

OCEANOGRAPHY

HEARING
BEFORE THE
SPECIAL SUBCOMMITTEE ON OCEANOGRAPHY
OF THE
COMMITTEE ON
MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES
EIGHTY-SIXTH CONGRESS
SECOND SESSION

ON

S. 2482

TO REMOVE GEOGRAPHICAL LIMITATIONS ON
ACTIVITIES OF THE COAST AND GEODETIC
SURVEY, AND FOR OTHER PURPOSES

S. 2483

TO PROVIDE FLEXIBILITY IN THE PERFORM-
ANCE OF CERTAIN FUNCTIONS OF THE COAST
AND GEODETIC SURVEY AND OF THE WEATHER
BUREAU

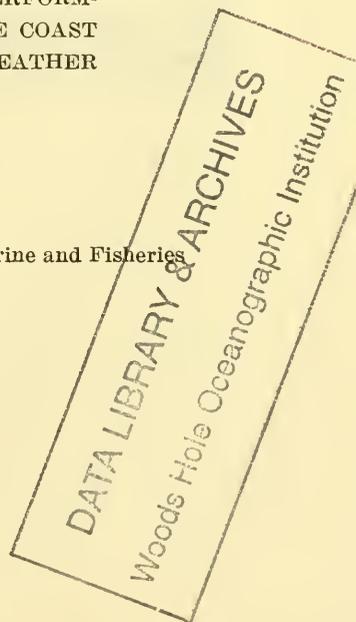
JANUARY 22, 1960

Printed for the use of the Committee on Merchant Marine and Fisheries



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1960

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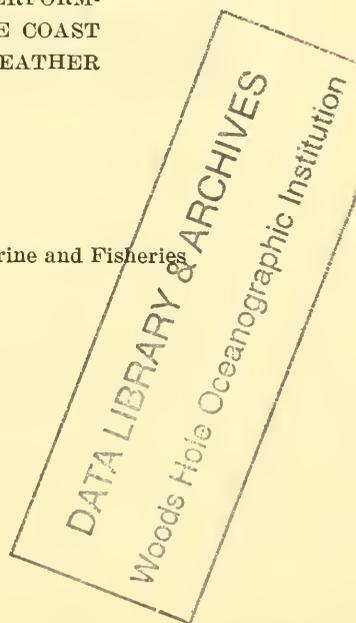
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CONTENTS

	Page
S. 2482-----	1
Senate Report 726-----	1
S. 2483-----	7
Senate Report 719-----	8
Testimony of—	
Allen, Hon. John J., Jr., Under Secretary of Commerce for Transportation, as read by Rear Adm. H. Arnold Karo-----	25
Grubb, R. C., Assistant Chief, Weather Bureau for Administration--	28
Karo, Rear Adm. H. Arnold, Director, Coast and Geodetic Survey--	25
Munson, Henry G., captain, USN, Hydrographer of the Navy and hydrographer in command of the U.S. Navy Hydrographic Office in Oceanography-----	31
Revelle, Dr. Roger, National Academy of Sciences, National Research Council, Committee on Oceanography-----	11
Additional information—	
American Legion, letter, January 22, 1960, re 1959 National Convention-----	24
Bonner, Hon. Herbert C., letter in reply to Dr. Harrison Brown, Chairman, Committee on Oceanography, National Academy of Sciences, re S. 2482-----	11
Department of the Navy, letter, August 12, 1959, signed, "R. L. Kibbe, Captain," with enclosed memorandum, re S. 2482-----	4
Statement of purpose and need-----	9
Statement in support of proposed legislation to remove geographical limitations on activities of the Coast and Geodetic Survey, etc-----	3

III



OCEANOGRAPHY

FRIDAY, JANUARY 22, 1960

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON OCEANOGRAPHY OF THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to notice, in room 219, Old House Office Building, Hon. George P. Miller (chairman of the subcommittee) presiding.

Present: Representatives Miller, Dingell, Oliver, Pelly, and Curtin.

Present also: John M. Drewry, counsel; Paul S. Bauer, consultant to the subcommittee; and Bernard M. Winfield, clerk.

Mr. MILLER. The meeting will come to order.

The meeting this morning is for the purpose of hearing testimony on S. 2482, a bill to remove the geographical limitation on activities of the Coast and Geodetic Survey, and S. 2483, a bill to provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and the Weather Bureau.

(S. 2482 and S. 2483 and reports follow:)

[S. 2482, 86th Cong., 1st sess.]

AN ACT To remove geographical limitations on activities of the Coast and Geodetic Survey, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act of August 6, 1947 (ch. 504, 61 Stat. 787; 33 U.S.C. 883a-883i), is amended by adding at the end thereof a new section reading as follows:

"SEC. 11. The Secretary of Commerce may conduct activities authorized by this Act without regard to the geographical limitations set forth herein in connection with projects designated as essential to the national interest by the head of an executive department or agency."

Passed the Senate August 19 (legislative day, August 18), 1959.

Attest:

FELTON M. JOHNSTON, *Secretary*.

[S. Rept. No. 726, 86th Cong., 1st sess.]

TO REMOVE GEOGRAPHICAL LIMITATIONS ON ACTIVITIES OF THE COAST AND GEODETIC SURVEY

The Committee on Interstate and Foreign Commerce, to whom was referred the bill (S. 2482) to remove geographical limitations on activities of the Coast and Geodetic Survey, and for other purposes, having considered the same, report favorably thereon and recommend that the bill do pass.

PURPOSE OF THE BILL

This bill is designed to remove present uncertainty as to the extent of possible offshore activities by the Coast and Geodetic Survey by adding a new section 11 to the act of August 6, 1947 (ch. 504, 61 Stat. 787; 33 U.S.C. 883a-883i) to provide that the Secretary of Commerce may conduct activities authorized by the act without regard to the geographical limitations set forth therein, in connection with projects designated as essential to the national interest by the head of an executive department or agency.

NEED FOR THE LEGISLATION

The intensive development of research programs in many fields of scientific endeavor in connection with military activities, particularly with regard to the exploration of outer space; and the pressing need for expanded knowledge of the oceans' depths for submarine operation and defense as well as for possible new sources of food and mineral resources, have laid greatly increased demands upon the Coast and Geodetic Survey which are certain to multiply as the years go by.

In scientific fields that have taken on new and vital significance, such as oceanography, geodesy, seismology, magnetism and the like, the scientific competence and experience of the Survey personnel must be utilized to the fullest in the interest of survival. That this may be made possible is the primary purpose of this bill.

Under the act of August 6, 1947, basic authority is provided for activities of the Survey which cover a wide field—hydrographic and topographic surveys of coastal water and land areas, tide and current observations, surveys for aeronautical charts, geophysical measurements, geomagnetic data, etc., etc. However, it is prescribed by statute that these activities be conducted

"in the United States, its territories, and possessions" while surveys may also be made "of offlying islands, banks, shoals, and other offshore islands."

That such limited statutory authority for operation of this most important research organization is dangerously inadequate becomes self-evident when the tremendously expanded operations of Russia and other nations in the various research areas are considered.

As a nation we have been remiss in seeking out data concerning outer space and the underwater areas that now loom so large in military thinking, as well as concerning the frozen wastes of the north where Russia has been actively exploring for years. Fortunately, however, our scientists have been awake to the needs for vastly accelerated research activities, and have on their own initiative assembled a great deal of information as to what must be done to try to close the gap between our knowledge of nature's forces and resources and the far more thorough understanding of such matters by competing nations.

The Committee on Oceanography, composed of eminent scientists from oceanographic institutions and universities, is greatly concerned over our Nation's deficiency in studies of the oceans. Likewise, launching of Sputnik I by the Russians was a shocking reminder to us that we had not pursued our own space program with necessary vigor and appreciation of the need for such vigor.

Our national funds expended in research on outer space and underwater exploration have almost infinitesimal compared to what these scientists and some in Government know that they should have been. Crying "Russia, Russia" must become tiresome to our people at times, but it is certainly no secret now that Russia has far exceeded any efforts of this country to explore and chart the waters of the North Pacific, for instance, as well as the entire Arctic area.

Our security in the years ahead may depend to large extent upon our ability to defend against long-range-missile submarines lying off our shores, but we have little knowledge of the Continental Shelf and adjacent depths on which to base such defense. Attack may come over the frozen north, but here again our data are negligible.

The recent recommendation by the National Academy of Sciences and the National Research Council that the Coast and Geodetic Survey be responsible for half of the deep-ocean surveys in connection with their proposed oceanographic program has pointed up the doubt as to whether present statutes would authorize such participation by the Survey in the program. Because of this uncertainty the Survey in the past has had to depend upon other sources for much of the data, measurements, etc., made outside the United States, its territories, and possessions.

On the economics side, our fisheries are in desperate circumstances, while Russia and Japan have taken command of the vast fishery resources of the Pacific. They know more about the fisheries than we do, and their fishery fleets are far ahead of ours in size and functional design.

