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## Authority experience during design approval procedure for packages loaded with special encapsulations for damaged spent nuclear fuel

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The first German package design approval certificates for a dual purpose casks intended for loading with damaged spent nuclear fuel were issued recently. BAM as part of the competent authority system in Germany carried out comprehensive assessment procedures with respect to the mechanical and thermal design, the release of radioactive material and the quality assurance aspects of manufacturing and operation. Packages for the transport and storage of radioactive material have been assessed by BAM for many years, thus the common assessment procedure is well-known and good practice. Up to now only SNF without defects or HLW with well-defined properties were designated for long-term interim storage and transports afterwards. Due to Germany's nuclear phase out all other kinds of spent nuclear fuel in particular damaged spent nuclear fuel shall be packed now. Damaged spent nuclear fuel needs a tight closure with special encapsulations and clearly defined properties in Germany. In addition, these encapsulations shall be long-term durable, because they are not accessible after loading in a packaging within periodical inspections. The main difference to standard package components is that encapsulations with a permanent closure achieve their specified conditions not after manufacturing but only during operation, after loading and closing. To ensure compliance with the specific conditions, special measures for quality assurance are necessary during operation of each encapsulation, e.g. drying and sealing, which were assessed by BAM. The present paper gives an overview of the conducted assessment from BAM and point out the findings concerning to the special closure lid of the approved encapsulation, which is screwed and welded. A wide verification concept was necessary to show the specific tightness under transport conditions. Together with quality assurance measures during first operation steps these encapsulations with damaged spent nuclear fuel can then be handled like standard fuel assemblies in approved package designs.

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### Country or International Organization

Germany

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