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FORENSIC ANALYSIS OF NUCLEAR PLANT

2.2 The failures of HMS Tireless & Kursk come under the scrutiny of a world expert in nuclear engineering and safety.


In May 2000, whilst operating submerged deep in the Mediterranean off the southern coast of Sicily, the Royal Navy nuclear powered submarine HMS Tireless developed a serious fault in the primary circuit of her nuclear reactor, she surfaced, shut down her nuclear propulsion system and made way under emergency diesel power to Gibraltar for investigation and repairs which were to occupy almost 12 months. In August of the same year, the Russian Federation Northern Fleet nuclear powered and nuclear weapons capable submarine Kursk, about to launch an experimental torpedo at periscope depth just north of the Murmansk inlet in the Barents Sea, experienced a catastrophic explosion in her forward torpedo compartment, sinking with a total loss of the 119 crew members on board.

The fully illustrated presentation reviews the determining aspects of both projects, concentrating on the detail of HMS Tireless and referring generally to the necessarily remote forensics of the Kursk's reactor plants in preparation for the salvage. Because of the need to assure continued nuclear safety in the absence of the opportunity for fully detailed scientific examination of the damaged plant, the forensic assessments had therefore to make best use of limited indirect evidence, backed by experienced judgement, to deduce limits to the potential damage and define safeguards to ensure that these limits were not infringed during both the repair and recovery processes leading to resumption of nuclear operations of Tireless and the world-first salvage of a nuclear-powered submarine the Kursk.

Poster

Presenter

John Large, Large Associates, is a Fellow of the Institution and he has previously presented to the IMechE North Western Region in the 2003 events programme. Throughout the period of repairs to HMS Tireless John Large advised the Government of Gibraltar on nuclear safety issues arising from the Tireless reactor repairs whilst in the Port and he headed up the team of nuclear and weaponry specialists undertaking the nuclear safety assessments of the Kursk salvage operations.