

From: Undine Shoop *> NRK*
To: Amy Cabbage
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B-24

Briefing on the visit of the NRC Delegation to Germany

Safety Aspects of HTR Technology
July 23-26, 2001

Undine Shoop and Amy Cabbage
August 2, 2001

Participants of the NRC Delegation

Howard Faulkner - OIP

Undine Shoop - Reactor Systems Branch, NRR

Amy Cabbage - Future Licensing Organization, NRR

Stuart Rubin - Advanced Reactor Group, RES

Donald Carlson - Advanced Reactor Group, RES

Alex Murray - Special Projects Branch, NMSS

Vanice Perin - Special Projects Branch, NMSS (Observer)

Agenda

July 23 - GRS office in Cologne

- Overview of HTR programme in Germany (Westinghouse)
- Overview of Safety Assessment of HTR-Module (TUV Hanover)

July 24 - FZJ, Research Center in Julich

- Overview of Research and Development and FZJ (FZJ)
- Fuel Element Irradiation and Post-Irradiation Examination for establishing the 1600 C fission product retention limit (FZJ)
- Fuel Element Research and Development and Production (NUKEM)

July 25 - FZJ, Research Center in Julich

- Nuclear Graphite Research and Development and Production (FZJ)
- Heat Transfer and Fluid flow (FZJ)
- AVR Operational Experience (FZJ)
- THTR Operational Experience (FZJ)
- Core Physics and Pebble Flow (BFS)
- Tour of Intermediate storage Facility
- Short Visit to AVR

July 26 - GRS office in Cologne

- Safety Assessment of HTR module (TUV Hanover)
- Safety Assessment of THTR (TUV Essen)
- Safety Issues during Licensing of THTR (Ministry for Economy)
- Rules and Standards (BFS)
- Know How Transfer to ESKOM (Westinghouse, FZJ)
- Waste Management (FZJ)

HTR Development and Experience in Germany

AVR

Operated from 1966-1989

15 MWe

Research Reactor designed with Containment because it was prior to the development of TRISO fuel

Used to test fuel types

Shut down for political reasons

THTR

Operated from 1983-1989

300 MWe

First Prototype

Used in-core control rods which presented a problem

Used a core width to height ratio of 1:1, which also presented problems related to pebble flow

Shut down for political reasons

HTR Module

Designed and submitted for concept license, application withdrawn due to unfavorable political climate

200 MWe

Forerunner of PBMR

Safety assessment was complete

Experiments

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