

**POLICY ISSUE
(INFORMATION)**

December 5, 2008

SECY-08-0188

FOR: The Commissioners

FROM: Brian W. Sheron, Director
Office of Nuclear Regulatory Research

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION PARTICIPATION
IN THE ORGANISATION FOR ECONOMIC COOPERATION AND
DEVELOPMENT HALDEN REACTOR PROJECT DURING 2009-2011

PURPOSE:

The purpose is to inform the Commission of the staff's plans to continue participating in the project during 2009-2011. This paper does not address any new commitments.

SUMMARY:

The Organisation for Economic Cooperation and Development (OECD) Halden Reactor Project (HRP) is a cooperatively funded international research and development project that operates under the auspices of the OECD's Nuclear Energy Agency (NEA) with the sponsorship of 18 countries, including the United States. The international organizations actively participating in the HRP represent a cross section of the nuclear community and include licensing and regulatory interests, national research organizations, reactor and fuel vendors, and utilities. In the past, HRP research has addressed five main areas of interest to the U.S. Nuclear Regulatory Commission (NRC): (1) nuclear fuels, (2) nuclear reactor materials performance, (3) human factors, (4) human reliability analysis (HRA), and (5) digital instrumentation and control (I&C) systems. By participating in the HRP, NRC has been able to leverage its research resources in these areas. NRC's participation has also facilitated information exchange with other participating countries.

The NRC plans to continue to participate in the HRP. The HRP budget for the upcoming 2009-2011 agreement period is 372.7 million (M) Norwegian Kroner (approximately \$53M at current

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exchange rates) or approximately \$18M per year. The NRC contribution will be 30M Norwegian Kroner. The average annual cost is approximately \$1.4M per year, up from \$1.3M/year for the previous (2006-2008) agreement period.

BACKGROUND:

NRC and its predecessor, the U.S. Atomic Energy Commission, have participated in the HRP since its inception in 1958. During this period, NRC has used numerous research products from this internationally funded cooperative effort. Examples are discussed later in the enclosure.

The Norwegian Institute for Energy Technology (Institutt for Energiteknikk – IFE) manages the HRP for the OECD/NEA. The HRP is based at IFE's facility in Halden, Norway. This facility includes the Halden Boiling Water Reactor (HBWR), which currently operates at 18 to 20 Megawatts (MW). The HBWR's current operating license expires in 2008. The Norwegian Government has been granted a license renewal for operation for an additional six years.

The HRP plans its program in 3-year agreement periods. The current period expires at the end of calendar year 2008, and the upcoming period covers the period 2009 to the end of 2011. As a signatory member of the HRP, NRC is a voting member on the Halden Board of Management, which approves the HRP's plans and provides project oversight. NRC also is represented on the Halden Program Group (HPG), which provides technical input to the project.

DISCUSSION:

The HRP's research activities are organized into (1) the fuels and materials program and (2) the Man-Technology-Organization (MTO) program. Within the fuels and materials program, the HRP is currently investigating: the capabilities of high-burnup fuel under normal operating conditions, the response of fuel to reactor transients (including accidents), fuel cladding creep/corrosion and water chemistry issues (including crud deposition) associated with new approaches to fuel design, and issues associated with plant life assessment (e.g., stress corrosion cracking of current structural materials). Within the MTO program, the HRP is currently performing research to support assessments of human performance, the design and evaluation of human system interfaces and control centers, the use of virtual reality technologies, computerized operations and maintenance support, and the development and assessment of dependable software systems. The HRP programs and activities are structured to respond to the broad range of needs of the full set of HRP members. NRC's interests fall into the following five areas: Nuclear fuels, Nuclear reactor materials performance, Human factors, HRA, and Digital I&C systems. NRC's past and continued benefits from participating in the HRP are summarized in the enclosure.

The HRP has provided and continues to provide valuable information to NRC. Moreover, because NRC provides only a small fraction of the HRP budget (NRC's contribution for the previous 2006-2008 program was approximately 7 percent of the overall HRP budget), the HRP enables the NRC staff to significantly leverage its resources. Therefore, the NRC plans to continue participating in the HRP during 2009-2011. Recent discussions among the staff and HRP personnel have identified additional activities that could further increase NRC's benefits from the HRP. These activities could involve enhanced internal coordination (e.g., through the formation of internal stakeholder groups such as a Technical Advisory Group), enhanced

communication with Halden (e.g., through videoconferences and seminars), and NRC onsite participation in Halden projects (e.g., through supporting staff rotations to Halden). All of these activities would require some increased amount of NRC staff time. In FY 2009, the staff will identify potentially effective activities, evaluate their likely costs and benefits, and determine which if any of these activities should be recommended for implementation. The resource requirements for recommended activities will be addressed through the Planning, Budgeting, and Performance Management (PBPM) process.

RESOURCES:

The cost of NRC's participation in the HRP during the 2009-2011 agreement period will be 30M Norwegian Kroner. The average annual cost is approximately \$1.4M per year at current exchange rates, and is up from \$1.3M/year for the previous (2006-2008) agreement period. This increase is due largely to the rise of Norwegian salaries at the Halden facility. \$1.4M is budgeted in the FY 2009 budget and \$1.4M has been requested in the FY 2010 budget. Funding for FY 2011 will be addressed and activities associated with this agreement will be consistent with funding received through the FY 2011 PBPM process.

Approximately 1 FTE is budgeted in RES to work on HRP-related efforts in the FY 2009 budget and 1 FTE has been requested in the FY2010 budget. FTE for FY 2011 will be addressed through the FY 2011 PBPM process.

Any additional resource requirements stemming from the staff's examination of activities aimed to increase the benefit of the HRP related efforts in the FY 2009 and FY 2010 budgets and will be addressed through the FY 2011 and subsequent PBPM processes.

COORDINATION:

The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections. The Office of the General Counsel has no legal objection to this paper. The Office of International Programs has no objections to this paper.

/RA/

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Enclosure:
Extended Summary of NRC Involvement
In the Halden Reactor Project

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