

Fire Source Ignition Frequencies Determined from the International OECD FIRE Database

Marina Roewekamp (a), Nicholas Melly (b), Andreas Werner (c)

a) Gesellschaft fuer Anlagen- und Reaktorsicherheit (GRS) gGmbH, Koeln, German

b) United States Nuclear Regulatory Commission (NRC), Office of Research, Washington, DC, USA

c) Safety Assessment Consulting (SAC), Breitbrunn, Germany

Presentation Only: The international fire incidents database OECD FIRE (Fire Incidents Records Ex-change) is one of in total four databases on operational events in nuclear power plants (NPP) currently operated under the umbrella of the OECD Nuclear Energy Agency (NEA). In this database, detailed information from fire events at nuclear power plants from meanwhile fourteen NEA member countries is collected. Meanwhile in its fifth phase, the database is mature enough for some applications in fire probabilistic risk assessment (PRA). The actual version of this database covers already more than 500, to a large extent well documented fire events during all operational phases of the entire plant life cycle from construction to decommissioning. Actual Fire PRA application possibilities of data from the Database are compartment as well as component specific fire frequencies, generic fire event tree specific data, in particular on fire detection and extinguishing, and fire suppression success data. The database has been recently applied, e.g., in the United States, for determining fire source ignition frequencies and comparing those to ignition source frequencies of individual nuclear power plants. At the time being, an activity of the OECD FIRE Database Project is on-going in order to provide information related to core damage frequency (CDF) either based on the type of room where the fire occurred or by a specific ignition category. The US analysis e.g. evaluates CDF contributions by ignition categories de-scribed in NUREG/CR-6850 (EPRI 1011989). After a general introduction of the recent features the OECD FIRE offers for risk analysis, the paper presents a generic analysis of fire source ignition frequencies from the FIRE Database and, in comparison, corresponding results from Fire PRA in FIRE Project member states and, in particular, from the above mentioned US study.