The Coast and Geodetic Survey must play a leading part in the expanded research operations which experts in various scientific fields have declared to be essential. To do so it must be released from the statutory geographical shackles that now restrict its activities.

The Defense Department, in its report on S. 2482, dated August 12, opposed enactment on the ground of possible duplication or overlapping of efforts in areas where Defense research and exploration facilities have been working. Your committee gave very careful consideration to the Navy's opposition to the bill, but came to the conclusion that the Coast and Geodetic Survey is peculiarly fitted to take over a much larger share of the work than is now possible under existing law. It should be noted that the Bureau of the Budget had no objection to the submission of the legislation to the Congress. On the other hand, there is no notation on the report of the Navy, as to the Bureau's position with respect thereto. Further, we are confident the Department of Defense and Commerce will be able to properly cooperate in this highly important field.

Reports of the interested Government departments and agencies follow:

THE SECRETARY OF COMMERCE,
Washington, D.C., August 3, 1959.

HON. RICHARD M. NIXON,
President of the Senate,
U.S. Senate, Washington, D.C.

DEAR MR. PRESIDENT: There are attached four copies of a proposed bill to provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and of the Weather Bureau.

There are also attached four copies of a statement of purpose and need for the proposed bill.

We are advised by the Bureau of the Budget that it would interpose no objection to the submission of this proposed legislation.

Sincerely yours,

FREDERICK H. MUELLER,
Acting Secretary of Commerce.

"A BILL To remove geographical limitations on activities of the Coast and Geodetic Survey, and for other purposes

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That the Act of August 6, 1947 (ch. 504, 61 Stat. 787, 33 U.S.C. 883a-883i) is amended by adding at the end thereof, a new section reading as follows:

"SEC. 11. The Secretary of Commerce may conduct activities authorized by this Act without regard to the geographical limitations set forth herein in connection with projects designated as essential to the national interest by the head of an Executive Department or Agency."

STATEMENT IN SUPPORT OF PROPOSED LEGISLATION TO REMOVE GEOGRAPHICAL LIMITATIONS ON ACTIVITIES OF THE COAST AND GEODETIC SURVEY AND FOR OTHER PURPOSES

The act of August 6, 1947, which provides basic authority for the activities of the Coast and Geodetic Survey authorizes surveys, observations, measurements, and charting activities in "the United States, its Territories and possessions."

The purpose of the proposed legislation is to clarify ambiguous language in the act of August 6, 1947, and to provide statutory authority for the Secretary of Commerce to conduct activities listed in that act without regard to the geographical limitations set forth therein in connection with projects designated essential to the national interest by the head of an executive department or agency.

The rapid development of the exploration of outer space, the impelling need for increasing our knowledge of the oceans, and the increasing range of scientific investigation and study generally require, for maximum effectiveness, the gathering of increasingly detailed and more widespread geophysical data, which in-

cludes geodesy, oceanography, seismology, and geomagnetism. The Coast and Geodetic Survey as a Government agency primarily responsible for surveys in these fields has experienced a rapidly increasing demand for its services in connection with these activities. Many of these requests require data relating to geographical locations and geophysical phenomena which can be obtained only from surveys, observations, measurements or investigations outside the United States, its Territories and possessions. Under the geographical restrictions set forth in the 1947 act, the Coast and Geodetic Survey is unable to collect through its own field parties such data and regardless of the necessity in the national interest for precise data is forced to rely upon other sources for the necessary observations, surveys, measurements and investigations with no control over methods, standards of accuracy or priorities to be established for the various projects.

The oceanographic program as proposed by the National Academy of Sciences, National Research Council, which is now being considered by the Congress, recommends that the Coast and Geodetic Survey be responsible for half of the deep-ocean surveys. The inclusion of the geographical restrictions in the 1947 act poses a question as to whether or not the Coast and Geodetic Survey has the legal authority to conduct hydrographic and oceanographic surveys on the high seas. This question is raised by the ambiguity of the phrase ("including surveys of offlying islands, banks, shoals, and other offshore areas") in section 1(1) of the act.

A question is also raised by the inclusion of the geographical limitations in section 1 as to whether or not the Coast and Geodetic Survey has the authority to conduct the activities enumerated in that section in areas outside the United States, its territories and possessions as a reimbursable project for another department or agency in accordance with section 601 of the Economy Act of 1932 (31 U.S.C. 686).

The proposed legislation would authorize the Coast and Geodetic Survey to carry out its activities without regard to geographical limitations whenever the head of an executive agency determines the project to be essential to the national interest.

Since the enactment of the enclosed draft bill would not, in the foreseeable future, entail annual expenditure of appropriated funds in excess of \$1 million the provisions of Public Law 801, 84th Congress, are not applicable.

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
Washington, D.C., August 12, 1959.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Interstate and Foreign Commerce,
U.S. Senate, Washington, D.C.*

MY DEAR MR. CHAIRMAN: Your request for comment on S. 2482, a bill to remove geographical limitations on activities of the Coast and Geodetic Survey, and for other purposes, has been assigned to this Department by the Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

The act of Congress approved August 6, 1947 (61 Stat. 787), pertaining to the functions of the Coast and Geodetic Survey, limits the activities of the Survey to the United States, its Territories, and possessions. The Congress considered this limitation proper inasmuch as surveying, mapping, and charting functions covering areas outside the United States, its Territories and possessions are being carried out by the charting and mapping agencies of the Army, Navy, and Air Force. The responsibilities of the Hydrographic Office of the Department of the Navy in this connection are defined in United States Code, title 10, section 7391-4.

In support of the above functions, national repositories have been established at the Hydrographic Office, the Army Map Service, and the Aeronautical Chart and Information Center containing information worldwide in scope, in the fields of hydrography and oceanography; geodesy and topography, and aeronautical charting, respectively. These repositories, unique in scope, contain classified and unclassified surveying, mapping, and charting data produced throughout the world. Through its military attachés the Department of Defense is constantly

aware of what survey, mapping, and charting work exists, what is underway and what is being planned which is considered of vital interest to the defense of the United States. Thus, any requirement for this type of information for areas outside the United States, its Territories, and possessions can best be met by the Department of Defense.

The proposed legislation is therefore opposed for the following reasons:

(a) It will result in duplication of responsibilities inasmuch as surveying, mapping, and charting functions covering areas outside the United States and its possessions are assigned to the Department of Defense and are accomplished through the coordinated efforts of the Corps of Engineers, U.S. Army, the U.S. Navy Hydrographic Office, and the Air Photographic and Charting Service, U.S. Air Force.

(b) Overlapping functions are never satisfactory as they often lead to duplication of effort, inefficiency of operations, and split responsibilities.

(c) Survey operations outside the continental limits of the United States and its possessions usually require diplomatic negotiations with foreign powers. Participation by agencies other than those normally recognized internationally as having the basic responsibility for carrying out such work, will result in loss of prestige to the military organizations and possible distrust of the United States.

(d) The Department of Defense, through its worldwide responsibility, can provide more efficient logistic support and facilities at less cost to the taxpayer for all surveying and charting operations carried out by this country outside the continental limits of the United States and its possessions.

It is pointed out that, through the memorandum of understanding dated February 24, 1959, between the Department of Defense and the Department of Commerce, copy of which is enclosed, the facilities of the U.S. Coast and Geodetic Survey can be fully utilized by the three services in the event of a national emergency. No special legislation for that purpose is therefore necessary. Neither is legislation considered necessary involving operations of the Coast and Geodetic Survey outside the United States, its Territories and possessions, as long as such work is requested by the appropriate Department of Defense agency and reimbursement therefore is made available by transfer of funds.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

Sincerely yours,

R. L. KIBBE,
Captain, U.S. Navy,
Deputy Chief of Legislative Affairs
(For the Secretary of the Navy).

MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT OF DEFENSE AND THE DEPARTMENT OF COMMERCE IN REGARD TO THE UTILIZATION OF THE FACILITIES OF THE COAST AND GEODETIC SURVEY IN THE EVENT OF NATIONAL EMERGENCY

1. PURPOSE

It is the purpose of this memorandum of understanding to provide, under conditions of a national emergency, for the effective use, cooperation, and coordination of the services of the Coast and Geodetic Survey of the Department of Commerce in support of Department of Defense requirements, and to establish the conditions of use of such services in the accomplishment of the responsibilities of the Department of Defense. This memorandum of understanding will be implemented upon Presidential or congressional declaration of a state of national emergency and when requested by the Secretary of Defense, and will be in conformity with the provisions of section 601 of the Economy Act of 1932 (31 U.S.C. 686).

