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Performance Demonstration for the Royal Navy

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ABSTRACT

Rolls Royce is the Design Authority for the development of Nuclear Steam Raising Plant on behalf of the Royal Navy. An important aspect of this work is the preparation of a structural integrity safety case necessary before the plant may be considered for operational service. An integral part of this safety case is the Non Destructive Examination carried out both before and during service. The basic philosophy adopted for these inspections has been that of ASME XI allied to a risk based ISI policy described in detail elsewhere (Chapman and Lloyd, 1992 and ASME Document CRTD-Vol. 20-1, 1993). In essence risk is defined as consequence times probability, the level of risk associated with each site leading to a league table of ISI candidates based on risk. It was the obvious importance of these In Service Inspections which led the Royal Navy to ask RR to look into instigating some form of Performance Demonstration, in the spirit of that proposed by the European Network for Inspection Qualification (ENIQ). This was to be applied to the development of inspection equipment for the new PWR2 plant which was to power the next class of Hunter Killer submarines named "Astute", but should take into account the differing operating environment. The process should include Personnel, Equipment and Procedures. As the work associated with the PD process is now almost complete and it is timely to look back and assess the effectiveness of the process with a view to identifying any shortfalls and learning from them for the future.

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