

AND REFER TO NO.

BUMED-135-TLW:blk  
All/EN10(753)

18 October 1946



NAV1.960822.012



WASHINGTON 25, D. C.

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To: MOinC, NMRL, U.S.N. Submarine Base, New London, Conn.  
Via: (1) The Commander Submarine Force, U.S. Atlantic Fleet.  
(2) The Commanding Officer, U.S. Naval Submarine Base.

Subj: BuMed Research Project X-753 (Sub.No. 156): "Field Study of the Effects of Schnorchelling on Submarine Personnel" - Approval of.

Ref: (a) MOinC, NMRL, SubBase, New London, Conn., ltr., NB7/All/P2-5(MRL), Serial 21, dtd 23 Sep 1946 to BuMed.

Encl: 1. (HW) Copy of subject project form.

1. Subject to the approval of the Commander Submarine Force, U. S. Atlantic Fleet, and Commanding Officer, U.S. Naval Submarine Base, New London, Conn., the project outlined in enclosure one is approved herewith.

2. The employment of Dr. Henry L. Haines under personal service contract for assistance in the investigation of subject project is an appropriate charge against Medical Department Appropriation. However, the employment of Dr. Haines under this contract in administering ear, nose, and throat therapy at the Dispensary, Submarine Base, New London, as indicated in first endorsement to reference (a), is contrary to BuMed policy. Accordingly that portion of project proposal which concerns the employment of Dr. Haines in consultive and therapeutic work on naval personnel has been deleted.

3. The Administration Division, Field Civilian Personnel Branch, of this Bureau will handle the details of processing a personal service contract between BuMed and Dr. Haines.

ROSS T McINTIRE  
Vice Admiral (MC) USN  
Chief of Bureau

PROJECT NO. I-753 (Sub. No. 156) SECTION II DATE 23 Sept. 1946

TITLE OF PROPOSAL  
**Field Study of the Effects of Schnorchelling on Submarine Personnel.**

ESTIMATED DURATION

**1 year**

LOCATION(S) OF STUDY

**Medical Research Laboratory, U.S. Naval Submarine Base, New London, Conn., and on board operating submarines as assigned by the Commander Submarine Force, U.S. Atlantic Fleet.**

OBJECTIVE(S) AND EXPERIMENTAL DESIGN

- (1) To evaluate the psychic, fatiguing, and/or injurious factors found under conditions of schnorchelling, --several weeks continuous submergence is essential for reliable results;
- (2) To determine measures necessary to preserve the health of submarine personnel under these conditions;
- (3) To determine the incidence of aerotitis media in submarine personnel when serving aboard submarines using schnorchel for protracted periods and under varying conditions;

(continued on attached sheet)

SUBJECTS

REQUIREMENTS TO BE PROVIDED

The crews of the "schnorchelling" submarines and any other specially selected men.

MATERIAL (List separately).

To be requested as need arises.

FUNDS (including allocation).

**\$2,000**

PRINCIPAL INVESTIGATOR

**Lt. Comdr. J. G. Bateman, (MC) USN, Med. Research Lab., New London, Conn., and an additional submarine medical officer to be designated by BuMed and ordered to ComSubLant.**

(see attached sheet)

CONDUCTANT(S)

It is planned to work in close cooperation with N.M.R.I.; BuShips representatives; engineering, and new developments officers, ComSubLant; and squadron, division, and submarine engineering officers concerned.

ADDITIONAL INFORMATION (use additional sheets as required).

The report on project X-606 (Sub.No. 131) will be submitted in the near future, and is based upon observations made aboard the captured German Submarine U-873, during several days of schnorchel operations; and upon observations made during simulated schnorchel operations on the USS SIRAGO, while alongside the dock. The experience gained from these observations have aided in determining the lines of investigation to be followed in the contemplated studies.

(continued on next page)

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Objectives and Experimental Design: (continued from preceding page)

- (4) To evaluate selection procedures (such as the 50-lb. pressure test) in detecting individuals who are unable to satisfactorily equalize pressure in their ears during schnorchelling operations;
- (5) To appraise the value, in selected individuals, of radium treatments as developed at this activity, for the prophylaxis of any aerotitis media acquired during schnorchelling operations; and
- (6) To make specific recommendations as indicated by the results obtained.

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Collaborators: (continued from preceding page)

Captain C. W. Shilling, (MC) USN, MO-in-C, Med. Research Laboratory;  
J. Donald Harris, Ph.D., (P-5), Medical Research Laboratory; and  
Henry L. Haines, M.D., New London, Connecticut, (Lieut.MC(S), USNR, inactive),  
—Dr. Haines to be employed for one day per week for work on this project, in connection with radium treatment of aerotitis media, and for diagnosis of any other ear conditions which may develop. He was an active participant in the preliminary project (X-606).

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Additional Information: (continued from preceding page)

It is understood that the captured German submarines U-2613 and U-3001, will be operating off Key West, and will be conducting extensive schnorchel operations in that area; and that by about February 1947, a U.S. submarine will be equipped with a schnorchel, and after a period of operations in the New London area, will operate in the Key West area. It is anticipated that the operational schedule will include simulated war conditions, such as evasive tactics, long periods of submergence, etc.

These operations will afford an excellent opportunity for studies such as are proposed. It is planned to observe submarine personnel during these exercises, in an effort to evaluate the effects of schnorchelling operations upon the personnel. If any harmful effects are encountered, efforts will be made to determine precautionary measures necessary to preserve the health of the crew.

It is planned to determine the extent of pressure fluctuations, atmospheric conditions, etc. in the American schnorchel equipped submarines, and to compare this with the German schnorchel submarines.

In the preliminary experiment, a high incidence of aerotitis media was encountered, but because of the limited number of subjects and observations, it was felt that more extensive observations should be made on a larger number of subjects over a longer period of time, and under various conditions. Therefore, the incidence of aerotitis media during routine schnorchel operations will be determined on submarine personnel who have been selected by the present selection methods, as well as the role of individual susceptibility. Factors influencing the ability of personnel to "clear" their ears, such as upper-respiratory infections, climatic conditions, etc., will be evaluated. If necessary, efforts will be made to develop methods of increasing the accuracy of predicting those men who will be unable to serve aboard schnorchel equipped submarines.

Doctor Haines services will be particularly helpful on this phase of the experiment. Radium applications to the nasopharynx were made by him at the Medical Research Laboratory as a method for the prophylaxis of aerotitis media. This method was used extensively during the recent war in the treatment of personnel who were otherwise unable to equalize pressure. It is planned to apply this technique to personnel exposed to schnorchel operations, in an effort to determine its value therein, and to set up criteria for selecting those men in need of this treatment. As noted in basic letter, it is requested that this Laboratory be empowered to employ Doctor Haines on this project.

The preliminary study revealed that many men did not complain of ear discomfort during schnorchel operations, but did, upon examination, show evidence of ear damage in the form of aerotitis of varying extent. It is therefore highly desirable that a qualified submarine medical officer, familiar with the problem involved, ride the boats and keep the crew under constant surveillance. It is felt that because of the varied areas of operation, this medical officer should be under the jurisdiction of the Commander Submarine Force, U.S. Atlantic Fleet. The latter officer is extremely interested in this experiment, and it was at his suggestion that the present modification of project X-606 is being initiated.

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