Status of Fast Breeder Reactor Development in Germany

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SNR 300: A Political Termination

The German Minister for Research and Technology (BMFT), Dr. Heinz Riesenhuber, announced on March 20, 1991 that SNR 300, the fast breeder power plant at Kalkar, shall be abandoned. This message followed a top level meeting between BMFT officials and senior managers of Siemens, RWE, PreußenElektra und Bayernwerk. BMFT, vendor Siemens and the three utilities had carried the interim finance costs of DM 105 million yearly since 1989.

The licensing procedure had been obstructed during a long time by the responsibile authorities. For several years the licensing process for the last permits on nuclear operation of KKW Kalkar had been held up by the government of the state of North Rhine-Westphalia (NWR). Licensing of nuclear power plants is the responsibility of the states, according to the German Atomic Act. The state of NRW turned against the SNR 300 project when the Social Democratic Party (SPD) started questioning nuclear power in 1985. Until then 17 partial licenses for SNR 300 had been granted, each time including an ovall project approval.

SNR 300 was started in 1973 with the support of the SPD Research Minister von Dohnanyi. Four more Federal Reserach Ministers of this Party (Ehmke, Matthöfer, Hauff, von Bülow) continued their support for the project. Between 1982 and 1985, now under the leadership of Riesenhuber from the Christian Democratic Union Party (CDU), the project was completed. Since then all work was focused on gaining the operation license - in vain. From 1978 through 1982 an enquiry commission of the German Federal Parliament investigated the project in detail and finally voted by two thirds to recommend a continuation of the project. Further studies with a positive result were performed in subsequent years by the Rector Safety Commission and the (Swiss) Motor Columbus Ingenieur-Unternehmung AG.

One of the consequences of the demise of SNR 00 was that Interatom GmbH, a subsidiary of Siemens AG, has been integrated into the division KWU of the Siemens AG on 1 October, 1991. For SNR 300 the turn-key contracts to the supplier

company (INB) were cancelled by the operator organisation (SBK) on April 10, 1991 following the political terminaton of the SNR 300 project. End of June 1991 INB closed its Kalkar site office and workshops. With a few exceptions all INB site work force was withdrawn and detached to other sites of Siemens/KWU business. Decommissioning activities will continue in 1992 leaving a workload for approx. 40 men on site.

At SNR 300 the sodium is being returned from the site to the supplier company. All surplus coolant exceeding the primary and secondary system drainage tank capacity are already shipped. The ceramic liner of the core catcher underneath the reactor vessel made of depleted uranium oxide (appr. 32 tons) was dismantled, the material sold and shipped off site.

Activities are going on to sell equipment and components to potential customers as a contribution to the financing of the decommissioning costs.

The decision of the further use of the Kalkar site expected for autumn 1991 by the RWE Energy Management Board was postponed without mentiond of a new reference date. Analysis by GNS is underway to check the usefulness of the reactor building as an intermediate storage for low level waste.

KNK II has been shut down

On 23 August 1991 after the termination of the SNR project, KfK decided to shut down the KNK II reactor for final decommissioning.

KNK had been put into operation as a thermal sodium-cooled 20 MWe power plant in 1971 as version KNK I, after construction started in 1966. In 1975-77 the plant was transformed into KNK II by receiving a fast MOX core which went critical in October 1977. KNK II was used predominantly for R + D programmes in support of SNR 300. Amongst others, a fuel burnup of 175.000 MWd/t was reached. Mixed oxide fuel of the first core irradiated up to a burnup level of 100.000 MWd/t was reprocessed and the fissile material refabriced into fuel elements and irradiated in the reactor again.

KNK II had received permission to restart on 12 July 1991 after cleaning of three extension rods of the first shutdown system through wetting by hot sodium. The licensing conditions asked for a periodical monitoring and rod exercising. On 16 July 1991 operation started at a power level of 80% and on 30 July the power was reduced to 60% for the first rod exercising. The procedure was carried out

successfully and the cover gas activity was monitored with regard to the existence of a leaker in the core.

KNK II fuel elements are planned to be reprocessed in Marcoule, France. Since the final shutdown of the plant 10 fuel elements of the first core have already been shipped to Cadarache for intermediate storage.

At present, the elements of the second core are being discharged from the reactor tank. After a dry shipping examination in order to find any leaker, the elements are then stored in the sodium-cooled storage tank.

Moreover, installations of the experimental programme have been removed from the plant. The licensing authorities have been asked for the permission to reduce the frequency of in-serive inspections and the number of shift personnel. The plant management and the authorities have also entered into discussions about the final shutdown concept.