

MARINE

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Rolls-Royce

### Nuclear Power for the Royal Navy



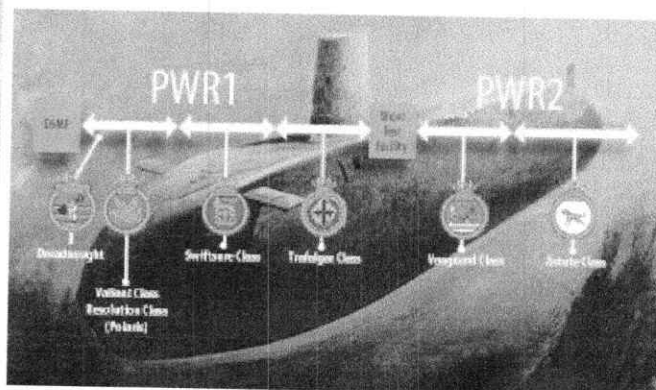
Since even before Queen Elizabeth launched HMS Dreadnought in 1960, Rolls-Royce has been the driving force behind the Royal Navy's nuclear submarine propulsion programme.

As the Design Authority for Naval nuclear plant, we have designed, supplied and supported all the reactor systems and equipment that powers the Royal Navy's nuclear submarine fleet.

The most durable proof of our ability to meet the most challenging customer and engineering requirements is the constant availability of Britain's ballistic missile submarines. Deterrent patrols have been maintained 24-hours-a-day, 365-days-a-year for more than 30 years with unsurpassed levels of safety and reliability.

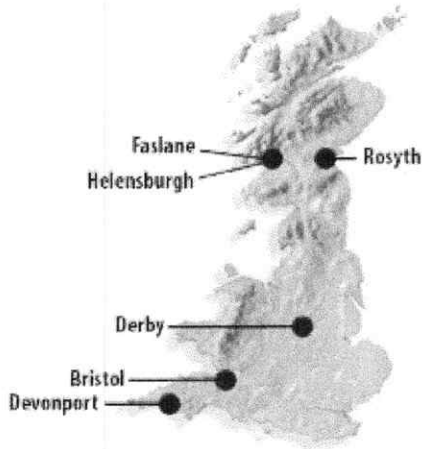


Our role today covers all major activities; design, project management, procurement and safety assessment together with maintenance and operation support. Decommissioning skills are also available to meet future needs.



Plants have been built to five evolutionary reactor designs, each with a longer life and quieter in operation than its predecessor. This effort has culminated in the plant for the latest ASTUTE class submarines. It will incorporate the PWR2 reactor with a core designed to operate for a full platform life - totally eliminating costly reactor refuelling while meeting the ever-growing demands of safety and quality.

These achievements are the result of technical excellence and the ability to provide rapid and innovative responses to operating challenges - competencies that rely on the flexible skills that make up our integrated marine propulsion capability.

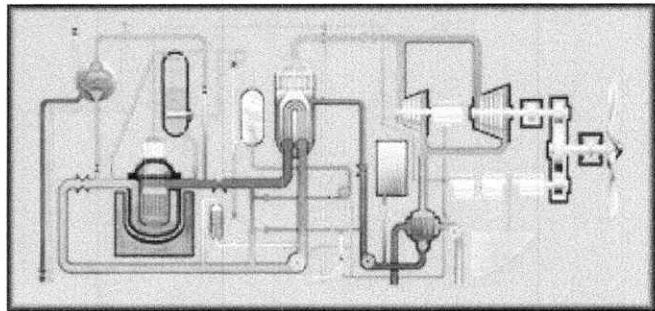


### Total Support

We place particular importance on support at the waterfront and have resident site managers at the UK's principal Naval bases. 24 hour support is provided worldwide, a complete technical and project management service, delivering the right support at the right time and cost. Additional services are available from regional offices in Bristol and Helensburgh.



### How a nuclear system operates



The process of turning the heat of fission into usable power on a nuclear submarine is done in two stages. Firstly, heat is drawn from the reactor core using a high-pressure water system. The high pressure ensures the water stays liquid and doesn't turn to steam. The primary water is then pumped through a heat exchanger in the steam generator where its heat is transferred to the secondary water system.

Water in the secondary system is not pressurised and so quickly turns to steam. This steam is used to drive the turbines that drive the submarine through the water and produce electrical power for the submarines operational and life support systems.



### For further information please contact:

Dr David Price  
 Director - Naval Marine  
 Contact Director here

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