on Nuclear Waste was convened by Chairman Dade W. Moeller at 8:40 a.m., Thursday, November 30, 1989, at the Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, 6220 Culebra Road, San Antonio, Texas.

[Note: Attendees: ACNW Members, Drs. Dade W. Moeller and William J. Hinze were present; ACNW Consultants, Dr. Melvin W. Carter and Mr. Eugene E. Voiland were also present.]

The Chairman said that the agenda for the meeting had been published. He also identified the items to be discussed. He stated that the meeting was being held in conformance with the Federal Advisory Committee Act and the Government in the Sunshine Act, Public Laws 92-463 and 94-409, respectively. He also noted that a transcript of the public portions of the meeting was being made, and would be available in the NRC Public Document Room at the Gelman Building, 2120 L Street, N.W., Washington, D.C.

[Note: Copies of the transcript taken at this meeting are also available for purchase from Ann Riley & Associates, Ltd., 1612 K St. N.W., Suite 300, Washington, D.C. 20006.]

INTRODUCTION

[Note: Mr. Richard Major was the Designated Federal Officer for the meeting.]

On Thursday, November 30, 1989, members of the Advisory Committee for Nuclear Waste held a Working Group meeting at the Center for Nuclear Waste Regulatory Analyses to review projects currently underway at the Center and planned for the near future. Following the formal meeting and presentations by staff of the CNWRA, the Committee Members, Consultants, and NRC Staff toured the offices and laboratory facilities at and available to the Center.

ACNW Committee Members in attendance were Drs. Dade Moeller and William Hinze; Consultants present were Dr. Melvin Carter and Mr. Eugene Voiland. ACNW Staff attending the meeting were Ms. Charlotte Abrams and Mr. Richard Major. Other NRC Staff in attendance were Melvin Silberberg, Jesse Funches, Guy Arlotto, A.L. Eiss, Susan Bilhorn, and James Blaha.

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The CNWRA is part of the Southwest Research Institute (SwRI) which has a total staff of approximately 2300, of whom nearly 1000 are professionals, and an annual budget of about 200 million dollars. Mr. Martin Goland, President, SwRI, made the opening presentation at the meeting and stated his commitment and that of SwRI to the success of the CNWRA as a national center for excellence. Other speakers included Mr. John Latz, President of the CNWRA; Dr. Wesley Patrick, Technical Director; and members of the CNWRA Technical Staff.

MEETING PRESENTATIONS

Mr. Martin Goland, President of SwRI, made the opening remarks and provided some of the history behind SwRI, information on SwRI's proficiency in research and development projects, and a description of how the CNWRA can draw from areas of expertise within the entire SwRI. His presentation was followed by that of Mr. John Latz, President of the CNWRA, who gave an overview of the Center, a summary of activities and operations, and a statement of the CNWRA's goals which were: 1) to avoid potential conflict of interest 2) to provide the NRC with technical assistance and research, and 3) to provide continuity of staff and projects in technical assistance review and research. The CNWRA has been provided some dedicated laboratory facilities and currently has five approved research projects ongoing, two pending, and five more planned. At this time the staff of the CNWRA is not at its full support level, but a staff of 60 professionals is planned for 1990. Other support will be provided by consultants subcontracted through the CNWRA. In addition, Mr. Latz stressed the experienced support in the area of Quality Assurance available to the CNWRA through SwRI. A commitment to search for high quality professionals to fill all key positions was also stressed.

Dr. Wesley Patrick, Technical Director for the CNWRA, gave a brief overview of the technical support program. He stressed that the CNWRA will apply a systems approach in their reviews and research programs. Areas in which they will provide support are: 1) in technical support to regulatory guidance documents, such as Technical Positions, being generated by the NRC Staff; 2) to review DOE pre-licensing documents, such as the SCP; 3) to review the DOE licensing document; 4) to provide support in QA and technical areas during audits of the DOE program; 5) to develop compliance determination methodologies reports; and 6) to provide assistance in development of an NRC performance assessment methodology. With respect to the area of performance assessment, Dr. Patrick announced that the CNWRA had recruited Dr. Sagar from PNL, who is experienced in performance assessment, to head that section at the CNWRA. He stated that the CNWRA is committed to the early application of the techniques of Performance Assessment in all

aspects of their work. They see this as: a) providing support to their work on sensitivity and uncertainty analyses; b) helping them to integrate the range of research activities planned; and c) providing a sound method for evaluating the characteristics of the proposed repository for meeting the standards promulgated by EPA.