2. UNDERSTANDING

Pursuant to paragraphs 3(b) and 5(b) of the Regulations Governing Cooperation of the Coast and Geodetic Survey with the Armed Services dated February 12, 1954, the U.S. Department of Commerce agrees to make the following services and facilities of the Coast and Geodetic Survey available for projects, within the limitations of the Coast and Geodetic Survey Enabling Act of 1947,

required by the Department of Defense upon its request, due consideration being given to civil defense and minimum civil needs:

- (a) Establishment of geodetic control, performance of geodetic computations, and allied processes pertaining to surveying and geodesy.
- (b) Compilation of magnetic data required for isomagnetic charts.
- (c) Survey vessels with their personnel and equipment.
- (d) Preparation and publication of tidal data to meet special military requirements.
- (e) Cartographic facilities and services required for research, compilation, and color separation for topographic maps, nautical charts, aeronautical charts, target materials, and allied publications as required during the period of national emergency.
- (f) Photogrammetric and ground surveying and allied services required for location of objects of military significance and for preparation of topographic maps.
- (g) Cartographic and reproduction (including photographic processing and indexing) facilities and services to meet special requirements of the Department of Defense commensurate with capabilities.

In the event minimum civil needs cannot be resolved by the Interdepartmental Board for Cooperation of the Coast and Geodetic Survey with the Armed Services, the Office of Civil and Defense Mobilization, or its successor agency, will be requested to determine those requirements.

3. GENERAL PROVISIONS

- (a) Coast and Geodetic Survey personnel, having access to classified information, engaged in the accomplishment of work of the Department of Defense will have an appropriate security clearance issued by the Secretary Control Officer of the Department of Commerce.
- (b) Facilities allocated for accomplishment of Department of Defense work should preferably be located away from coastal or prime target areas.
- (c) The utilization of services set forth in this understanding will be within the administrative structure of the Coast and Geodetic Survey.
- (d) Expansion of facilities of the Coast and Geodetic Survey to meet military requirements will be determined by policies of the Department of Defense, assisted by such advisory boards of representatives of military and civilian mapping and charting organizations as may be established.
- (e) The Department of Defense will budget for all military projects envisaged herein, and will transfer to the Department of Commerce the funds required to cover the cost of assigned projects.
- (f) The Department of Defense will furnish the Department of Commerce its estimated requirements as far in advance as possible.
- (g) The Department of Defense will assist, as may be required, in the procurement or development of additional equipment, materials, or other facilities needed for the successful completion of assigned military projects.

4. SPECIAL PROVISIONS

Requests for the services of the Coast and Geodetic Survey, made by the Department of Defense, will be in accordance with the following procedures:

- (a) All photogrammetric and geodetic projects initiated to meet military topographic mapping needs under the terms of this understanding will be made by the Chief of Engineers, Department of the Army.
- (b) All magnetic, tidal data, survey vessels, and nautical cartographic projects under the terms of this understanding will be made by the Department of the Navy.
- (c) All cartographic services devoted to target materials production, aeronautical charting, and photographic indexing and related processing, under the terms of this understanding will be made by the Department of the Air Force.
- (d) The accomplishment of cartographic and reproduction projects for the Department of Defense will be made in accordance with priorities established by the Interdepartmental Board for Cooperation of the Coast and Geodetic Survey with the Armed Services.
- (e) Services and facilities not specifically committed to one of the military departments above and not required for minimum civil needs, and any

conflicts among Defense Departmental requirements, will be coordinated by or through the Photographic and Survey Branch, J-2 (Intelligence) Directorate, Joint Staff, Joint Chiefs of Staff, Department of Defense.

5. The details of organizational and liaison relationship between the Department of Defense elements and Department of Commerce elements to best utilize the overall capabilities of the Coast and Geodetic Survey will be developed as rapidly as feasible in order that full utilization may be made upon implementation of the memorandum of understanding.

6. The terms of this understanding are subject to change as dictated by mobilization requirements upon agreement of the departments concerned.

7. This memorandum of understanding supersedes and rescinds the following memorandums between the U.S. Department of Commerce and :

- (a) Department of the Army, dated May 29, 1951.
- (b) Department of the Navy, dated May 17, 1951.
- (c) Department of the Air Force, dated October 3, 1951.

DONALD A. QUARLES,
Secretary of Defense, Acting.
LEWIS L. STRAUSS,
Secretary of Commerce.

FEBRUARY 24, 1959.

CHANGES IN EXISTING LAW

In compliance with subsection 4 of rule XXIX of the Standing Rules of the Senate, changes in existing law made by the bill are shown as follows (new matter is printed in italic; and existing law in which no change is proposed is shown in roman) :

"AN ACT To define the Functions and Duties of the Coast and Geodetic Survey, and for other Purposes (61 Stat. 787, ch. 504; 33 U.S.C. 883a et seq.)

"SEC. 1. Activities. * * *

"SEC. 2. Dissemination of data. * * *

"SEC. 3. Geomagnetic data. * * *

"SEC. 4. Developmental work. * * *

"SEC. 5. Cooperation with organizations. * * *

"SEC. 6. Contracts. * * *

"SEC. 7. Acceptance of gifts. * * *

"SEC. 8. Employment of Public Vessels. * * *

"SEC. 9. Appropriations. * * *

"SEC. 10. Repeals. * * *

"*Sec. 11. The Secretary of Commerce may conduct activities authorized by this Act without regard to the geographical limitations set forth herein in connection with projects designated as essential to the national interest by the head of an executive department or agency.*"

[S. 2483, 86th Cong., 1st sess.]

AN ACT To provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and for the Weather Bureau

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Act of July 22, 1947 (61 Stat. 400; 33 U.S.C. 873), is amended to read as follows:

"The Secretary of Commerce is hereby authorized to pay extra compensation to members of crews of vessels when assigned duties as instrument observer or recorder, and to employees of other Federal agencies while observing tides or currents, or tending seismographs or magnetographs, at such rates as may be specified from time to time by him.

SEC. 2. Section 3 of the Act of June 2, 1948 (62 Stat. 286, as amended; 15 U.S.C. 327), is hereby revised to read as follows:

"The Secretary of Commerce is hereby authorized to (a) appoint employees for the conduct of meteorological investigations in the Arctic region without regard to the civil service laws and fix their compensation without regard to the Classification Act of 1949, as amended (5 U.S.C. 1071 and the following) and titles II and III of the Federal Employees Pay Act of 1945, as amended (5 U.S.C.

911 and the following), at base rates not to exceed the maximum scheduled rate for GS-12, and (b) grant extra compensation to employees of other Government agencies for taking and transmitting meteorological observations."

Passed the Senate August 19 (legislative day, August 18), 1959.

Attest:

FELTON M. JOHNSTON, *Secretary*.

[S. Rept. No. 719, 86th Cong., 1st sess.]

PROVIDING FLEXIBILITY IN THE PERFORMANCE OF CERTAIN COAST AND GEODETIC SURVEY AND WEATHER BUREAU FUNCTIONS

The Committee on Interstate and Foreign Commerce, to whom was referred the bill (S. 2483) to provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and of the Weather Bureau, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

PURPOSE OF THE BILL

This bill would simplify administrative activities of the Coast and Geodetic Survey and the Weather Bureau, and provide flexibility in the legal provisions under which they carry out their respective functions.

Section 1 of the bill would authorize the Secretary of Commerce to fix certain rates of pay for extra compensation for members of crews of vessels when assigned to certain duties, instead of requiring, as at present, that the rates in question be incorporated in the annual appropriations. It also would correct certain obsolete language.

Section 2 would authorize that the rates in question be prescribed at base rates not to exceed the maximum scheduled rates for GS-12, and would reenact on a continuing basis the exemption from the classification laws, which was nullified by the Classification Act of 1949, and has been, since that time, reenacted in the annual appropriation act.

The legislation was requested by the Secretary of Commerce. There was no objection to enactment from any source.

THE GENERAL COUNSEL OF COMMERCE

Washington, D.C., August 3, 1959.

HON. WARREN G. MAGNUSON,

*Chairman, Committee on Interstate and Foreign Commerce,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Acting Secretary Mueller is today transmitting to the President of the Senate and the Speaker of the House draft legislation to provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and of the Weather Bureau.

For your information and convenient reference there is enclosed a copy of the draft legislation together with a statement of purpose and need therefor.

Sincerely yours,

F. BOURNE UPHAM III,
Deputy General Counsel.

"A BILL To provide flexibility in the performance of certain functions of the Coast and Geodetic Survey and of the Weather Bureau

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Act of July 22, 1947 (61 Stat. 400, 33 U.S.C. 873) is amended to read as follows:

"The Secretary of Commerce is hereby authorized to pay extra compensation to members of crews of vessels when assigned duties as instrument observer or recorder, and to employees of other Federal agencies while observing tides or currents, or tending seismographs or magnetographs, at such rates as may be specified from time to time by him."

"SEC. 2. Section 3 of the Act of June 2, 1948 (62 Stat. 286, as amended, 15 U.S.C. 327) is hereby revised to read as follows:

"The Secretary of Commerce is hereby authorized to (a) appoint employees for the conduct of meteorological investigations in the Arctic region without regard to the civil service laws and fix their compensation without regard to the Classification Act of 1949, as amended (5 U.S.C. 1071 et seq.) and titles

II and III of the Federal Employees Pay Act of 1945, as amended (5 U.S.C. 911 et seq.) at base rates not to exceed the maximum scheduled rate for GS-12, and (b) grant extra compensation to employees of other Government agencies for taking and transmitting meteorological observations.' "

"STATEMENT OF PURPOSE AND NEED

"The purpose of the bill is to make possible simplification of appropriation act language and to provide flexibility in the legal provisions under which the Coast and Geodetic Survey and the Weather Bureau, in the Department of Commerce, carry out certain functions relating to oceanographic observations, seismograph observations, magnetic observations, meteorological observations and meteorological investigations in the Arctic region.

