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The IAEA coordinated research programmes BEFAST and SPAR –thirty-four years of experience with the storage of spent fuel and facility components

The IAEA Coordinated Research Programmes (CRP) on the behaviour of spent fuel and storage facility components during long term storage were initiated in 1981 under various titles. The first programme was designated BEFAST-I (BEhaviour of spent Fuel Assemblies in STorage), followed by BEFAST-II in 1986 and BEFAST-III in 1991. A follow-on CRP was called SPAR-I to -III (Spent fuel Performance Assessment and Research), respectively.

During the CRP, the participating countries contributed their R&D results on fundamental questions regarding spent fuel storage. The overall objectives of the CRPs were to develop a technical knowledge base on long term storage of commercial power reactor spent fuel through evaluation of operating experience and research by participating Member States, and to extrapolate predictions of spent fuel behaviour over long periods of time.

A final report for each stage of the CRPs was prepared and published as an IAEA Technical Document (TECDOC).

Towards the end of the BEFAST-III project, it became apparent that the R&D component of the project was decreasing steadily; more emphasis was being placed on the operation and implementation of storage technology. The storage technology (particularly dry storage) was undergoing a rapid evolution: new fuel and material design changes were coming on stream and target discharge burnup were steadily increasing; in addition, storage durations were predicted to be much longer than anticipated.

Overall, 20 countries and one international organization participated in one or more of the CRPs.

The paper describes the research objectives and results achieved during the course of the CRPs.

Country/ int. organization

Hungary

Author: Mr TAKATS, Ferenc (TS Enercon Kft.)

Co-authors: Mr MACHIELS, Albert (EPRI, Palo Alto); Mrs JUSSOFIE, Astrid (GNS, Essen); Mr ISSARD, Herve (Areva TN); Mr STANDRING, Paul (IAEA, NEFW)

Presenter: Mr TAKATS, Ferenc (TS Enercon Kft.)