Committee members and consultants questioned Dr. Patrick about the selection of topics for research. He described the mechanism for generation and selection of topics as a joint one between the CNWRA and the NRC Staff. The selection of future project topics will be influenced by the results of a current CNWRA project in which 10 CFR Part 60 is being examined to establish the necessity, sufficiency, and consistency of each requirement. Where areas of inconsistency or uncertainties exist which would indicate a need for research, a research project may be initiated. In some areas work has already begun. Other projects already identified, but not initiated, have been delayed due to the lack of appropriate staff as yet. CNWRA research work has been initiated in the areas of geochemistry, thermohydrology, waste package corrosion, and rock mechanics.

Another important factor influencing the CNWRA's research effort at the present is the adequacy of their staffing. Initiation of work on some projects has been delayed for lack of the proper professionals to lead related research activities.

In response to a question by Dr. Hinze on the CNWRA's role with respect to Technical Positions, Dr. Patrick answered that the CNWRA's input on Technical Positions and Rulemakings to-date has been primarily as a reviewer of the Staff's documents. They are providing input to the Natural Resources Technical Position.

Following Dr. Patrick's presentation, he introduced members of the CNWRA technical staff. Technical staff providing presentations were Project Managers and Principal investigators for the various on-going projects. For all projects the regulatory framework as stated in 10 CFR Part 60 has been established. Research projects discussed were:

- 1) Geochemistry research project; Project Manager, John Russell; Principal Investigators, William Murphy, Ron Green, and Roberto Pabalan. This project is being conducted to understand geochemical conditions at the site and the transport of radionuclides to the accessible environment. The project has established regulatory bases from 10 CFR Part 60 and includes efforts in modeling of ion exchange properties of zeolites at Yucca Mountain and studies of relevant natural analogs such as Pena Blanca, Mexico, and Santorini, Greece.
- 2) Integrated waste package experiments; Principal Investigators,

Prasad Nair, Narasi Sridhar, Gustavo Cragolino, Hersh Manaktala, Fred Lyle, and Bryan Wilde. The project objectives are to understand factors, such as corrosion, which will potentially affect the long-term performance of the waste package. As part of the project they are looking at a range of metals (e.g., three stainless steels and three copper alloys). They arranged an independent peer review of their plans by an outside panel of experts on July 27, 1989. At this time a summary report and analysis of the peer review comments is being prepared. They are applying Fast Probabilistic Performance Assessment (FPPA) methodology in their assessment of facilities for the disposal of HLW, particularly to waste package performance assessment.

- 3) Seismic/Rock Mechanics Project; Project Manager, Asadul Chowdhury; Principal Investigators, Simon Hsiung, Barry Brady, and Daniel Kana. This project is designed to provide an understanding of how the shaft liners and engineered underground repository will respond to seismic motion and to develop methodologies to evaluate, validate, and reduce uncertainties in seismic assessment models for the proposed repository.
- 4) Stochastic Analysis of Large Scale Flow and Transport in Unsaturated Fractured Rock; Project Manager, John Russell; Principal Investigator, Rachid Ababou. The project is designed to gather data on transport and flow in the unsaturated zone through development of models and simulations of unsaturated conditions. Hopefully, the results will provide information on groundwater travel time. This project is new and no preliminary results are available.
- 5) Thermohydrology Project; Project Manager, John Russell; Principal Investigators, Frank Dodge, Chris Freitas, Ron Green, Mike Lewis, and Steve Svedman. All investigators on this project, with the exception of Green, are employees of SWRI. This project is primarily designed to promote an understanding of the effects of heat on the hydrologic regime. Saturated and unsaturated conditions will be investigated separately.
- 6) Transportation Risk Study, Ruth Weiner, Project Manager. This project involves an evaluation of the RADTRAN code and will potentially provide a technical basis for a revision of the EIS on the transportation of radioactive materials. Through efforts to validate the code the CNWRA staff has identified possible defects in the code. These defects are not errors in the RADTRAN code, but in the data bases that were used, such as errors in entries. If funds are available, they hope eventually to validate the code through examination of actual

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data, instead of computer simulation.