"Section 2 of the act of July 22, 1947, 61 Stat. 400, 33 U.S.C. 873, authorized the Coast and Geodetic Survey to pay extra compensation to members of crews of vessels when assigned duties as bombers or fathometer readers, and to employees of other Federal agencies while observing tides or currents or tending seismographs, at such rates as may be specified from time to time in the appropriation concerned.

"During the intervening years, it has been necessary each year to incorporate in the appropriation for the Coast and Geodetic Survey language fixing the above-mentioned rates. This has resulted in an unnecessary and undesirable complication of the appropriation act language. In addition, the rate incorporated in the appropriation act language tends to become fixed and inadequate in the light of changing times and conditions. Necessary adjustments from time to time require the attention of the Congress, even though they are of negligible significance compared with the many important questions of public policy which urgently require the attention of the Congress.

"To remedy this difficulty and provide necessary flexibility, it is proposed in section 1 of the bill to authorize the Secretary of Commerce to fix the rates rather than to require them to be specified in appropriation acts.

"Section 1 of the bill would also correct certain obsolete language. In view of technological advances in the nature of the work concerned, the phrase in the present law 'assigned duties as bombers or fathometer readers' would be changed to 'assigned duties as instrument observer or recorder,' and 'tending seismographs' would be changed to 'tending seismographs or magnetographs.' "

"The Weather Bureau has a similar but somewhat more complex problem. Section 3 of the act of June 2, 1948, 62 Stat. 286, 15 U.S.C. 327, authorized the Weather Bureau to (a) grant extra compensation to employees of other Government agencies for taking and transmitting meteorological observations, and (b) appoint employees for the conduct of meteorological investigations in the Arctic region without regard to the civil service and classification laws and titles II and III of the Federal Employees Pay Act of 1945, both at base rates which shall not exceed such maximum rates as may be specified from time to time in the appropriation concerned.

"The foregoing language makes it necessary to specify the rates mentioned in the appropriation language each year. This unnecessarily complicates the appropriation language, fixes the rates in relatively rigid form, and makes it necessary to take up the time of the Congress in consideration of adjustments in such rates. In addition, the section as enacted in 1948 contained an exception from the classification laws. This exemption was nullified by the Classification Act of 1949, and it has been necessary to reenact it each year in the annual appropriation act.

"The additional complexity in the appropriation act resulting from the necessity of including these details is reflected by the fact that two-thirds of the appropriation act language is devoted to a proviso setting forth these details.

"Section 2 of the bill would authorize the Secretary of Commerce to prescribe the rates concerned, at base rates not to exceed the maximum scheduled rate for GS-12, and would reenact on a continuing basis the exemption from the classification laws which is now dependent on annual appropriation acts.

"Changes in the rates now specified in the appropriation acts are urgently needed. The Coast and Geodetic Survey reports that it is no longer practicable in numerous localities to obtain the services required for only \$1 a day, the rate now authorized by statute. An increase in the rate to \$5 a day is now

essential. The Weather Bureau reports it is no longer practicable in many localities to obtain the services required for only \$5 a day. An increase in the rate to \$8 a day is now required.

"Enactment of the bill would make it possible to simplify the appropriation act for the two appropriations concerned, provide much-needed flexibility in the periodic adjustment of the rates, and eliminate the necessity for asking the Congress to legislate on what are essentially minor details of administration."

CHANGES IN EXISTING LAW

In compliance with subsection 4 of rule XXIX of the Standing Rules of the Senate, changes in existing law made by the bill are shown as follows (existing law proposed to be omitted is enclosed in black brackets; new matter is printed in italic; and existing law in which no change is proposed is shown in roman):

(33 U.S.C. 873)

"**[**The Coast and Geodetic Survey is authorized to pay extra compensation to members of crews of vessels when assigned duties as bombers or fathometer readers, and to employees of other Federal agencies while observing tides or currents or tending seismographs, at such rates as may be specified from time to time in the appropriation concerned.**]**

"The Secretary of Commerce is hereby authorized to pay extra compensation to members of crews of vessels when assigned duties as instrument observer or recorder, and to employees of other Federal agencies while observing tides or currents, or tending seismographs or magnetographs, at such rates as may be specified from time to time by him."

(15 U.S.C. 327)

"**[**The Weather Bureau is authorized to (a) grant extra compensation to employees of other Government agencies for taking and transmitting meteorological observations, and (b) appoint employees for the conduct of meteorological investigations in the Arctic region without regard to the civil-service and classification laws and sections 911-913, 921 and 922 of Title 5, both at base rates which shall not exceed such maximum rates as may be specified from time to time in the appropriation concerned.**]**

"The Secretary of Commerce is hereby authorized to (a) appoint employees for the conduct of meteorological investigations in the Arctic region without regard to the civil service laws and fix their compensation without regard to the Classification Act of 1949, as amended (5 U.S.C. 1071 and the following), and titles II and III of the Federal Employees Pay Act of 1945, as amended (5 U.S.C. 911 and the following), at base rates not to exceed the maximum scheduled rate for GS-12, and (b) grant extra compensation to employees of other Government agencies for taking and transmitting meteorological observations."

Mr. MILLER. Both of these bills have identical counterparts in the House. The bills passed the Senate in the closing weeks of the session, but our committee did not have opportunity to act upon them last year.

In the case of S. 2482, however, we did order the bill reported, but withheld actual reporting when some questions arose concerning the intent of the legislation. I think it would be worthwhile if I were to read into the record a letter from Chairman Bonner to Dr. Harrison Brown, Chairman of the National Academy of Sciences Committee on Oceanography, in reply to a letter from him endorsing the proposed broadened jurisdiction for the Coast and Geodetic Survey.

I am going to ask the counsel of the committee to read that correspondence now.

Mr. DREWRY. The letter of December 23, 1959, from Chairman

Bonner to Dr. Harrison Brown, Chairman, Committee on Oceanography, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C., reads as follows:

DEAR DOCTOR: Receipt is acknowledged of your letter of November 27, relative to S. 2482, to remove geographical limitations on activities of the Coast and Geodetic Survey. I appreciate hearing from you on this important matter, and your offer of Committee on Oceanography representation in the event of hearings.

When I had the pleasure and privilege, together with members of our Special Subcommittee on Oceanography, to join with your group at Lubec, Maine, last summer, I recall that this subject was an item on your agenda. Following that meeting our subcommittee chairman, Representative George P. Miller, introduced a bill to accomplish that purpose. Subsequently, I introduced a similar measure, when the administration forwarded a draft bill to the Congress.

Circumstances in the closing weeks of the session denied us the opportunity to hold hearings on the legislation, although we did take action in the committee, ordering the bill reported, following the Senate action. Upon learning that the matter was not noncontroversial we withheld reporting the bill to the House, pending an opportunity to hold hearings on it in January when Congress reconvenes. I understand that committee counsel, Jack Drewry, explained the background of this situation to you when he and Congressman Oliver attended your committee meeting in Pasadena in October.

It is my intention to schedule a hearing on the legislation as soon as feasible after the beginning of the next session. I think it will be appropriate and desirable to receive testimony from someone on behalf of your committee. I will see that you receive adequate notice of the scheduling of the hearing.

With kindest regards and best wishes for a very happy Christmas and New Year.

Sincerely,

HERBERT C. BONNER, *Chairman.*

Mr. MILLER. For the convenience of the members I have had duplicated and distributed to each desk a copy of the pertinent provisions of law which will be affected by the bills under consideration today.

We have a number of important witnesses from the cognizant departments this morning, and we are privileged to have with us Dr. Roger Revelle, a member of the Committee on Oceanography of the National Academy of Sciences, and the distinguished director of Scripps Institution on Oceanography.

May I say that Dr. Revelle was a wonderful host when Mr. Pelly, Mr. Bauer, and I had an opportunity to visit with him this summer. He has come to Washington to attend an important committee meeting of the National Academy of Sciences Oceanography group. Accordingly, in view of his commitments and the great interest in this subject on the part of the NASCO Committee, I am going to ask that Dr. Revelle appear first.

STATEMENT OF DR. ROGER REVELLE, NATIONAL ACADEMY OF SCIENCES, NATIONAL RESEARCH COUNCIL, COMMITTEE ON OCEANOGRAPHY

DR. REVELLE. This is such an important subject, Mr. Chairman, that I am quite glad to spend all the time that is necessary that will be of use to the committee.

Mr. MILLER. May I just say this in passing. The Honorable John J. Allen, Jr., Under Secretary of Commerce for Transportation, was to appear this morning and I had a call from him just a few minutes ago that he was called to the White House on a transportation problem and could not be with us this morning.

