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the Development of the Nuclear “Engine” -- 3 The Nuclear Option -- Tube Alloys, US Cooperation and the McMahon Act -- Acquiring an Experienced Team -- Harwell and the Admiralty -- Initial Considerations -- The Mark I Enriched Reactor -- Metropolitan-Vickers and the Problem of Scale -- The End of the Beginning -- 4 The Pressurised Water Reactor -- The Reactor Technical Challenge -- The Brontosaurus in the Museum: Quality Assurance -- Industry Joins the Project -- Miracle Metals -- The Fuel Element Decision -- Neptune: The Zero Energy Experimental Reactor -- 5 HMS/m Dreadnought -- Admiral Hyman G. Rickover USN.-What Price Exchange of Information? -- The Offers to Purchase a US Submarine Reactor -- Choices and Decisions -- Mountbatten Corrections -- Management and Establishment of the Dreadnought Project Team -- Purchase of the S5W Reactor -- Final Adjustments -- 6 Nuclear Training and Dounreay -- Training Facilities -- Off to School -- Practical Training and Jason -- Dounreay Submarine Prototype (DS/MP) -- Dounreay’s Future Questioned -- A Very Serious Snag -- HMS/m Valiant -- 7 Future Developments -- Refuelling Preparations -- The Strength of Steel -- Core Development -- Amended Access Agreements -- Core Development Programme (CORDEP) -- Nuclear Development (Submarines): NuDe(S) -- NuDe(S) II—FLIP—ANP -- Core Z -- Secondary Machinery Improvement -- Reporting the Nuclear Navy -- Project Cost -- 8 Conclusions -- Political Problems and Indifference -- Technical Considerations -- The Military Situation -- The Nuclear Propulsion Legacy -- Research in the “Secret (Nuclear) State” -- Appendix A -- Appendix B -- Glossary -- Bibliography -- Index.

Sommario/riassunto

This book examines the development of nuclear propulsion in the Royal Navy from the first proposal in 1946 to the start-up of the last core improvement for the first submarine reactor power plant PWR 1 in December 1974. Drawing from unreleased records and archives, the book answers questions around three main themes. Political: what problems were encountered in transferring nuclear knowledge from the USA to the UK in the post-war period, and how much support was there for the development of nuclear propulsion? Military: why was there a requirement to develop nuclear propulsion, and in particular, why submarines? Technical: were the problems associated with nuclear energy fully appreciated, and did the UK have the technical and engineering capability to develop nuclear propulsion? Aside from the political considerations and military motives for developing nuclear propulsion in the Royal Navy, the author focuses on the technical problems that had to be overcome by all participants in theRoyal Navy’s development of nuclear propulsion, adding significantly to naval historiography. Providing a critical analysis of the political, technological, operational and industrial issues of introducing nuclear propulsion into the Royal Navy, the author situates his research in the context of the evolving Cold War, changing Anglo-American relations, the end of Empire and the relative decline of British power. Gareth Michael Jones is a former CPO(WSM) Royal Navy submariner retiring from the service in 2003. He is currently working as a Project Engineer with Babcock International Group at Devonport Royal Dockyard. He is interested in the history of nuclear propulsion development and completed his PhD at the University of Plymouth in the UK.