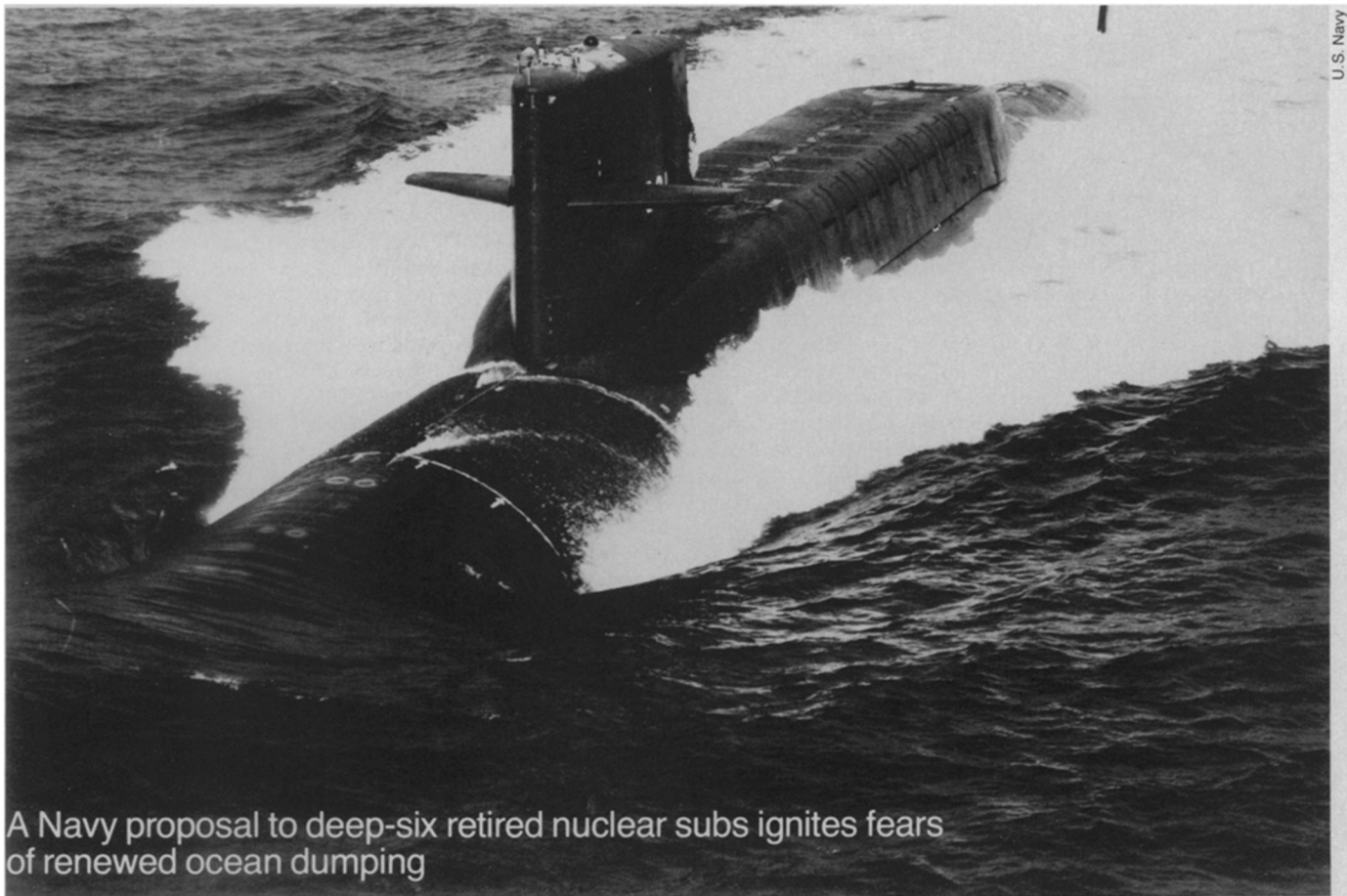


Submarine Gravesites



A Navy proposal to deep-six retired nuclear subs ignites fears of renewed ocean dumping

By CHERYL SIMON

USS Robert E. Lee

Old nuclear-powered submarines don't die, but they don't fade away either.

In the next 30 years the U.S. Navy plans to retire 100 of the 130 nuclear-powered submarines now in operation. But how does one dispose of a nuclear sub? The Navy, in a draft Environmental Impact Statement (EIS), explores two main options. While the draft EIS does not state a preference, environmentalists have sounded a clarion call against one proposal — scuttling the vessels in the ocean — which they believe the Navy favors.

Public responses submitted to the Navy regarding the ocean dumping option pertain mostly to technical and environmental aspects, but an underlying sentiment motivates opponents of the measure. They fear that any move toward ocean disposal of radioactive wastes — even these low-level wastes — will establish a dangerous precedent that could make dumping of higher-level wastes all too easy.

The United States has not disposed of any radioactive material in the ocean since 1970. Last December the U.S. Congress passed an amendment to the Ocean Dumping Act (the Marine Protection, Research, and Sanctuaries Act of 1972) that established a two-year moratorium during which no permits would be granted for

ocean dumping of low-level radioactive wastes. That moratorium is now in effect. The amendment also gave Congress the power to veto any permit for such dumping, but this authority was negated by a recent U.S. Supreme Court decision that declared the Congressional legislative veto unconstitutional.