I think that Admiral Karo will make his excuses.

Mr. Allen is going to Panama next week and I have told him that when he returns from Panama we shall be very happy to arrange a meeting at his convenience so that we can hear from him.

Thank you.

Dr. REVELLE. Mr. Chairman and members of the subcommittee, the subject of this bill is one with which I have been closely concerned almost all my adult life and I do not appear as an advocate for any particular point of view. I am concerned, I think, with the interest of the United States as the greatest maritime power and what I want to argue for is the continued effectiveness of both the Hydrographic Office of the Navy and the Coast Survey of the United States.

It is my personal belief and also the belief of the members of the Committee on Oceanography that Senate bill 2482 and its counterpart in the House, H.R. 8611, will in fact strengthen both agencies.

The Hydrographic Office, by its charter, has responsibility both for fostering the civilian maritime interest of the United States and also the interest of the Navy.

The pressure of the needs of defense has been so great in the postwar era that the Hydrographic Office has, of necessity, had to spend most of its manpower and effort in the support of defense needs.

In this work it has been assisted by the Coast Survey upon request of the Secretary of the Navy and the Hydrographic Office has provided funds to the Coast Survey for carrying out certain survey work.

This work has usually been of a rather crash nature; that is, it is something which always had to be done as quickly as possible, and this is only natural in view of the rapidly changing needs of defense.

In the case of the longer term interests of the country, however, systematic surveying on a broadly conceived and long range plan is a far more satisfactory way to make charts, to find out what the shape of the sea floor is like and what the magnetic and gravity topography underneath the sea floor is like, than short range highly concentrated efforts in which necessarily the overwhelming need is for doing things in a hurry.

Therefore, the work is often quite expensive and it is often directed to just one objective or a limited number of objectives, and it is difficult to do the overall broad long-range job which will serve many future purposes.

The Committee on Oceanography has advocated, and I think everyone is agreed in the Government, that we should expand our surveying effort to cover not only the shallow water coastal areas of the world but also the entire ocean.

We have called this an oceanwide, ocean deep survey effort and the necessity for this is basically a long range necessity. Part of the necessity comes from the needs of the fishing industry of the United States, the needs to expand our exploitation of the living resources of the sea and, for example, the discovery of sea mounts off the Mexican and Central American coasts many hundreds of miles from shore has actually led to an increase in the tuna catch. The tuna, and fish in general, tend to concentrate around high places in the sea floor even though they are quite deep.

Several sea mounts several hundred fathoms deep in the Central Eastern Pacific have been discovered in the last few years and tuna fishermen have gone to them and have actually caught a good deal of fish.

On one bank in particular within a few months a million dollars worth of tuna were caught from this newly discovered bank. This is simply an illustration of one of the potentials of surveying the area beyond the continental shelves of the United States and the other coastlines of the world.

The principal needs at the present moment for such deep sea surveying are certainly military. They are related to the navigation of submarines, to the ability of submarines to locate themselves by using land marks on the sea floor, and the use of various kinds of underwater devices in which the bottom topography is a serious matter. But basically, one can say this: that maps of the ocean floor, like maps of the land, are useful for military purposes. Just as an army on land needs to know the topography very well indeed, so the modern navy with its increasing dependence on submarines needs to know the topography of the sea floor very well indeed.

The making of maps has therefore always been an important military requirement.

Moreover, the Navy, because of its worldwide interest, has had a long tradition of sending out expeditions to faraway places and, as a case in point, one may cite the maps of most of the South Pacific islands which were made by either the British Admiralty or by the American Navy in the first decades of the 19th century, something over a hundred years ago.

If you want to go to the Taumotu Islands, for example, or even to many of the Society Islands, you buy from the Hydrographic Office a chart which was made by the U.S. Exploring Expedition in 1837. It is labeled "U.S. Ex. Ex." Particularly during the 19th century, the Navy was very much concerned with worldwide surveys and surveys remote from the shorelines of the world but with the increase of the Navy's responsibilities, it has become plainly evident that this charting work has attained a fairly low priority. Simply because the Navy has so many more things to do than it could possibly do, the charting has tended to take a low priority.

The Coast Survey, on the contrary, has as its primary mission and indeed its sole mission to find out about the earth, about the magnetic field of the earth, about the gravitational field of the earth which affects geodesy, the topography of the surface, and the shape of the whole earth.

Its appropriations for this purpose come directly from Congress and the magnitude of the U.S. surveying effort insofar as it is done by the Coast Survey can be judged directly by Congress and evaluated and approved or disapproved.

It therefore seems to me and to the Committee on Oceanography that no harm would be done and a great deal of good would be done if the abilities of the Coast Survey were enlarged to enable it to conduct its excellent surveys in waters which extend beyond the immediate territories of the United States.

One reason for this is, of course, the cagueness of definition of what the waters immediately outside the United States and its possessions are.

The Survey has, in general, interpreted this to mean waters on the Continental Shelf or the continental slope, and beyond the continental slope they have made surveys but these have been essentially incidental to their work on the shelf and the slope. They have not been part of their planned program. They have simply been incidental as, for example, their surveys in the Gulf of Alaska which were made when the ships went from Seattle to Alaska using the gulf. Each time they took as close survey lines as they could and were eventually able to provide a pretty good map of the Gulf of Alaska based upon these sounding lines of opportunity.

In my own opinion, the map would have been better if it had been done for its own sake rather than incidentally in passage. The navigational control would have been better.

The spacing of the lines would have been more carefully planned and the lines would have been laid out in such a way that the accuracy of different lines could be checked against each other.

The Coast Survey and the Navy at one time were one organization. The Survey ships were manned by naval officers with civilian engineers to do the actual survey work.

In the 1890's and early 1900's, the Congress was persuaded that this system was not a satisfactory one and since that time the Coast Survey ships have been manned by specially commissioned officers taken from civilian life, trained as civil engineers, so that the entire survey organization from Admiral Kero on down have spent their lives in the business of finding out about the earth, obtaining information about the shape of the earth, the topography of the surface, and, as I said, the other features of the earth which are of national interest, such as the magnetic field and the gravity field.

The survey ships of the Coast Survey, therefore, have officers and men who are career surveyors and who literally spend, for 20 years or more, every year at sea conducting surveys of the very highest quality.

In contrast, the Hydrographic Office is, of necessity, manned or is controlled and supervised by career officers who have many other experiences, who have spent a relatively small part of their time in the surveying business, and whose promotion and whose careers do not depend upon surveys but upon how good they are as leaders of men and as managers and as tacticians and as gunners and as experts in electronics and all of the manifold complexities of the Navy.

I have been in the Naval Reserve most of my life. I served in the Navy for 7 years. What I have often said is that the interests of the Navy and the interests of the country are identical, and one can say this in a variety of ways. One way to put it is that everything that is done in the United States is of interest and importance to the Navy. Everything that the Navy does is of interest and importance to the United States, but just because of these very broad interests, it seems desirable to me that the Navy should be able to call upon and should be able to depend upon, without really controlling, the efforts of other components of the Government, particularly in this very highly specialized field of surveying where a lifetime of experience is essential for adequate planning and control.

The oceans of the world, as you gentleman know very well by this time, cover a very large area. Nearly three-fourths of the surface of the earth is covered by sea water. About 10 percent of the ocean area consists of the continental shelves of the world and most of this Continental Shelf area has been surveyed with some degree of accuracy.

On the other hand, the other 90 percent of the ocean area, the deep sea has hardly been surveyed at all. There have been sounding lines run across it on a casual catch-as-catch-can basis primarily by Navy ships, and these are the basis of the Hydrographic Office compilations of the soundings in the deep sea.

Up until a year or so ago, at least, only about 2 percent of the deep-sea area had been surveyed with any accuracy at all comparable to any maps on land. Part of this 2 percent was the area off the west coast of the United States where the Coast Survey ship *Pioneer*, using Navy funds and under the direction of the Navy, made a survey of an area of about 100,000 square miles with sounding lines 5 miles apart. This is the closest grid we have anywhere in the deep sea.

I am sure that everyone concerned would say that the survey by the Coast and Geodetic Survey of this area off the west coast of North America was conducted with the very highest standards of accuracy and precision. It is a most satisfactory job.

The purpose of this bill is to enable the Coast Survey to do a job like this on the request of any head of a Government agency and provide that the funds are appropriated directly by Congress. This is a job which they have demonstrated that they are capable of doing, which they are eager to do, and which, in the opinion of both scientists and the fishing industry needs to be done.

I think that the basic thing that could be said is that in this field of surveys one never need fear the problem of duplication, nor the problem of coordination. The coordination can be done very easily and the duplication is virtually impossible because of the extremely large area of the oceans that needs to be surveyed. If you put every surveying agency of the United States on the job, it would still take a long time to do it.

The great thing about it is that, if the Coast Survey can be brought into the act, systematic surveys of high quality can be planned on a long-term basis, the ships and facilities can be built, and men can be recruited to do this job at a level with the accuracy and precision that is required.

