

Subs Change Concept Of Underwater Research

ANN ARBOR — Submarines have "revolutionized" the concept of underwater research in the Great Lakes, according to a report on the feasibility of their use issued by the University of Michigan's Great Lakes Research Division.

Submarine research was first tested in the Great Lakes last summer when U-M, the Coast Guard and General Dynamics Corp. used resources and probed the bottom of Lake Michigan in the Star II. The purpose was to determine the mine's usefulness in the lakes, rather than to conduct specific research projects.

THE REGAL REPORT OF THE

two-man vessel's 26 scientific dives, just released, says the sub "eliminates the random groping method of sampling and substitutes the trained mind and eye, thus making possible accurate location of sampling sites and the immediate mental assimilation of the complex environment and the dynamic events taking place."

Prof. David Chandler, aquatic biologist and director of GLRD, explains that most research is done with a "fishing pole" technique whereby sampling devices are lowered into the water from boats.

"Imagine trying to understand what goes on in a big city by hovering over it in a

helicopter and dropping a line to fish for samples of the life below," he said.

The sub is a means of entry into the environment, however, and its two-week excursion in Lake Michigan has revealed some information not obtainable from surface vessels.

ACCORDING TO THE report, divers aboard the two-man sub found ambient light penetrating almost 400 feet, nearly twice the depth scientists had estimated on the basis of fishing with a Secchi disc.

"Such observations of greater than expected light penetration have also been made from submarines operating in

the ocean," the report notes.

The sub also permitted the first look at the bottom of Lake Michigan at the deepest point, about 25 miles south-southwest of Frankfort. The sub's precise gauge reading, corrected for fresh water, was 890 feet. But the depth sounder on the Coast Guard cutter Woodlark, the support vessel, read 912 feet. The lake's greatest recorded depth is 923 feet, in the same area.

IN GENERAL, the two-week expedition found:

"Bottom sediments, where clearly observable, did not prove to be different than supposed. However, detailed view-

ing of the gently undulating plain of flocculent silt which composes the bottom in the deepest part of the lake, for example, and observation of the mysids (a kind of small fish) associated with it, provided an appreciation and comprehension of benthic organisms on the lake's bottom conditions that could never be obtained in any other way.

"We know, for the first time, that the bottom there is covered with small craters created by the sculpins."

The report finds the sub has two kinds of limitations as a research tool—"those imposed by the environment and those resulting from design features

of the vehicle and its equipment."

The environmental limitation was one of poor visibility caused by minute particles floating throughout the water, and "creating the effect of looking through a lighted window into a snowstorm."

SHORTCOMING OF THE sub's 35-mm camera and of its mechanical arm and claw are regarded as easily remedied with small craters created by the sculpins."

It is unlikely that a submarine will be used by GLRD this summer since operation is costly, because present sampling studies can be conducted adequately from the sur-

face, and because available research submarines are not equipped properly to deal with the special problems of the Great Lakes.

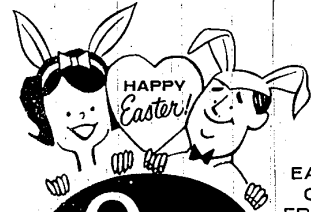
But Dr. Chandler did not rule out the use of submarines in future summers—or perhaps autumn, when lake visibility is usually better. The sub is not likely ever to replace the surface vessel as a research tool. But it can complement the surface vessel and be used primarily for "very specific or localized problems," according to Dr. Chandler.

Last summer's dives were the result of three years' preparation by the Great Lakes Research Division, culminating in

the leasing of the General Dynamics sub for a period of two weeks. The Coast Guard provided the services of a support ship, the Woodlark, a 180-foot cutter equipped with a crane for depositing and retrieving the sub.

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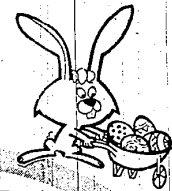
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