The two options described in the draft EIS refer to submarines from which the highly radioactive fuel has been removed. The first option is to sink the entire submarine at sea. The second is to remove the reactor compartment, in which radioactive species, predominantly Cobalt-60, accumulated during operation of the vessel, and bury it on land. The remaining part of the submarine would either be dumped at sea or scrapped on land. The Navy estimates that it would cost \$1.9 million less per submarine if the full ocean approach were selected. And regarding safety, the draft EIS states that "most of the radioactive nuclides would have decayed to stable atoms before they could possibly be released to the environment by the slow corrosion process." Neither disposal on land nor sea, the Navy maintains, would harm the environment.

Many of the people who commented on the proposal are not so sure. A broad spec-

trum contend that too little is known of the actual paths traveled by radionuclides through the food chain, or of the ways radiation affects marine life. Responses that point out weaknesses in the ocean option include those from the Environmental Protection Agency (EPA), and from the Oceanic Society, which has rallied 26 conservation and community groups to sign a document stating that the draft EIS is inadequate in its scientific and technical analysis of the ocean-dumping option. More than 100 organizations endorsed a five-page summary of the document.

General offshore locations proposed as submarine gravesites are 220 miles east of Cape Hatteras, N.C., 280 miles southeast of Cape Hatteras, and 160 miles west of Cape Mendocino, Calif. (EPA would designate the specific sea disposal site.) The amount of radioactive material retained in each defueled submarine is expected to be about 62 kilocuries. For 100 submarines, the Oceanic Society claims, this is about 60 times the total amount of radioactive material that the United States dumped in the oceans between 1946 and 1970.

This is still a small amount of radiation, says Kenneth Solomon of the Rand Corp. in Santa Monica, Calif., and no one is claim-

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ing that its release into the ocean will affect human health or cause other widespread or serious environmental damage. Solomon participated in a study, conducted by the Rand Corp. under contract with the National Oceanic and Atmospheric Administration, that considered ocean disposal of radioactive wastes.

The two main technical problems with ocean disposal, Solomon says, are that too little is known about the food chain on the ocean floor to predict how the radioactive nuclides may accumulate in organisms, and that monitoring procedures are inadequate. Once submerged in waters deeper than 4,000 meters, the submarines could not be retrieved. "What the report didn't say, and what I will not say, is that the ocean is a better or worse place to dump than land," he says. "All I'm saying is that one should approach the problem very cautiously."

The real concern, and the one that has catalyzed the opposition to the ocean alternative, is that the move will establish a precedent for broader ocean disposal of radioactive wastes, especially high-level wastes. Such actions, Solomon says, require substantially more investigation than has been conducted for the present draft EIS.

Each type of container and class of waste would have to go through a separate permitting process and period of public

comment, so there would be institutional restraints on the speed and level at which ocean dumping of radioactive wastes could proceed, says Robert Dyer of EPA's Office of Radiation Programs. "There are a tremendous number of checks and balances in here. The Navy can pick whichever option it wants, but they'd better have a good reason."

In the unlikely event that every step in the approval process went perfectly, Dyer says, two and a half years would elapse between the time the permit was requested and the time disposal began. If the full ocean alternative were selected, there would be the added step of formal site designation, because no ocean sites presently are listed in the Federal Register as low-level waste repositories.

Despite the surveillance of regulatory agencies over dumping actions, the perception lingers that even moderate, controlled pollution quickly can get out of hand. Solomon, who is familiar with both bureaucratic and scientific aspects of ocean dumping, says that even with the safeguards, "I think from a practical point of view, if you get certain kinds of containers approved it's much easier to take the next step than if you establish some ground rules [for what can and cannot be dumped] up front." He advocates that before any ocean dumping of radioactive material is allowed, broader decisions be made, rather than "starting to dump a little

bit and edging in more and more."

Some concerns pertain to international law. Gordon Thompson, a consulting scientist with the Union of Concerned Scientists in Cambridge, Mass., believes that the self-imposed U.S. ban on ocean dumping of radioactive wastes has discouraged many other nations from dumping. He would like to see an established regulatory structure to control ocean disposal that has "real power over governments." Barring that, he says, "the second option is not to use the oceans at all. I really don't see anything else as being desirable."

The Law of the Sea (LOS) Convention could be amended to encompass regulation of ocean disposal of radioactive wastes, but would be effective in this role only if the United States and other western powers sign, Thompson says. So far, the United States has declined to sign the LOS treaty, which was signed by 117 nations in December 1982 (SN: 12/18/82, p. 389).

Despite the alarm sounded by some who oppose the ocean alternative, no approach selected by the Navy is likely to be acted upon in the near future. A Navy spokesman at the Pentagon says that the Navy plans to complete a final EIS by the end of the year, and to select a disposal method one or two months later. In the meantime, five of the submarines already have been retired. They sit passively in dry dock, like old captains awaiting their final orders. □

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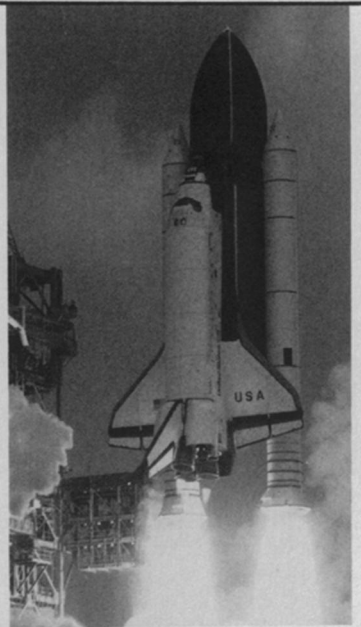
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