I am quite confident that the Hydrographic Office could do the job provided that they had the support of the Congress for this specific function, but the Congress does not really have a chance to support a particular function of the Navy Department. The budget of the Navy is so large and it passes through so many hands before it reaches Congress that you have very little control of such a relatively small operation in the Navy as the Hydrographic Officer, whereas you have a very direct and easily carried out control of the activities of the Coast Survey.

I think that that is all I need to say by way of introduction, Mr. Chairman. Perhaps we can continue this conversation by questions.

Mr. MILLER. Doctor, are you not in effect telling us that all we are going to do is to bring the Coast and Geodetic Survey into the 20th century? At the time it was established sailing was used a great deal in the traffic of the ocean. Most all fishing boats were sailed under sail. In 60 years great changes have taken place and there have been technological advances, so that we do go far afield for fish for food. It is a completely new area, just as much as the break from the old wagon train in the early days of the development of the country has taken place and all we are trying to do is modernize; is that right?

Dr. REVELLE. Yes; it certainly is. The way I would put this, Mr. Chairman, is that at the present time with our present technology and our present needs, it is really completely impossible to divide the ocean up into arbitrary areas. The oceans of the world are indivisible. They are a unit, and to say that you have some kind of an artificial line between one part and another just does not coincide with our present needs or our present capabilities.

Mr. MILLER. I remember, too, that we have a Geological Survey that makes topographic maps of the United States. This sprang from the military. The work was once done by the Army.

Dr. REVELLE. The founder of the Survey was, of course, Major Powell, who had been in the surveying branch of the Army.

Mr. MILLER. Fremont entered the Army as a topographical engineer, not as a line officer. With the most modern methods of aerial survey today, we have not succeeded in completely mapping the land area of the United States, which is less than one-fiftieth of the area of the ocean.

Mr. Pelly?

Mr. PELLY. I would first like, Mr. Chairman, to join with you in the sentiment that you expressed earlier with regard to the hospitality when our subcommittee visited the Scripps Institution of Oceanography. I can say for myself that I found the information and other experiences there extremely helpful and I know it is going to make my work on this subcommittee more effective.

I am concerned, Dr. Revelle, about the adverse report of the Navy on this legislation. Reference is made in their comments as to the overlapping functions and duplication. I think all of us are constantly hearing criticism that there is duplication and waste in Government, and I am interested in your objective analysis that actually that would not exist; is that correct?

Dr. REVELLE. I have the letter from the Secretary of the Navy before me.

Mr. PELLY. I am referring to page 5 in the report on the legislation.

Dr. REVELLE. It says:

The proposed legislation is therefore opposed for the following reasons:

(a) It will result in duplication of responsibilities inasmuch as surveying, mapping and charting functions covering areas outside the United States and its possessions are assigned to the Department of Defense and are accomplished through the coordinated efforts of the Corps of Engineers, U.S. Army, the U.S. Navy Hydrographic Office, and the Air Photographic and Chartering Service, U.S. Air Force.

(b) Overlapping functions are never satisfactory as they often lead to duplication of effort, inefficiency of operations, and split responsibilities.

Mr. PELLY. The point of the Navy that I get is that actually the Coast and Geodetic Survey service is available to the Department of Defense in an emergency and that the best manner of efficiently getting

the results that are desired would be by allowing the Department of Defense to exercise its present authority to request and coordinate any surveys that might be made.

Dr. REVELLE. But you see, Mr. Pelly, this rests on what seems to me to be an inadequate premise and that is that the only reason for making surveys is a military reason outside the continental limits of the United States, and this I do not think is the case. There are also scientific and commercial reasons for making such surveys.

Mr. PELLY. I think that is an extremely important point, and one that I wanted to see written into the record because I think that when the Department of Defense is pointed up, as it is in this report, as providing "more efficient logistic support and facilities," they are thinking in terms of military values and not of other scientific values that are very desirable.

Dr. REVELLE. I do not mean to imply by this that the Navy has not supported and will not continue to support scientific research on a very liberal and generous scale, but the Department of Defense, in its survey functions as opposed to its support of science, inevitably has to put first things first in accordance with their mission and their mission is obviously the security of the United States; so that, the survey operations planned and directed by the Department of Defense, regardless of whether they are carried out by Defense Department vessels or by the Coast Survey vessels, have in general quite a narrow objective related to the security of the United States.

Mr. PELLY. Has it not been our experience in the last few years that the various agencies and services of Government are coordinating their efforts and avoiding the duplication and waste? Was that your observation?

Dr. REVELLE. There is no question about that, Mr. Pelly, and, in fact, the New Federal Council of Science and Technology has made an experiment in trying to go a good deal further in this than has ever been done before, and they have made the experiment in the field of oceanography simply because there was a ready-made case here where several departments of the Government had different interests and different activities and the problem was to fit these into one unified, coordinated, nonduplicating, and effective package.

I was talking to Mr. Kistiakowsky on Saturday, the President's scientific adviser, and his comment was that in the oceanography effort this was what they have been able to do. It is an achievement by them. It is a small field compared with the development of atomic energy or space research, but it is an important field and one in which there have been vested interests of different Government agencies for a long time. They think they have effected, and I am sure they are right, a very satisfactory degree of coordination. I myself am not worried at all about the problem of duplication, both because of this deliberate attempt at coordination within the Federal Council on Science and Technology and more particularly, however, because of the fact that if every surveying ship available to the United States were multiplied by three or four they could all be profitably occupied for many years to come in surveying the oceans.

Mr. PELLY. And the Navy will have a very large voice in the selection of any area outside present limitations because their priority

will be a very high one as far as the Coast and Geodetic Survey is concerned.

DR. REVELLE. I am sure this is the case, but I would like to point out again what I said in my previous statement that what really needs to be done is to have a long-range plan and a long-range plan is the easiest kind of plan to coordinate. It is by far the most economical and it is by far the most effective in doing the overall job that needs to be done.

You have to really think not only of the needs of defense this year and next year but the defense needs that we will have 10 or 15 years from now.

This is the kind of a surveying job which the Coast Survey is particularly adept at doing, jobs which are good not just for the immediate needs but for the continuing needs of the country.

MR. PELLY. Thank you.

MR. DINGELL (presiding). Mr. Oliver?

DR. OLIVER. Mr. Chairman, I have not too many questions to ask Dr. Revelle. I would like to say, however, that, associating myself with the remarks which have been made by Congressman Miller and Congressman Pelly, it has been not only a real pleasure but a privilege to have been on this committee for these past several months primarily because of the information which it has been possible to have absorbed during this time which is due in no large part, may I say, to such dedicated people as yourself, Doctor, and those others on the committee of scientists who have not only made this the most pleasant mission I have had on this committee but also the sessions made possible because of membership have been most satisfying indeed.

I feel that the subject matter of this hearing is of tremendous importance. I realize that the point about overlapping jurisdiction and activities, and so forth, is a rather potent one so far as many people in our country are concerned and also in our Government.

I would like to ask you this question in that connection, Dr. Revelle. If the civilian purpose, which you have referred to, to result from a continuity of surveying the ocean bottom is to be carried out on a systematic and continuing basis, then it obviously requires people who are specializing perhaps as a career in this type of work. Is that your feeling?

DR. REVELLE. That is very strongly my feeling; yes.

MR. OLIVER. On the other hand, if naval commissioned personnel are doing this work through the Hydrographic Office of the Navy, does it not follow, then, that the general efficiency and general ability of naval personnel assigned to this duty is apt to be diluted by reason of the fact that they would have to stay on this particular assignment for a longer period of years than they ordinarily would in the rotating system that is now carried out so far as naval commissioned personnel, of course?

DR. REVELLE. You understand, of course, sir, and I am sure Captain Munson would explain to you, that there are people in the Navy who are hydrographic specialists and spend their careers on naval ships; but I was saying that the bosses, the men who run the show and plan the programs, are officers who necessarily have a wide variety of jobs and a wide variety of responsibilities and interests, whereas

the Coast and Geodetic Survey organization all the way from the bottom to the top consists of people who have spent their lives in this one specialty.

While I am on this particular subject, let me carry this problem one step further. It has been suggested that one could do a lot by having ordinary merchant marine ships make these surveys or in the long run that somehow by compiling the data from merchant marine vessels you could produce adequate charts.

My own opinion is that our experience shows that this just cannot be done. There are several reasons for this. One of the reasons for it is an interesting fact of geometry.

Merchant ships always take the Great Circle routes from one port to the other or the shortest distance from one port to the other. They, therefore, make many sounding lines which are parallel to each other on routes which are pretty much great circles between ports, and this leads to a curious type of topography. The contour of the soundings made by the merchant ships leads to topography which we call Great Circle topography. It has nothing to do with what the earth is like. The soundings made by the merchant ships are not very well located, the sounding machines are not in very good shape, and the result is that two soundings a mile or so apart may apparently differ by 600 feet or so in depth so that, if you are drawing 100-foot contours, you would draw six contours between those two lines, whereas if you surveyed a line at right angles, you would find that you were going over a flat plane where the depth difference is not more than a few feet.

