



RELEASED TO THE PDR
 9/13/90 *g*
 date initials

POLICY ISSUE
 (Information)

August 15, 1990

SECY-90-291

For: The Commissioners
From: James M. Taylor, Executive Director for Operations
Subject: STATUS REPORT ON ADVANCED REACTOR REVIEWS
Purpose: To inform the Commission on the status of the staff's activities relating to the DOE-sponsored advanced non-LWR designs (MHTGR, PRISM, and SAFR).

Background: In SECY 86-368, "NRC Activities Related to the Commission's Policy on the Regulation of Advanced Nuclear Power Plants," dated December 10, 1986, the staff informed the Commission of its plan for the review of the three advanced non-light-water reactor conceptual designs sponsored by DOE:

- * General Atomics' 350-Mwt Modular High Temperature Gas-Cooled Reactor (MHTGR).
- * General Electric's 425-Mwt liquid sodium-cooled reactor called the Power Reactor Innovative Small Module (PRISM).
- * Rockwell International's 900-Mwt liquid sodium-cooled reactor called the Sodium Advanced Fast Reactor (SAFR).

On July 15, 1988, the staff submitted to the Commission two papers that proposed criteria to address certain issues that had been identified during the reviews of these reactors:

- * SECY 88-202, "Standardization of Advanced Reactor Designs"
- * SECY 88-203, "Key Licensing Issues Associated with DOE Sponsored Advanced Reactor Designs"

Discussion:

- I. Status of Staff's Activities Relating to the DOE-Sponsored Advanced Reactors
 - A. Modular High-Temperature Gas-Cooled Reactor (MHTGR)

The conceptual design for the MHTGR was submitted by DOE in accordance with the NRC Statement of Policy for the Regulation

Contact:
 E.D. Thom, DRA/RES
 492-3735

NOTE: TO BE MADE PUBLICLY AVAILABLE
 IN 10 WORKING DAYS FROM THE
 DATE OF THIS PAPER

9008270112 XA

DF02-
 1/1

of Advanced Nuclear Power Plants (51 FR 24643). The Preliminary Safety Information Document (PSID) was submitted on September 30, 1986, and has been amended and supplemented during the course of the staff review. A draft safety evaluation report (SER), NUREG-1338, "Draft Preapplication Safety Evaluation Report for the Modular High-Temperature Gas-Cooled Reactor," was published in March 1989. Two contractor reports were also issued. They are NUREG/CR-5261, "Safety Evaluation of MHTGR Licensing Basis Accident Scenarios," and NUREG/CR-5514, "Modeling and Performance of the MHTGR Reactor Cavity Cooling System."

In response to one of the open issues identified in NUREG-1338, DOE submitted a "Containment Study for MHTGR" on November 28, 1989. This report is currently under review by the staff.

The staff has recently been informed that DOE is reassessing its MHTGR program. A revised project plan is currently under development. A key milestone in DOE's revised plan for the MHTGR will be a September 1992 decision on whether to proceed with the design of a first-of-a-kind plant. In addition, DOE is conducting a cost reduction study that is expected to result in significant design changes. Because of these expected design changes, it is the staff's intent to defer its efforts on finalization of the preapplication SER. It is our understanding that DOE will complete its cost reduction study by October 1990 and will discuss the results of the study with staff at that time. Following these discussions, and the anticipated DOE program milestones, staff will establish whether the preapplication SER needs to be updated and if so the schedule necessary to properly support DOE.

D. Power Reactor Innovative Small Module (PRISM)

The U.S. Advanced Liquid Metal Cooled Reactor (ALMR) program under the sponsorship of the Department of Energy is based on the PRISM (Power Reactor Innovative Small Module) modular design conceived by General Electric, and on the integral metal fuel cycle under development by Argonne National Laboratory. The goal of the U.S. program is to produce a standard, commercial ALMR, including associated fuel cycle. The concept incorporates innovative design and passive safety features to simultaneously achieve favorable safety and economics.

The conceptual design for PRISM was submitted by DOE in accordance with the NRC Statement of Policy for the Regulation of Advanced Nuclear Power Plants (51 FR 24643). The Preliminary Safety Information Document (PSID) was submitted on November 14, 1986, and has been amended and supplemented by DOE during the course of the staff review. A draft safety evaluation report (SER), NUREG-1368, "Draft Preapplication Safety Evaluation

Report for Power Reactor Inherently Safe Module Liquid Metal Reactor," was published in September 1989 and a contractor report, NUREG/CR-5364, "Summary of Advanced LMR Evaluations - PRISM and SAFR," was also issued.

