

US research ships

Naval build-up in prospect

Washington

REPLACEMENT of the ageing fleet of US research ships has received a surprise commitment from the US Navy, but there are still uncertainties about the continuation of state-of-the-art research into the 1990s.

Almost all the 20 ocean-going ships operated by universities and by research institutions such as Woods Hole and Scripps were built with federal funds; most are at least 15 years old, and some are as much as 28 years old. The average lifetime of a research vessel is considered to be 25 to 30 years. Moreover, Bob Dinsmore of Woods Hole Oceanographic Institution, who is heading a committee studying fleet replacement for academic users, says that some comparatively young ships "are already approaching obsolescence" in their suitability for modern research.

To the surprise of many, the Navy recently seemed to reverse a 20-year trend of diminishing interest in the academic research fleet. A policy statement signed by the Secretary of the Navy, John Lehman, sets out a number of new initiatives in oceanography, including a commitment to seek support in fiscal year 1987 for the construction of one new research ship for academic users. In addition, the statement signalled an intention to develop a long-range plan to replace the other four large ships originally built by the Navy.

But researchers remain un reassured. Professor James McCarthy, an oceanographer at Harvard University, says "the Navy is very hard to predict". Many things could happen between now and 1987; and even if the \$35 million that the Navy is now talking about for construction does survive in the Defense Department's budget request a year from now, it would still have to be approved by the Office of Management and Budget, the President and the Congress.

The National Science Foundation (NSF), which has shown a steadier commitment to the academic research fleet, has however found itself up against financial constraints that have ruled out any thoughts of building a new large ship. Only one of the six large research ships in the academic fleet was built by NSF (*Atlantis II*, operated by Woods Hole); and while NSF has been able to underwrite construction of five new smaller coastal ships since 1970, an increasing share of its oceanography budget has gone on operating and maintaining the existing fleet. (Overall, NSF supports some 75 per cent of federally supported oceanography research, the Navy about 15 per cent and the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration and the US Geological Survey the balance.) Maintenance costs have escalated over the past decade as more and more replacement parts for the older ships have had to be

specially made; fuel costs have taken a large bite as well. Sandra Toye, the NSF official who deals with oceanographic facilities, says the agency has no plans for constructing new ships in the next few years.

From the researchers' point of view, the problem is both the age of the ships and the increasing sophistication of experiments, which require larger scientific crews, more on-board instrumentation and larger laboratory space. "By the 1990s, we will be desperately short of ocean-going vessels", McCarthy says, unless construction of replacement ships begins at once. "We're currently using vessels that are on their second lives." Four of the increasingly-in-demand large ships were built in the early 1960s, the other two, *Knorr* (operated by Woods Hole) and *Melville* (operated by Scripps), in 1970.

The trend in recent years has been towards greater use of interdisciplinary research teams, of perhaps 25-30 people, studying such questions as atmosphere-ocean interactions. Satellite navigation and communications equipment is being used more; real-time data analysis, which allows the researchers to modify their experiments during a cruise, is also becoming the norm.

The Committee on Fleet Replacement for the University/National Oceanographic Laboratory System (UNOLS), which Dinsmore is heading, has put together a "wish list" that may carry considerable weight in Navy and NSF planning. Similar calls for replacement of the fleet are coming in a series of National Academy of Sciences reports due out this year. The UNOLS committee is proposing that the Navy begin construction of three large general-purpose ships in 1987, 1988 and 1989; these would replace the three oldest Navy-built ships, which date from the early 1960s. In addition, the Navy would be asked to refurbish and modernize the two ships it built in 1970, extending their life to 2010. Another five ships would come from NSF: one general-purpose ship to be built in the second half of the next decade, two special-purpose geophysics vessels, one submarine support ship and one polar ship—an item long sought by the research community.

The Navy and NSF have together supported conceptual design studies for the new ships; model-testing of two designs is planned for this winter, and UNOLS expects to select candidates for a detailed preliminary design in March. The Navy has expressed interest in the the so-called SWATH design—a two-hulled ship that would be very stable.

A selling point for the US replacement effort that is sure to be heard in the coming year is that Britain, France, West Germany, and the Soviet Union have all constructed well-equipped, state-of-the-art research vessels within the past few years.

Stephen Budiansky

Bacterial boycott

Strains withheld from Soviets

Washington

BIOLOGISTS in the United States and Britain are urging their colleagues in the West not to supply their Soviet counterparts with bacterial strains for research until refusnik scientist David Goldfarb is allowed to leave the Soviet Union. Goldfarb had been assured last April that he would be permitted to emigrate, but after resigning his position and making final preparations to depart, he was abruptly informed by KGB agents that his permission to emigrate had been suspended and that he was under investigation for attempting to smuggle out of the country "secret" bacterial strains.

Almost all of Goldfarb's collection of auxotrophic mutants of *Escherichia coli* K-12 were originally obtained from US and British researchers. Western scientists familiar with Goldfarb's research say it is "very innocuous" and totally unrelated to military applications. Goldfarb's visa had been arranged by the Soviet Academy of



Sciences, which apparently by-passed the KGB; the incident may be part of a larger tug-of-war between Soviet biologists and the KGB over KGB efforts to impose secrecy upon recombinant DNA research.

The attempt to suspend shipments of strains to the Soviet Union is being organized by Max Gottesman of the National Institutes of Health and Charles Yanofsky of Stanford University in the United States, and Michael Yudkin of the University of Oxford and Simon Baumberg of the University of Leeds in Europe. Gottesman was unable to say how many requests for samples US and European laboratories receive from Soviet researchers; he said his own laboratory had received a few requests a year from Soviet scientists until recently.

Goldfarb, who is 66, has one son living in Israel and one in the United States, who now teaches at Columbia University. That son, Alexander, who has been in contact with Goldfarb, is supporting the boycott, believing that it may succeed in putting pressure on the Soviet authorities.

Stephen Budiansky