So you get these lines which are comparable to great circles and this has nothing to do with what the ocean is actually like. The ocean does not pay attention to any arbitrary lines let alone such arbitrary lines as great circles and distances between ports.

Mr. OLIVER. Having had a couple of months of "boot" training with the U.S. Coast Guard in World War II, Doctor, I have a vague recollection of what you are now discussing. But I appreciate that there is a problem involved.

Dr. REVELLE. It is really very simple. The thing is that any job that is worth doing requires a professional. You cannot do a good job as a kind of a supplement or hobby on the side of what your main mission is. The job of merchant ships is to carry goods from one place to the other just as fast as they can and to turn around and come back just as soon as they can.

The job of the Navy is to defend the country. The job of the Coast Survey is to make charts and maps.

All three of these jobs are done very well by the professionals, but when a pro tries to do somebody else's job, he turns out to be an amateur.

Mr. OLIVER. I have one other question, Doctor. I do not know whether you would care to comment on it or not, but do you know whether there has been a free interchange of data between the Navy and the Coast and Geodetic Survey insofar as surveying material is concerned?

Dr. REVELLE. Are you talking about equipment now or actual soundings?

Mr. OLIVER. I mean, has there been an interchange of information and data that have been compiled as a result of surveying?

Dr. REVELLE. I do not really know about this, Congressman Oliver. As you know, until recently many soundings have been classified and I am not sure whether the Navy has given the soundings to the Coast Survey or not.

Mr. OLIVER. What I am trying to get at is, if the fishermen in the New England area, for example, wanted the data with reference to the banks or some other area up in the waters of that geographical area, any Navy data would be available for civilian purposes?

Dr. REVELLE. I am sure it would be available as long as it is not classified.

Mr. OLIVER. That is all I have, Mr. Chairman. Thank you.

Mr. MILLER (presiding). Mr. Curtin?

Mr. CURTIN. Doctor, is it at all possible for you to estimate the increased cost of this expanded program? What would be the extra cost annually to the Government?

Dr. REVELLE. Of the Coast Survey?

Mr. CURTIN. If this bill were enacted which would provide for the increased activities of the Coast and Geodetic Survey, would you tell me exactly what it would cost the Government?

Dr. REVELLE. It depends on what Congress wants the Coast Survey to do.

Mr. CURTIN. Is it possible to give an estimate of the cost of this bill?

Dr. REVELLE. The best way to put it is that if the Survey carried out the recommendations made by the National Research Council Committee on Oceanography, I can give you the figures. Of course, that depends on whether the Congress thinks this is worth doing. We recommended that the Coast Survey should build 10 new survey ships within the next 10 years, we estimate that this would cost about \$36 million over the next 10 years; and that the operating costs would be \$14 million over the next 10 years.

Mr. CURTIN. Would that operating cost increase as they got more ships?

Dr. REVELLE. Yes; that is right. By 1970 costs above the present level of expenditures in our recommendation would be \$2.3 million for ship operators; capital costs for shore facilities for the increased activity during the next 10 years would be about \$4 million; and the operating costs of the shore facilities during the next 10 years would total about \$24 million above the present level of expenditures. It comes out to about \$3,800,000 a year and capital costs, costs for building ships and shore facilities, \$5 million a year, so that the total cost to the Government, if the entire program recommended by the Academy for the Coast Survey were carried out would be about \$8 million a year.

I think the Coast Survey does not plan such an extensive program.

Mr. CURTIN. But that would be your recommendation?

Dr. REVELLE. What we recommended would be the total that should be done by the Coast Survey.

We recommended a similar expenditure by the Navy.

Mr. CURTIN. Thank you.

That is all, Mr. Chairman.

Mr. MILLER. Mr. Dingell?

Mr. DINGELL. I have no questions, Mr. Chairman. Thank you.

Mr. MILLER. Mr. Counsel?

Mr. DREWRY. Dr. Revelle, let me see if I understand your position entirely. The position of your Committee is that this additional authority will more effectively allow the Coast Survey to participate on an overall long-range planned program; is that correct?

Dr. REVELLE. That is correct. Yes, sir.

Mr. DREWRY. At the present time, the Coast Survey, acting under statutory authority, is statutorily limited as to its field of operations?

Dr. REVELLE. It is not quite certain that it is but the Coast Survey interprets it that way.

Mr. DREWRY. Although it is interpreted that way, never the less they have worked on a cooperative arrangement with the Department of Defense?

Dr. REVELLE. What they have done is this: They have made their ships and men available to the Department of Defense provided the Department of Defense put up the money and in accordance with very close direction by the Department of Defense.

Mr. DREWRY. So, still thinking of the Coast Survey's relationship to the Department of Defense, this would allow the Coast Survey and the Hydrographic Office together to say, "Here is a project that we can both work on. I will go to my appropriations subcommittee for money and you go to yours," rather than to have it all come out of Navy and then be on a reimbursable basis; is that correct?

Dr. REVELLE. That is correct. I am not sure that I quite understand what this means in terms of budgeting, but I think that what it means is that the Coast Survey budget would be based on the planned survey program and come before you gentlemen for authorization and before the appropriate subcommittee for appropriations whereas, in the case of the Navy, most of these things are decided internally within the Navy simply because it is such a small part of the overall Navy budget.

Mr. DREWRY. Now, Mr. Pelly brought up a point which is a very important point in our holding these hearings. In this bill, in its particular language, it says that the Coast Survey may conduct activities without regard to geographical limitations set forth in the existing Coast and Geodetic Survey authority in connection with projects designated as essential to the national interest by the head of an executive department or agency.

Is there not a possibility that within that language the thing that I believe you are interested in could be frustrated by, let us say, the Department of Agriculture wanting to have them perform functions relating to some new concept of planktonic food or something of that sort, while the Geological Survey is saying that it is essential in the national interest to do certain work to find out about the mineral distributions, the Navy is saying, "We want you to help us locate sea mounts in connection with ASW, or something." Is there not danger in this rather simple language if the head of any executive department or agency is empowered to proceed without coordination? There is certainly no coordination provided for in this language.

Dr. REVELLE. This is not the way I read this. You may very well be right, but the way it is stated, I would regard it as permissive:

The Secretary of Commerce may conduct activities authorized by this Act in connection with projects designated as essential to the national interest by the head of an executive department or agency.

In other words, the Coast Survey will have to fit whatever projects are decided as essential by any executive head of a department or agency into its overall plan.

Mr. DREWRY. But the decision is in the Secretary of Commerce and even though the request may ask the Department of Commerce to go into a field which has heretofore been in the hands of the Department of Defense, the Secretary of Commerce may, for instance, say, "I would be delighted to ask the Coast Survey to do this deep ocean job for you," and let us say it does relate to planktonic studies or something and then out comes the data and it is published far and wide and the Department of Defense has not had their views requested on it and there has been a disclosure of information that may be had best not be so widely disseminated from a defense standpoint.

Dr. REVELLE. Are you not changing the subject here? Maybe I do not understand this.

Mr. DREWRY. I say that decision for the Coast and Geodetic Survey to depart from its present jurisdictional field is in the Secretary of Commerce. It is his sole decision. Are there not some possible dangers in that the Secretary of Commerce, a civilian, in making such a decision, might run afoul of or result in the disclosure of information that it would best remain classified at the time?

Dr. REVELLE. I am sorry that I do not really understand this because this is true of all scientific activities by any department of the Government.

Are you saying that the National Science Foundation, for example, or the Bureau of Standards or the present work of the Coast Survey on magnetism and gravity, that this should not be done except by the Department of Defense because of the danger of disclosure of information which should be classified?

Mr. DREWRY. No; I am not saying that. As a matter of fact, my questions are questions that have been put to me as objections to this bill, and I wanted to get your views on them.

Dr. REVELLE. I would think the same objection would apply to any research conducted by any department of the Government or supported by any department of the Government, and this is a separate matter.

Mr. DREWRY. Or any private institution.

Dr. REVELLE. Or any private institution. This is a separate problem, the problem of security, quite apart from the problem of doing the work. I must say that I have never really quite understood how this problem is handled in the Government. For example, suppose a discovery is made by the University of California, not at the Radiation Laboratory but at some other laboratory of the university dealing with nuclear physics. In that case, I think it is rather clear that the Atomic Energy Commission does have the authority to classify it, but this is the only field that I am aware of where such explicit authority exists and, obviously, this is something which perhaps should be clarified.

It seems to me it is beyond the scope of the present bill, however. It is a general problem with all research carried out and supported by the Government.

Mr. DREWRY. Would it be well, if not in the statutory language, at least in the report, to emphasize that the objective is to make possible a coordinated long-range effort?

Dr. REVELLE. I think so; yes; absolutely.

Mr. DREWRY. We have had this discussion of duplication. Duplication of capability is different from duplication of performance and, as I understand the purpose of this bill, it is to take maximum advantage of the existence of parallel or duplicate capabilities.

