# *32 in '44: Building the Portsmouth Submarine Fleet in World War II* (review)


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Rodney K. Watterson. *32 in '44: Building the Portsmouth Submarine Fleet in World War II*. Annapolis, MD: Naval Institute Press, 2011. xix + pp. ISBN 978-1-59114-953-8, $34.95 (cloth).

Naval construction in World War II has long been a stepchild of industrial history scholarship, unlike the cargo shipbuilding program of the U.S. Maritime Commission, its more famous cousin that received thorough analysis in Frederic Lane's classic *Ships for Liberty* (1951). Though the design and operational history of American warships is well documented, we know little about the structures and dynamics of the naval shipbuilding industry that produced the world's largest fleet.

Rodney Watterson helps to fill this gap in his study of the Portsmouth Navy Yard in New Hampshire that completed thirty-two submarines at the height of its wartime activity in 1944 (hence the title of the book). Founded in 1800, the government-owned yard carved out a niche in the construction of submarines and served as the navy's principal supplier of this sophisticated vessel type during the interwar period, when it acquired managerial and technical expertise that laid the groundwork for wartime production. After the passage of the Two-Ocean Navy Act of 1940 that signaled the beginning of large-scale naval construction, the yard received important facility upgrades that quadrupled its aggregate production capacity. Its wartime performance also benefited from administrative continuity, and from the shop floor experience of veteran tradesmen who comprised the vital core of a workforce that grew from two thousand during the 1930s to more than twenty thousand at its peak in 1943. Industrial relations remained amicable because workers were cooperative, and because management and labor settled complaints about shiftwork problems and other issues collaboratively. These factors, combined with effective production schedules, the use of preassembly techniques that shortened the construction cycle, and emphasis on teamwork enabled the yard

to deliver seventy-nine submarines, one more than Electric Boat in Groton, Connecticut, which boasted much larger production facilities.

*32 in '44* makes valuable contributions to studies of industrial mobilization and naval shipbuilding. First, it underscores the significance of prewar developments, notably the introduction of basic modular construction in 1934 that enabled the yard to work on different hull sections simultaneously, replacing the more time-consuming technique of building up hulls piece by piece on the shipways. During the war, similar methods were used not only by the Maritime Commission yards referenced in the book, but also by the Bath Iron Works in destroyer construction, the Philadelphia Navy Yard in destroyer escorts, and other naval builders as well. Second, the book demonstrates the benefits of specialization in submarine construction at Portsmouth, in contrast to yards whose more diverse projects often interfered with each other and made it difficult to maintain a clear production focus. Similar dynamics were evident at New York Shipbuilding Corporation in Camden, New Jersey, the navy's principal supplier of light cruisers, and at Grumman in Bethpage, New York, a leading specialty producer of fighter aircraft. Third, Watterson emphasizes that the Navy Department's Bureau of Ships, the administrative entity responsible for warship construction, eschewed rigid centralized control and instead kept Portsmouth on a long leash, enabling yard administrators to tailor production methods to the particular needs of the submarine program. Managers of other navy yards and private firms who enjoyed a similar degree of local autonomy shaped the diverse industrial landscape of naval construction and the war economy.

The book's shortcomings reflect its parochial proclivities. Passing up an opportunity to examine disintegrated production formats that have attracted scholarly attention in recent decades, Watterson pays little attention to the far-flung industrial network of specialty firms that supplied Portsmouth with diesel engines, batteries, torpedo tubes, and many other items. The book also neglects submarine design, one of the yard's core missions in World War II, when its design department crafted detail blueprints and specifications for submarines building at Portsmouth and in Philadelphia. This omission is particularly puzzling because Watterson has a professional background in naval architecture that would have qualified him to shed new light on a highly technical endeavor that has received scant attention in the literature. Lastly, *32 in '44* includes few references to shipyards other than Electric Boat and the Liberty ship builders to place its story in broader context and evaluate the yard's performance.

Portsmouth, whose production record is portrayed in the most glowing terms throughout the book, certainly did better than Electric Boat, but its "maximum efficiency of 665,000 work hours per submarine in 1944" (p. 100) was less impressive compared to the performance of British submarine builders, or that of Blohm & Voss in Hamburg, Germany, which routinely expended less than three-lakh manhours on Mark VIIC submarines and delivered one boat a week from 1941 to 1943. The German production record (which has been documented in English-language studies) was partly attributable to the extensive use of basic preassembly techniques that resembled American modular systems, raising interesting questions for students of shopfloor practices. Were the Americans at a disadvantage because they preassembled hull sections on site, in contrast to German builders who outsourced the production of basic Mark VIIC shell sections to steel fabricators, enabling the shipyards to focus on final assembly? When Portsmouth "sought to increase the number of components—primarily foundations, hull fittings, bulkheads, and other structural components—that it could install in submarine sections prior to delivery to the building ways" (p. 79), did it experience difficulties fitting the sections together during final assembly, much as the Germans did in their unsuccessful switch from basic to advanced modular construction for Mark XXI submarines in 1944? These and other comparative questions, which remain beyond the purview of Watterson's somewhat narrowly focused book, should be addressed in future studies to determine the scope and limits of modular construction methods that played a vital role in American, British, and Axis naval construction.

Its deficiencies notwithstanding, *32 in '44* tells a compelling story and contains important nuggets of information that enhance our understanding of a much-neglected industry, industrial mobilization, and the American war economy.

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