

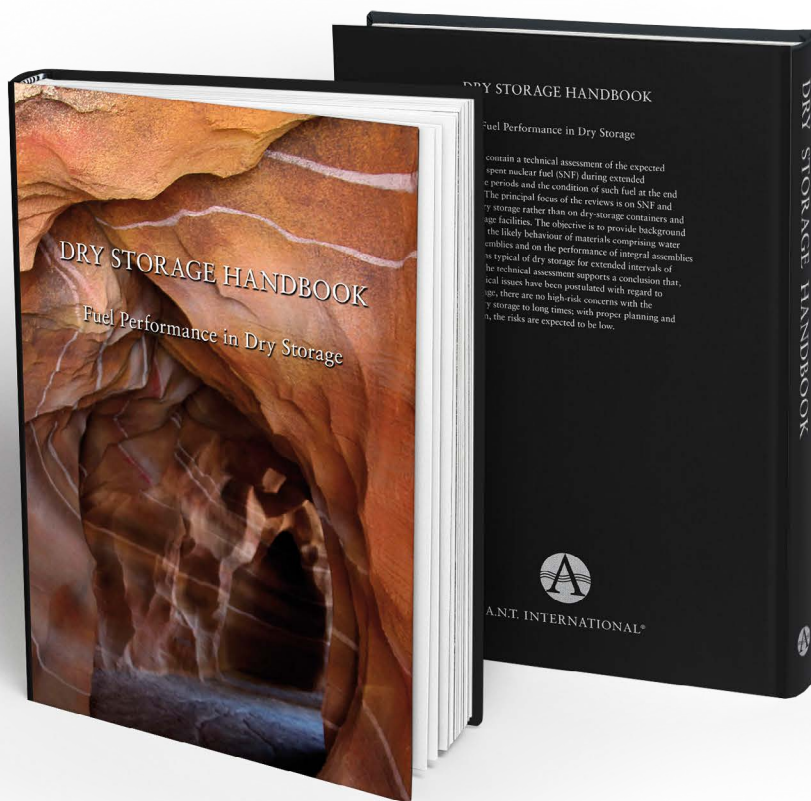


HANDBOOKS & REPORTS

DRY STORAGE HANDBOOK

Fuel Performance in Dry Storage

(DSH)



About the handbook

This handbook contains a technical assessment of the expected performance of spent nuclear fuel (SNF) during extended dry-storage time periods and the condition of such fuel at the end of dry storage. The principal focus of the reviews is on SNF and the effects of dry storage rather than on dry-storage containers and the related storage facilities. The objective is to provide background information on the likely behaviour of materials comprising water reactor fuel assemblies and on the performance of integral assemblies under conditions typical of dry storage for extended intervals of time. In brief, the technical assessment supports a conclusion that, although technical issues have been postulated with regard to long-term storage, there are no high-risk concerns with the extension of dry storage to long times; with proper planning and implementation, the risks are expected to be low.

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The Authors

The lead author and chief editor of the Handbook was Mr. Alfred Strasser



Dr. Charles Patterson retired from Global Nuclear Fuel in 2008 as a Consulting Engineer for Fuel Engineering. During 44 years with GE Nuclear Energy/GNF, he was actively engaged in the development of fuel manufacturing processes, fuel materials, thermal-mechanical and fuel performance models and in the improvement of fuel reliability. This activity involved irradiation and hot cell Programs in Asia, Europe and the United States to identify in-core material behaviour, validate analytic models and improve fuel reliability. Chuck holds patents in the areas of fuel and cladding materials, fuel assembly design and fuel inspection technology.

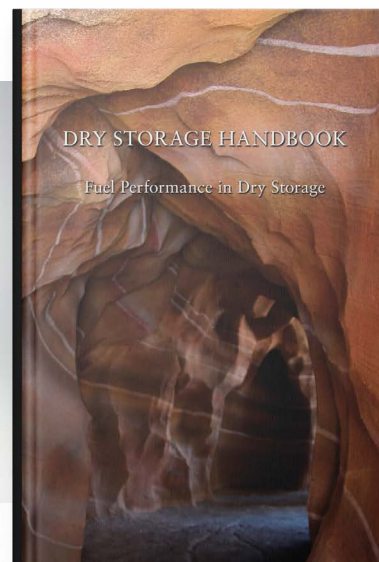
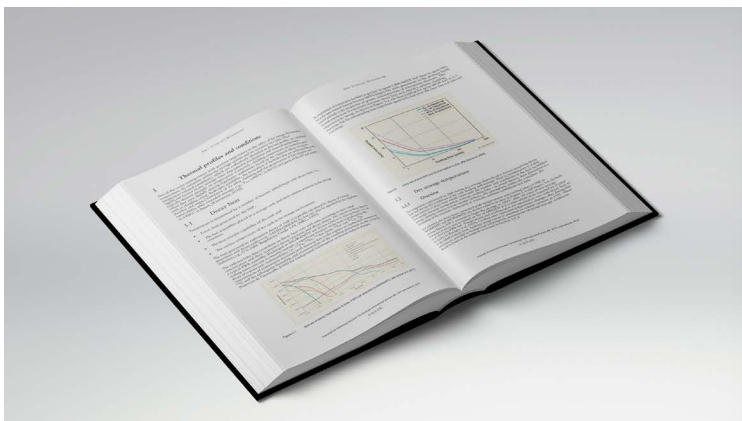
Dr. Patterson has particular interest and experience in the thermal and mechanical behaviour of fuel, cladding and structural materials, the development of analytic models to describe their behaviour and in the improvement of fuel reliability.



Mr. Friedrich Garzarolli retired from Framatome ANP in March 2002, where he has held various managerial and research positions, dealing with fuel rod performance analysis, planning and evaluation of irradiation tests, materials characterisation and evaluation of irradiation effects in materials. His degree as Diplom Ingenieur in metallurgy was obtained from the University of Leoben, Austria, in 1963.

He has been active in the following fields:

- Development of new fuel assembly materials, especially cladding for BWRs and PWRs
- Modelling of corrosion for zirconium alloys and stainless steels
- Effect of water chemistry on cladding corrosion
- PCI failures of cladding
- In-reactor dimensional stability
- High-burnup performance
- Failure mechanisms and remedies



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