December 29, 2005

MEMORANDUM TO: John D. Monninger, Chief
Probabilistic Risk Analysis Branch
Division of Risk Assessments and Applications
Office of Nuclear Regulatory Research

FROM: Molly J. Keefe /RA/
Probabilistic Risk Analysis Branch
Division of Risk Assessments and Applications
Office of Nuclear Regulatory Research

SUBJECT: PUBLIC MEETING SUMMARY FROM WORKSHOP ON DEVELOPMENT OF HUMAN PERFORMANCE MEASURES

The Office of Nuclear Regulatory Research (RES) and the Idaho National Laboratory (INL) conducted a workshop that was categorized as a Category 2 public meeting on December 6-8, 2005 in Charleston, SC. The workshop was an information gathering session with subject matter experts about industry best practices in the area of human performance. This workshop was conducted to support work RES is sponsoring at INL to develop a technical basis for establishing human performance measures for potential use in the Reactor Oversight Process (ROP). The workshop was attended by individuals who work in human performance fields from the Institute for Nuclear Power Operations (INPO), the Electric Power Research Institute (EPRI), and various utilities. A copy of the meeting summary and the list of attendees are enclosed.

Enclosures:
1. Public Meeting Summary
2. Meeting Attendees

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DATE	/ / 05		12 / 20 / 05		12 / 22 / 05		12 /29 / 05	

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Public Meeting Summary:
Workshop on the Development of Human Performance Measures

December 6-8, 2005

On December 6-8, 2005, the Nuclear Regulatory Commission's Office of Nuclear Regulatory Research (RES) and the Idaho National Laboratory (INL) conducted a workshop that was categorized as a category 2 public meeting. The workshop was an information gathering session with subject matter experts about industry best practices in the area of human performance. This workshop was conducted to support work RES is sponsoring at INL to develop a technical basis for establishing human performance measures for potential use in the current Reactor Oversight Process (ROP). The workshop was attended by individuals from the Institute for Nuclear Power Operations (INPO), The Electric Power Research Institute (EPRI), and various utilities who work in human performance fields. These stakeholders had the opportunity to discuss current NRC, nuclear industry, and other industry activities related to the measurement of human performance. Participants from several utilities shared their human performance monitoring programs, processes and measures, and had an opportunity to interact with experts in simulation and modeling techniques that are a suggested means of demonstrating how various data sets can be used to assess human performance.

During the workshop, potential measures, the means for modeling and simulating their relationship to human and plant performance, and potential relevance to reactor oversight processes were discussed. Specifically, after introductory remarks were made by the INL and the NRC, nuclear power industry participants presented their in-house programs and efforts to track and trend human performance. The INL and its subcontractors then described the basic principles behind modeling and simulation as a means to understand and assess human and plant performance. Follow-on discussion topics included how modeling and simulation could make use of the data source like the ones maintained by the nuclear power industry and how the outcomes of this research effort could be used within the context of the reactor oversight process. There were many concerns voiced regarding how the data could be used, how the reactor oversight process could be changed, and how these changes may impact the industry. Industry participants also provided some very insightful and helpful recommendations with respect to helping define the scope and the data requirements of the modeling and simulation effort. One recommendation from industry participants was to use existing human performance models developed by INPO, EPRI, and NEI as an initial framework for use in simulation.

The meetings ended with participants' interest in follow-on activities. In particular, tentative agreements from some industry participants to provide operational data for use in the modeling and simulation effort were made. There was also general interest by all attendees in having a follow-up meeting when the modeling and simulation effort has developed more robust and testable models of human performance.

List of Attendees

Bruce Halbert, Idaho National Laboratory (INL)
Donald Dudenhoeffer, INL
Jeffrey Joe, INL
Larry Blackwood, INL
John Wreathall , INL
Kent Hansen, Massachusetts Institute of Technology
Sankaran Hahadevan, Vanderbuilt University
Julius Persensky, Nuclear Regulatory Commission (NRC)
Molly Keefe, NRC
June Cai, NRC
Fred Forck, AmerenUE Calloway
Fred Dunham, Texas Utilities
Karen Jennings, Florida Power & Light
Pete Bedesem, Diablo Canyon
Eric Dilandro, Dominion
Victor Settergren, Palo Verde
James “Dee” Bryan, Duke Energy
Ben Whitmere, South Texas Project
Dave Ziebell, Electric Power Research Institute
Peggy Lucky, Institute for Nuclear Power Operations
Suzanne Jackson, Canadian Nuclear Safety Commission
David McDaniel, Westinghouse