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## Lost Subs: From the Hunley to the Kursk, the Greatest Submarines Ever Lost—and Found

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Dunmore, Spencer. *Lost Subs: From the Hunley to the Kursk, the Greatest Submarines Ever Lost—and Found*. Cambridge, Mass.: Da Capo, 2002. 176pp. \$35

Service in the Confederate submarine CSS *Hunley* was not for the faint of heart—on its first two sea trials, it sank with a loss of nearly all hands. With a fresh and stalwart crew, *Hunley* crept from Charleston on the night of 17 February 1864 and sank the USS *Housatonic* with a contact torpedo. However, in the ensuing confusion and gunfire, *Hunley* was lost.

For over one hundred years *Hunley* lay undisturbed in the mud and silt of Charleston's harbor, until August 2000, when it was raised with an elaborate cat's cradle of slings, braces, and foam pads. CSS *Hunley* is now undergoing an archaeological examination that is yielding a treasure trove of artifacts as well as insights into the technology of its time.

Spencer Dunmore's work, a handsomely produced coffee-table book, has more substance than one might initially expect. Dunmore's accounts of the loss and recovery of the CSS *Hunley*, USS *Squalus*, HMS *Thetis*, and the Russian *Kursk*, and the losses of the USS *Thresher* and USS *Scorpion*, are interesting and contain notable new material.

Like aircraft, submarines are inherently safe but very unforgiving of human and mechanical failures. *Squalus* (1939), *Thetis* (1939), and *Thresher* (1963) each was lost when its hull was breached and seawater flooded in. The main air-induction valve stuck open when *Squalus* submerged, a torpedo-tube outer door was inadvertently opened on

*Thetis*, and a seawater inlet pipe apparently failed catastrophically on *Thresher*.

Torpedoes can be as lethal to the submarine that carries them as to the enemy. In the years since the loss of *Scorpion* in 1968, its wreckage has been photographed several times by deep-sea reconnaissance vehicles. These photographs (many of which have been released and are in Dunmore's book), the troubled history of the batteries used by the submarine's Mark 37 torpedoes, and engineering analysis suggest that a spontaneous and violent initiation of a torpedo battery led to a warhead detonation and hull rupture.

The Russian submarine *Kursk* appears to have suffered a similar fate in the Barents Sea in 2000. Western acoustic detection systems picked up two massive explosions that correlated with *Kursk*'s position. Naval engineers cited by Dunmore build a good case for the theory that the first of these explosions came from the hydrogen peroxide that was carried in *Kursk*'s torpedoes and that the second resulted from the detonation of the torpedo's warhead.

The most fascinating and yet disappointing aspect of Dunmore's book is his descriptions of crew rescues and salvage—fascinating because these operations are high among underwater engineering feats, disappointing because Dunmore treats them shallowly.

When *Squalus* sank off Portsmouth, New Hampshire, the Navy had just placed into service a diving bell for submarine rescue. Winching itself down a half-inch wire fastened to the forward hatch of the *Squalus* 243 feet below, the bell ultimately rescued thirty-three of the fifty-five men aboard. The following summer, *Squalus* was raised with a

complex system of cradles and supporting pontoons. With each lift, it was moved into shallower water, grounded, then lifted again. It reached Portsmouth Harbor in September 1939. The technical details of its salvage are one of the truly great stories of deep-sea salvage operations.

*Kursk* was raised in the fall of 2001 and carried back to Roslyakovo Shipyard. Raising the sub was no mean feat of underwater engineering—it weighed twenty-four thousand tons underwater and lay in 350 feet of water. Unfortunately, Dunmore gives but four pages to this accomplishment. Happily, two of them are devoted to excellent drawings of the techniques by which the damaged bow was removed, lift points attached to the hull, and the submarine drawn up into a specially prepared floating dry dock. One could well spend a serious amount of time studying these drawings alone.

As a comprehensive treatment of submarine loss and recovery, *Lost Subs* is uneven and technically superficial. However, its treatment of the *Scorpion* and *Kursk* disasters and the rich collection of underwater and salvage photographs will please the generalist and fill niches for the naval scholar.

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Stiehm, Judith Hicks. *The U.S. Army War College: Military Education in a Democracy*. Temple Univ. Press, 2002. 200pp. \$69.50

This is an in-depth and insightful examination of the U.S. Army War College, one of the nation's six senior service colleges. Stiehm offers a comprehensive

book that reviews the history of the college, provides a typical class profile, offers a look at the faculty and the curriculum, and describes what a typical "Carlisle year" is like for the students. While analyzing the administration, Stiehm offers recommendations for improving the institution's ability to produce quality graduates. Stiehm believes that after following her prescription for improvements, the graduates would be better able to fight and win the nation's wars and would be better prepared to provide sound, thoughtful advice to senior decision makers on matters of national security and the application of military force in the pursuit of national objectives.

Stiehm is uniquely qualified to write this book. She attended the Army War College as a student-participant observer during the first semester of academic year 1996–97, with the class of 1997. Stiehm was fully integrated into the seminar experience of the war college and shared both the academic and social experiences of her classmates. She also served as a visiting professor at the U.S. Army Peacekeeping Institute and at the Army's Strategic Studies Institute, both located at Carlisle Barracks.

Stiehm's critical examination of the Army War College is valuable for the insightful information she shares, which is otherwise not available to the general reader, but more importantly should prove valuable to the Department of Defense policy makers and decision makers responsible for the establishment and maintenance of defense institutions. The complex and multidimensional nature of the global war on terrorism has caused the United States to think about warfare in a new way. Stiehm's work challenges those in