

August 22, 1985

MEMORANDUM FOR: Themis P. Speis, Director, Division of Safety Technology,
Office of Nuclear Reactor Regulation

FROM: Thomas L. King, Chief, ARG, Division of Safety Technology,
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF BRIEFING ON ADVANCED HTGR DESIGN

On July 31 and August 1, 1985 DOE and its contractors provided us with a briefing on the status of their selected HTGR concept and the "top down" approach used to arrive at this design. The agenda and list of attendees are enclosed. Copies of the handouts from the briefing are available in my office. Significant points from the meeting were:

- 1) DOE confirmed the concept selection as the modular, side by side steam generator, steel vessel HTGR concept with the choice of a pebble bed versus prismatic core still under evaluation. Final selection of the core concept will be made by September 30, 1985.
- 2) The arrangement of modules is in groups of four with a common turbine and common control room.
- 3) The portion of the plant which NRC will be requested to review at the conceptual design stage is the nuclear island. This will include all safety related systems.

The review of other plant systems (turbine, steam/feedwater system, etc.) will be mainly of the functions and interface requirements associated with these. It is a goal of this concept to concentrate all safety related functions into the nuclear island and thus have the option in the balance of plant to build to different standards.

- 4) The design utilizes active systems for normal decay heat removal and reactor shutdown.

Passive means are provided as backup for accomplishing these functions; however, if the passive means are used the plant could experience economic loss (i.e., loss of lifetime).

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- 5) The design has no containment. A safety grade confinement system is used in the design.

A number of areas in the design are still subject to on-going design trade-offs and a briefing on the design, after these design trade-offs are completed, was tentatively scheduled for October 1985.

The briefing was useful in that it was the most complete description of the design, and the basis for the design, received to date. This has allowed us to begin to identify what we believe are key safety issues associated with this design and to initiate plans to focus on these areas in FY 86, prior to DOE's submittal of the HTGR-PSID.

If you would like to see the handouts from the briefing or discuss any of the above further please let me know.

/s/

Thomas L. King, Chief
Advanced Reactors Group
Division of Safety Technology
Office of Nuclear Reactor Regulation

Enclosures:
As stated

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AGENDA

SMALL HTGR FUNCTIONAL ANALYSIS/DESIGN BRIEFING
 JULY 31 AND AUGUST 1, 1985
 U.S. NUCLEAR REGULATORY COMMISSION - PHILLIPS BUILDING, ROOM P-110
 7920 NORFOLK AVENUE, BETHESDA, MARYLAND

WEDNESDAY, JULY 31

9:00 AM	INTRODUCTORY COMMENTS OBJECTIVE OF MEETING	NRC DOE
9:30 AM	OVERVIEW OF INTEGRATED APPROACH TO DESIGN	GA
10:30 AM	GOAL 1 EXAMPLE FOR SEVERAL KEY FUNCTIONS o TOP LEVEL USER RQMTS/REGULATORY CRITERIA o FUNCTIONAL ANALYSIS TREE/WORK SHEETS o DESIGN SELECTIONS	GA
12:30 PM	LUNCH	
1:30 PM	GOAL 2 EXAMPLE FOR SEVERAL KEY FUNCTIONS	GA
3:00 PM	GOAL 3 EXAMPLE FOR SEVERAL KEY FUNCTIONS	GA

THURSDAY, AUGUST 1

9:00 AM	OVERVIEW OF PLANT	AE
9:30 AM	REACTOR SYSTEM o KEY FUNCTIONS AND REQUIREMENTS o DESIGN SELECTION DETAILS HEAT TRANSPORT SYSTEM REACTOR VESSEL SHUTDOWN COOLING SYSTEM REACTOR CAVITY COOLING SYSTEM	GA GA GA AE
12:30 PM	LUNCH	
1:30 PM	REACTOR BUILDING FUEL HANDLING PLANT CONTROL	AE GA GE
4:30 PM	SUMMARY	DOE

NRC/DOE MEETING ON HTGR FUNCTION DESIGN
JULY 31, 1985

ATTENDEES

T. King
P. Williams
S. Sands
C. Allen
G. Arndt
R. Foulds
G. Sherwood
R. Ng
D. Mears
A. Kelly
T. Neylan
A. Shenoy
G. Bramblett
F. Silady
N. Brown
J. diLauro
R. Whitacre
L. Walker
P. Kroeger
S. Ball
W. Barthold
S. Lynch
T. Sweeney
L. Lidsky
J. Maneke
T. Jenkins

ORGANIZATION

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NRC/RES
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GCRA
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GA
GA
GE
C-E
EG&G Idaho, Inc.
SWEC
BNL
ORNL
ORNL
Bechtel
Bechtel
MIT
MIT
TVA

NRC/DOE MEETING ON HTGR MODULAR DESIGN
August 1, 1985

ATTENDEES

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G. Millman
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B. Whitacre
T. Sweeney
S. Lynch
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