Dr. Patrick concluded the presentations by stating that although the CNWRA is just beginning its involvement in the area of performance assessment, it is believed to be one of the most important activities. He stressed that research activities should be integrated with performance assessment activities.

The topic of selection of research projects was discussed again at the end of the meeting. At that time Dr. Dr. Guy Arlotto, Deputy Director of NMSS responded to a question by Dr. Moeller on the choice and prioritization of research by the CNWRA. He stated that the CNWRA and the NRC staff were now in the process of phasing out contracts with national laboratories in an effort to avoid potential conflicts of interest. In the process of doing this there is an ongoing technology transfer between the former contractors, NRC staff, and the CNWRA. For these reasons the CNWRA staff has not specifically identified what their ideas are with respect to where research emphasis should be. A request for feedback from the CNWRA on the topic of research needs and priorities has been made by the Deputy Director of Research and the response to this request is anticipated in the spring, 1990.

Other items of interest mentioned by Dr. Patrick at the close of the meeting were:

- 1) The CNWRA supports exchanges of personnel between the CNWRA and the NRC staff.
- 2) The CNWRA has been competitive in attracting staff because the HLW project is seen by many to be an area where a researcher can be active in a national and international arena.
- 3) Staff of the CNWRA are encouraged to submit reports to refereed professional journals and participate in meetings of professional societies.
- 4) In order to keep up with DOE's progress in technical areas, more open dialogue is needed. Technical exchanges are important, but more scientist-to-scientist talk is needed.

Following the presentations and discussion the meeting was adjourned at 3:55 p.m. and the Members and consultants were taken on a tour of the CNWRA facilities.

TENTATIVE SCHEDULE FOR
THE ACNW WORKING GROUP MEETING
AND TOUR OF
THE CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
NOVEMBER 30, 1989
SAN ANTONIO, TEXAS
SwRI AUDITORIUM, ADMINISTRATION BUILDING

8:30 a.m.	I.	Introduction by ACNW Working Group Chairman D. W. Moeller
8:35 a.m.	II.	Welcoming remarks by Martin Goland, President SwRI
8:40 a.m.	III.	Overview of CNWRA by John Latz, President, CNWRA
8:50 a.m.	IV.	Review of Center's Activities in Technical Assistance, Research Systems Engineering/ Integration in NWPA program by Dr. Patrick
9:15 a.m.	V.	Geochemistry Research Project by Drs. Russell/ Murphy/Pabalar. Natural Analog Studies by Dr. Murphy
10:00 a.m.	*****	BREAK *****
10:10 a.m.	VI.	Integrated Waste Package Experiments by Dr. Nair
10:45 a.m.	VII.	Seismic/Rock Mechanics Res. Project by Drs. Chowdhury/Kana
11:05 a.m.	VIII.	Geohydrology/Stochastic Modeling by Drs. Russell/ Ababou Thermohydrologic Research Project by Dr. Russell Fast Probabilistic Performance Assessment - Dr. Nair
11:30 a.m.	IX.	Transportation Risk Study by Dr. Weiner
11:50 a.m.	X.	Performance Assessment and Program Integration by Dr. Patrick
12:00 Noon		Luncheon in Institute Cafeteria (Fair Market Value)
1:00 p.m.		Tour of Institute Facilities including Chemistry, Center Lab and Materials Sciences
3:00 p.m.		Convene for informal discussion in Center's Conference Room 1
3:30 p.m.		<u>ADJOURN</u> Members and Consultants to airport in rental car