In response to the open issues identified in NUREG-1368, DOE submitted two additional amendments to the PSID. Amendment No. 12 was submitted on March 30, 1990, and No. 13 on May 31, 1990. These amendments are currently under review by the staff. The staff plans to complete its review of these amendments prior to finalizing the preapplication SER. Staff will be working with DOE to identify its needs regarding the schedule for issuance of a final preapplication SER.

The current DOE plan for the ALMR program calls for the completion of an advanced conceptual design in December 1993 and the establishment of a baseline design in September 1994. In December 1994, DOE will decide on whether to proceed with a first-of-a-kind plant. Staff is still awaiting information from DOE on its current plans with regard to staff review of the integral metal fuel cycle.

C. Sodium Advanced Fast Reactor (SAFR)

The conceptual design for SAFR, a liquid metal reactor, was submitted by DOE in accordance with the NRC Statement of Policy for the Regulation of Advanced Nuclear Power Plants (51 FR 24643). The Preliminary Safety Information Document (PSID) was submitted on October 30, 1986, and has been amended and supplemented during the course of the staff review. A safety evaluation report (SER), NUREG-1369, "Preapplication Safety Evaluation Report for Sodium Advanced Fast Reactor Liquid Metal Reactor," is under final review by the staff.

In a letter from Delbert F. Bunch, Principal Deputy Assistant Secretary for Nuclear Energy, Department of Energy to Victor Stello, Executive Director for Operations dated August 15, 1988, the staff was informed of DOE's decision to terminate work on the SAFR design and its desire to have the Commission's work done to date on SAFR documented. Accordingly, the staff plans to complete the draft preapplication SER on SAFR by the end of 1990 and plans no further work on the SAFR design.

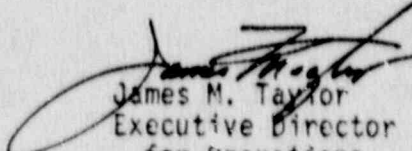
D. Advanced Reactor Policy Papers

During the review of the DOE-sponsored advanced reactor designs, the staff identified certain issues associated with the MHTGR, PRISM, and SAFR that required Commission guidance.

On July 15, 1988, the staff submitted the following two papers that requested Commission guidance on the staff's proposed criteria to address these issues:

- * SECY 88-202, "Standardization of Advanced Reactor Designs"
- * SECY 88-203, "Key Licensing Issues Associated with DOE Sponsored Advanced Reactor Designs"

In a memorandum dated August 18, 1988, the EDO requested that the Commission withhold action on SECY 88-202 and 88-203. The proposed criteria in SECY 88-202 were subsequently incorporated into 10 CFR Part 52 which was approved by the Commission. As a result, there is no further need for Commission action on SECY 88-202. The staff will determine whether the issues raised in SECY 88-203 are still relevant after completing its review of the recently proposed design changes presented in the amendments to the PRISM PSID and after further clarification from DOE on the direction of the MHTGR program. Staff will request Commission guidance on such policy issues prior to finalizing the preapplication SERs for the DOE sponsored advanced reactor designs.


James M. Taylor
Executive Director
for Operations

DISTRIBUTION:
Commissioners
OGC
OIG
GPA
REGIONAL OFFICES
EDO
ACRS
ACNW
ASLBP
ASLAP
SECY



TRANSMITTAL TO: X Document Control Desk, P1-24

ADVANCE COPY TO: _____ Public Document Room*

DATE: 9/13/90

FROM: SECY, Operations Branch *JS*

Attached are copies of SECY papers and related documents. They are being forwarded for entry on the Daily Accession List and placement in the Public Document Room. No other distribution is requested or required.

- | | |
|---------------------------|--------------------------|
| 1. <u>Secy - 90-235</u> | 11. <u>Secy - 90-296</u> |
| <i>rem on 90-235</i> | " <u>90-298</u> |
| 2. <u>dtd 8/23/90</u> | 12. <u>" 90-302</u> |
| <i>Com. Rogers' note</i> | 13. <u>" 90-303</u> |
| 3. <u>sheet on 90-235</u> | 14. <u>" 90-304</u> |
| <i>Com. Curtiss' note</i> | 15. <u>" 90-308</u> |
| 4. <u>sheet on 90-235</u> | 16. _____ |
| <i>Com. Remicki note</i> | 17. _____ |
| 5. <u>sheet on 90-235</u> | 18. _____ |
| 6. <u>Secy. 90-286</u> | 19. _____ |
| 7. <u>" 90-290</u> | 20. _____ |
| 8. <u>" 90-291</u> | |
| 9. <u>" 90-293</u> | |
| 10. <u>" 90-295</u> | |

10007

* PDR is advanced two copies of each SECY paper and one copy of each related document.

