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Norman Polmar and K.J. Moore, **Cold War Submarines: The Design and Construction of U.S. and Soviet Submarines**, Dulles , Virginia : Brassey's Inc, 2004.  
430 pp.

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During the Cold War, there were many books written on the American and Soviet submarine forces. While many of these works were valuable, they were all hampered by a lack of information, particularly from the Soviet side of the Iron Curtain. However, with the end of the Cold War and the fall of the Soviet Union in the early 1990s, more information has become available. As a result, new more detailed works have been written, and one of these books is Norman Polmar and K.J. Moore's *Cold War Submarines*.<sup>[1]</sup>

This book begins in the later days of the Second World War with the development by Germany of the Type XXI U-Boat. This vessel, with its streamlined hull and greater battery capacity, would influence the development of submarines in both the United States and the Soviet Union in the post-war period. Polmar and Moore discuss the continued development of these fleets throughout the Cold War including the emergence of nuclear power and the development of advanced attack, hunter-killer, cruise missile, and ballistic missile submarines. The authors also touch upon the many differences between the U.S. and Soviet programs; the book concludes with an analysis of the current American and Russian submarine fleets.

With this work, Polmar and Moore have produced an excellent history of the American and Soviet submarine forces that is both well written and musters effective evidence to support its arguments. In addition, the authors have been very skillful in crafting a book that is appealing to the amateur military historian, while still addressing

serious issues about these submarines from the 1940s to the present.<sup>2[2]</sup> Indeed, this work features discussions that examine topics ranging from the development of midget submarines, to British and Soviet experiments with Helmut Walters' hydrogen-peroxide propulsion system, to even an American attempt to develop a submersible seaplane in the 1960s. In addition, the authors examine how these submarines were designed and how they were used by their respective navies. This is particularly important because the authors demonstrate that the Soviets utilized their submarines differently than the Americans, and that many of the improvements that they made to their submarines were from their own developments to meet their own strategic concerns.<sup>3[3]</sup> Polmar and Moore also make an effective argument that the United States squandered much of its technical superiority over the Soviets during the Cold War due to an overly conservative approach to design that began after the loss of the USS *Thresher* in 1963. The authors concluded that this was primarily the result of the dominant influence that Admiral Hyman G. Rickover had on the American program from the 1950s to the early 1980s. Nevertheless, despite the overall quality of this work, it does have a few weaknesses.

One of the most serious is that there is less detail on developments within the Soviet submarine program than on the American. This is not so much a criticism of the work as an observation, since the authors have made extensive efforts, particularly through interviews, to gain as great an understanding as possible of the Soviet submarine force in the Cold War. However, it is just the reality is that neither of these men are insiders in Russian submarine circles. This can be seen in the less detailed discussion of the power that Academician Igor D. Spassky had in the Soviet submarine program during his 30-year career as the head of the Rubin design bureau, when compared to the extensive examination of Rickover's influence in the United States. Another problem with the work is that there are some unexpected omissions. For example, Polmar and Moore do not discuss one of the most serious problems the Soviets had with their first generation of submarine launched ballistic missiles (SLBMs), their use of nitric acid as an oxidizer. Indeed, nitric acid was not only highly flammable, but it literally ate through the components of the missiles.<sup>4[4]</sup> This meant that the effectiveness of these weapons systems was rather limited. Furthermore, the loss of the USS *Scorpion* in 1968 is only

briefly mentioned, which is in contrast to the detailed discussion of the loss of the USS *Thresher*.

However, *Cold War Submarines* is an excellent work for those interested in American and Soviet submarines, and it will be a valuable resource for amateur and academic historians alike for many years to come.



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1<sup>[1]</sup>. Polmar is a well-respected defence analyst and is the author of over 30 works on various defence topics. He has also, over his career, advised two Chiefs of Naval Operations and three Secretaries of the Navy, as well as many foreign and domestic defence contractors and the United States Congress. Moore is a former U.S. submariner, and is the founder of Cortana Corporation, a firm that specializes in studying the development of submarines.

2<sup>[2]</sup>. The fact that this work has endnotes is a feature that also greatly enhances it for an academic audience.

3<sup>[3]</sup>. Of course this does not mean that the Soviet intelligence efforts were not important for their submarine program, as the Walker Spy scandal demonstrated.

4<sup>[4]</sup>. These problems were so serious that the Commander of the Soviet Fleet, Admiral Sergei Gorshikov even attempted to stop the production of these early SLBMs; however, he was overruled by senior members of the Soviet leadership; Steven Zaloga, *The Kremlin's Nuclear Shield: The Rise and Fall of Russia's Strategic Nuclear Forces* (Washington D.C.: Smithsonian Institution Press, 2002), 52-53, 86