

Draft of 2/26/01 KILDEE

1

FOR: The Commissioners
FROM: William D.Travers
 Executive Director for Operations

SUBJECT: PLAN FOR ADVANCED HIGH TEMPERATURE GAS COOLED REACTOR
 (HTGR) TECHNOLOGY ASSESSMENT AND PREAPPLICATION ACTIVITIES ON THE
 PEBBLE-BED MODULAR REACTOR (PBMR)

PURPOSE

To request Commission approval to proceed with an advanced HTGR technology assessment and preapplication activities with Exelon Generation Company on the PBMR.

BACKGROUND:

On November 14, 2000, representatives from Exelon Generation Company informally expressed their desire for early (preapplication) interactions with the staff directed toward establishing the feasibility of licensing the a PBMR in the U.S. The PBMR is (a modular high temperature gas-cooled reactor (HTGR) currently being developed in the Republic of South Africa.) in the U.S. Subsequently, Exelon, in a letter dated December 5, 2000, Exelon formally requested such early interactions (Attachment 1). An initial meeting with Exelon was held on January 31, 2001 at NRC-HQ to discuss the PBMR design and , technology of the pebble bed modular HTGR and preapplication plans for the PBMR ~~was held on January 31, 2001, at NRC-HQ.~~ Based upon the initial meeting, with Exelon ~~they have~~ has indicated that it is their desire to have the preapplication phase completed by July 2002. Subsequently, the Commission issued a Staff Requirements Memorandum (SRM), dated February 13, 2001, which requested the staff to assess its readiness for new nuclear plant construction ~~and~~ including the pebble-bed reactor.

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301-415-5790

DISCUSSION:

Consistent with my memorandum of November 14, 2000, on advanced reactors, RES has taken the lead (in coordination with NRR and NMSS) to develop a plan for a generic technology assessment of advanced HTGR technology and preapplication activities on the pebble-bed modular reactor (PBMR) design. ~~preapplication activities with Exelon on the PBMR.~~ This plan is attached (Attachment 2) and Commission approval is requested to begin the advanced HTGR technology assessment and the design-specific PBMR preapplication activities as described in the plan. ~~This plan takes into consideration~~ With respect to the preapplication activities requested by Exelon and, we believe that it is responsive to Exelon's ~~their~~ request, although certain activities will be completed later ~~take longer be of certain activities may take a few months longer than Exelon has requested.~~ For example, assuming a start date in late March 2001, completion of the preapplication activities would more likely be in the Fall 2002 in lieu of July 2002 as requested by Exelon.

The plan has two phases. In the first phase the staff would itself with the advanced HTGR (including the PBMR) design and would assess its technology, safety issues and research needs. The assessment would build upon previous HTGR experience (both domestic and international). In the second phase, ~~preapplication activities would be the~~ staff would conduct PBMR preapplication activities with Exelon with the objective ~~application become familiar with the design, its supporting technology and of assessing applicable regulatory requirements, design-specific key safety issues and Exelon's approach to licensing.~~ The staff would identify ~~is to early identification of issues fundamental to licensing and develop the technical basis and/or policy implications for their resolution.~~ This assessment would also build upon the staff's previous HTGR and ALWR design and regulatory reviews. ~~In addition,~~ The staff would also identify the NRC resources and infrastructure needed to conduct an actual licensing review of a PBMR. ~~would be identified.~~ Such early interactions with potential applicants are encouraged by and consistent with the Commission's Policy Statement on Advanced Reactors. ~~and would build upon previous HTGR experience (both domestic and international) and the previous ALWR design reviews.~~ Due to the active interest in the PBMR and requests of Exelon, this plan is being forwarded to the Commission in advance of the broader readiness assessment being developed in response to the February 13, 2001 SRM.

RESOURCES:

~~Based upon the attached plan~~ It is estimated that approximately 18 months would be required to complete ~~for the advanced HTGR technology assessment (Phase I) and the PBMR preapplication activities (Phase II).~~ Overall, it is estimated that 7 FTE and approximately \$1 million in contractor support are would be required to implement the plan. The activities, schedule, and resource needs are based upon the staff's previous experience with a preapplication review of a DOE-sponsored modular HTGR conducted in the late 1980s and would build upon that work and other previous advanced reactor work. Currently, these resources are not in the FY2001 or 2002 budget, nor are resources to conduct an actual licensing review of an advanced HTGR, if and when such a review is requested.

The U.S. Department of Energy (DOE) considers ~~the~~ NRC initial an advanced HTGR technology

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assessment (and PBMR preapplication assessment) activities on the PBMR as providing having the potential to provide fundamental input key to for assessing their advanced reactor programs. Accordingly, DOE has requested that NRC conduct the indicated that they would be willing to fund the NRC advanced HTGR technology assessment activities and has indicated that they would be willing to fund (FTE and contractor support) the costs for this phase of described in the attached plan. DOE funding would beginning in FY2001, (thru a reimbursable agreement between DOE and NRC) if the Commission approves proceeding with this work. DOE has indicated that they will make available \$500K in FY2001 to initiate the work, with the remainder being provided in FY2002, subject to availability of funds. ~~Such a funding arrangement would then preclude having to charge Exelon a fee for the preapplication activities, except for any portion not covered by DOE.~~ DOE would fund in full the FTE and contractor support needed to complete Phase I.

Under the provisions of the Economy Act, Exelon would be charged a fee to cover the NRC's costs (FTE and contractor support) for the staff's PBMR preapplication activities in Phase II. Additionally, However, any actual license application for an HTGR licensing PBMR would be conducted on a fee recoverable basis in accordance with 10 CFR 170.

~~Even though DOE will fund all, or a portion, of the work there~~ Implementation of the attached plan would be an impact on other currently planned ongoing priority work, due to the need to reassigning of staff to the PBMR to perform the activities. We will endeavor to minimize the impact as much as possible; however, it is likely activities such as completion of the final IPEEE insights report and the resolution of GSI 156.6.1 "Pipe Break Effects on Systems and Components" will be delayed.

COORDINATION:

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

RECOMMENDATION:

That the Commission approve proceeding with preapplication activities on the PBMR as described in Attachment 2.

William D. Travers
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for Operations

Attachments: (1) December 5, 2000, Exelon letter
(2) Plan

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