Subject: **Foreign Travel Quick Look and Final Report – Meeting of the OECD/NEA Working Party on Nuclear Criticality Safety, September 22 – 25, 2008.**

Travel Dates: September 20 – 26, 2008

Location: Paris, France

Organization/Committee: Organization for Economic Co-Operation and Development/Nuclear Energy Agency (OECD/NEA) Working Party on Nuclear Criticality Safety (WPNCS)

Results Achieved:

Participation in these meetings supports NRC efforts to keep up with current international developments with respect to burnup credit in the criticality safety of spent nuclear fuel. This topic is of particular interest to the Division of Spent Fuel Storage and Transportation (SFST), as two applications for burnup credit are under review, and others are anticipated in the near future.

Mr. Rahimi participated in the conference, which consisted of 4 meetings of the various Expert Groups within the WPNCS, as well as a joint Working Party meeting on the last day. The Expert Group on Burnup Credit (EGBUC) met on September 22, where the status of burnup credit activities in the various member countries was discussed. Mr. Rahimi gave a brief status update to the group regarding burnup credit activities in which NRC is involved. The next meeting for EGBUC will be in Cordoba, Spain either during the week October 19 or 26, 2009 when the International Atomic Energy Agency working party on burnup credit meets.

Mr. Rahimi also participated in the meetings of the Expert Groups on Assay Data for Spent Nuclear Fuel, Source Convergence Analyses, and Criticality Excursions Analysis during September 23 and 24. These meetings involved discussions and presentations related to spent fuel chemical assay effort, k_{eff} and fission source convergence in Monte Carlo criticality code calculations, and criticality excursion experiments.

The WPNCS meeting was held on September 25, and included summaries of national programs for nuclear criticality safety from representatives of the various member countries and reports from each of the Expert Group Chairperson. This meeting provided an effective forum to share NRC experiences and status related to criticality safety, specifically in the area of burnup credit. In addition, information was gained about the burnup credit programs in the other countries, including current practices and future plans for implementing burnup credit. Based on the information received at this meeting, the U.S. is generally ahead of most other member countries in the area of burnup credit for commercial spent fuel transportation. Staff will continue to monitor international activities involving burnup credit, and will inform the Commission of any major developments.

The agenda and coordination for OECD/NEA Workshop on Criticality Safety Research Needs for Future Nuclear Systems during September 21-22, 2009 in Idaho Falls Idaho, and International Conference on Nuclear Criticality Safety in 2011 in Edinburg, Scotland were also discussed at the WPNCS meeting. At the end of the meeting, Veronica Boyeh from France was elected as the new chairperson for WPNCS and the next meeting was scheduled for September 25, 2009 in Paris, France.

Summary of Trip:

The EGBUC meeting included summaries of burnup credit activities in various member countries. Germany is currently considering the application of Burnup Credit in disposal. France is currently in developing international standard for Burnup Credit. Hungary reported large errors in fission product quantities between the chemical assay results and analyses using the SCALE package for the VVER-40 fuel assemblies. Germany reported the results of Phase II-E benchmarks. U.S. representatives discussed the proposed Phase V Benchmark. Phase V benchmark is focused on study of UO2 spent fuel compositions for long-term disposal.

The WPNCS meeting included summaries of national programs for nuclear criticality from representatives of the following countries: Czech Republic, France, Germany, Hungary, Japan, Slovakia, Spain, Sweden, Switzerland, U.K., and the U.S. Mr. Rahimi gave a brief summary of recent criticality safety activities at the NRC in the areas of spent fuel storage and transportation, fuel cycle safety and safeguards, and high level waste and repository safety. A representative from Oak Ridge National Laboratory gave also a presentation on Department of Energy criticality safety activities. A representative from Idaho National Laboratory presented the status of the International Handbook of Evaluated Criticality Safety Benchmark Experiments.

Additionally at the WPNCS meeting, the chairperson of the newly created Expert Group on Uncertainty Analysis for Criticality Safety Assessment (EG UACSA) presented their first report. The goal of EG UACSA is selection or development efficient and safe methodology (ies) to establish “best estimate” bias and the bias uncertainty to assist criticality safety analyst. The EG UACSA chairperson reported the results of their meeting which had been held on December 5-6 in France.

Next Steps:

The information gained in these two meetings will help advance the NRC’s efforts on burnup credit. Mr. Rahimi agreed to participate in the EGBUC Phase V exercise by performing depletion analyses for isotopic inventories as a function of disposal time. Mr. Rahimi also agreed to propose a problem for benchmarking criticality computer codes which involve some of the burnup credit isotopes during the next meeting. The WPNCS next meeting will be in 2009, tentatively scheduled for the week of October 19 or 26 in Cordoba, Spain. Continued participation in these meetings is beneficial to the NRC.

Policy Issues:

Only topics of a technical nature were discussed and these meetings are not considered to be policy issues. However, burnup credit in general is of interest to the Commission (see Commission Memo dated May 12, 2006 [ML061170608]). As discussed above, the NRC is currently reviewing spent fuel transportation cask applications involving burnup credit. Based on the information received at this meeting, the U.S. is ahead of the other member countries in this area. Staff will continue to monitor international activities involving burnup credit, and will inform the Commission of any major developments.

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