Dr. REVELLE. It seems to me that this is a very good point, Mr. Drewry, that we want to be sure that the Coast Survey can do the things that need to be done and what it actually does do depends upon the Federal Council of Science and Technology and upon the Congress.

Mr. DREWRY. In fact, is not the essence of the Academy Committee's approach that there be ways and means found of using duplicate capability to its maximum extent?

Dr. REVELLE. To its maximum advantage.

Mr. DREWRY. As contrasted with the present separate boxes of activity?

Dr. REVELLE. Just exactly.

Mr. DREWRY. In other words, we would say that the passage of this bill would not in any way change the actual relationships. It would simply make it possible for the Coast Survey to do the things that it is best at doing.

You have mentioned the possibilities of other functions than the military functions of surveys. Has there been interest coming from within the Government or without that broader surveying activities take place from a fisheries' standpoint?

Dr. REVELLE. Oh, yes; very much so. For example, the Fish and Wildlife Service is right now supporting the Scripps Institution in a program of compiling and plotting and charting all of the high places on the sea floor in what we call tuna land, that is the area of the ocean where our tuna fishermen operate.

Mr. DREWRY. That is the Fish and Wildlife Service?

Dr. REVELLE. Yes.

Mr. DREWRY. The Department of the Interior report on this bill has no comment other than it has no objection to its enactment.

That is all I have, Mr. Chairman.

Mr. MILLER. Mr. Bauer, do you have a question?

Mr. BAUER. I have just one question that I would like to ask Dr. Revelle.

You mentioned that the Federal Council has a coordination plan with respect to oceanography.

Is that a published document; do you know? It has not been presented to this committee.

Dr. REVELLE. No, sir; it has not been presented to this committee, nor has it been published. It is something which has been done during the last few weeks.

Mr. BAUER. Is it the intention of the executive department, do you know, to advise the Congress of this plan?

Dr. REVELLE. I am sure it is.

Mr. BAUER. Thank you. That is all I have.

Mr. MILLER. Thank you very much, Doctor. We appreciate your being here.

Dr. REVELLE. I have a feeling that, as usual, I have talked too much, but I am very grateful for the opportunity to have been here.

Mr. MILLER. We look upon you as one of the foremost advocates in this field and are very happy to have the benefit of your long experience in the field.

I have for the record, a letter addressed to me from Mr. Miles D. Kennedy, Director of the American Legion Legislative Commission, including Resolution 640, adopted at the 1959 National Convention of the American Legion, endorsing oceanographic research and the work of the Committee of the National Academy.

Without objection, we will make it part of the record.

(The documents follow:)

THE AMERICAN LEGION,
LEGISLATIVE COMMISSION,
Washington, D.C., January 22, 1960.

HON. GEORGE P. MILLER,

Chairman, Special Subcommittee on Oceanography, House Merchant Marine and Fisheries Committee, Old House Office Building, Washington, D.C.

DEAR CONGRESSMAN MILLER: Referring to the hearings scheduled to be held today by the Special Subcommittee on Oceanography, I enclose a copy of Resolution No. 640 adopted at the 1959 National Convention of the American Legion, having to do with oceanographic research.

While we are not asking for the privilege of the personal appearance of a representative before your subcommittee, may I respectfully request that the enclosed resolution be given consideration by the subcommittee, and incorporated in the record of the hearings.

Thanking you for your courtesy and consideration, I am

Sincerely yours,

MILES D. KENNEDY, *Director.*

1959 NATIONAL CONVENTION OF THE AMERICAN LEGION HELD IN MINNEAPOLIS,
MINN., AUGUST 24-27, 1959

Resolution No. 640.

Committee: National security commission.

Subject: Oceanographic research.

Whereas the knowledge of the scientific phenomena related to the world's oceans at present is extremely meager compared to their paramount importance; and

Whereas the world's oceans cover three-fourths of the earth's surface and are daily increasing in importance to the destiny of the free world; and

Whereas increased utilization of marine resources provide a promising food potential in the face of the explosive increases of the world's population; and

Whereas the world's oceans provide a future source of atomic fuel, mineral resources, and fresh water supply; and

Whereas there is an increased mutual interdependence of the nations of the free world for nonindigenous strategic materials in view of expanding technological applications; and

Whereas the United States and the free world depend for sea lift of 99 percent of all materials exported; and

Whereas the United States depends largely upon utilization of the world's oceans by its naval forces for its capability to cope with limited war and international crises all over the world; and

Whereas the threat of enemy submarine launched missile attack against the United States is now a reality; and

Whereas there is an urgent need to provide a comprehensive, long-range program for oceanographic research embodying an accelerated increase in oceanographic research and survey ships, laboratories, schools, and scientific personnel: Now, therefore, be it

Resolved, That the American Legion National Convention assembled in Minneapolis, Minn., August 24-27, 1959, endorses the overall 10-year plan for oceanographic research as outlined on the report of the Committee of Oceanography of the National Academy of Sciences and the U.S. Navy.

Mr. MILLER. Rear Adm. H. Arnold Karo, Director, Coast and Geodetic Survey.

STATEMENT OF REAR ADM. H. ARNOLD KARO, DIRECTOR, COAST AND GEODETIC SURVEY

Admiral KARO. Mr. Chairman, you mentioned at the opening of your meeting there the inability of Under Secretary Allen to appear. He has also asked me to express his regrets because until 9 o'clock this morning he had intended to appear when he got this hurry-up call for this meeting over at the White House. He wanted me to express his greetings to this committee and asked me to read the statement that he prepared which I will do.

Mr. MILLER. Thank you. You may proceed.

STATEMENT OF HON. JOHN J. ALLEN, JR., UNDER SECRETARY OF COMMERCE FOR TRANSPORTATION, AS READ BY REAR ADM. H. ARNOLD KARO

Admiral KARO. Mr. Chairman, members of the subcommittee, I welcome this opportunity to appear before you to support enactment of H.R. 8611 and H.R. 8612. The counterparts of these bills, S. 2482 and S. 2483, were passed by the Senate without a dissenting vote on August 19, 1959.

H.R. 8611 would amend the basic statute under which the Coast and Geodetic Survey operates to provide that the activities which the Survey is authorized to perform may be conducted—

without regard to the geographical limitations set forth herein in connection with projects designated as essential in the national interest by the head of an executive department or agency.

The purpose of H.R. 8611 is to remove any possible doubt as to the availability of all the scientific resources of the Coast Survey wherever they may be required in the national interest. During the more than 100 years of its existence before 1947, the Coast and Geodetic Survey compiled a notable history of scientific achievement and service to the Nation pursuant to authority provided by a series of unrelated statutory grants. In 1947, Congress enacted the comprehensive statute under which the Coast Survey presently conducts its various activities.

Section 1 of this act authorizes the Coast Survey to conduct the following activities, "in the United States, its territories and possessions": hydrographic and topographic surveys of coastal waters and land areas, including surveys of offlying islands, banks, shoals, and other offshore areas; hydrographic and topographic surveys of lakes, rivers, reservoirs, and other inland waters not otherwise provided for by statute; tide and current observations; geodetic control surveys; field surveys for aeronautical charts; and geomagnetic, seismological, gravity, and related geophysical measurements and investigations, and observations for the determination of variation in latitude and longitude.

In addition to other sections of the act which authorize us to perform such other functions as the compilation and publication of aeronautical and nautical charts, analysis, and prediction of tide and current data, collection of geomagnetic data, section 4 provides:

To improve the efficiency of the Coast and Geodetic Survey and to increase engineering and scientific knowledge, the Director is authorized to conduct developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences (including geodesy, oceanography, seismology, and equipments).

There is no geographical limitation stated in section 4, nor is it indicated in the committee report on the bill that such limitation was intended in connection with the activities authorized by that section.

In any event, some uncertainty has arisen in connection with the full availability, as a matter of law, of the scientific resources of the Coast Survey to participate in the realization of our national goals. The Senate Committee on Interstate and Foreign Commerce, in its report recommending enactment of this legislation, summed up the purpose and need for this bill saying:

This bill is designed to remove present uncertainty as to the extent of possible offshore activities by the Coast and Geodetic Survey by adding a new section 11 to the act of August 6, 1947 * * * to provide that the Secretary of Commerce may conduct activities authorized by the act without regard to the geographical limitations set forth therein, in connection with projects designated as essential to the national interest by the head of an executive department or agency.

The intensive development of research programs in many fields of scientific endeavor in connection with military activities, particularly with regard to the exploration of outer space; and the pressing need for expanded knowledge of the ocean's depths for submarine operation and defense as well as for possible new sources of food and mineral resources, have laid greatly increased demands upon the Coast and Geodetic Survey which are certain to multiply as the years go by.

In scientific fields that have taken on new and vital significance, such as oceanography, geodesy, seismology, magnetism, and the like, the scientific competence and experience of the Survey personnel must be utilized to the fullest in the interest of survival. That this may be made possible is the primary purpose of this bill.

It is not the purpose of this bill to have the Coast Survey assume any function which Congress has assigned to any other agency. It is the purpose of this bill to assure that the Coast Survey's experienced and trained scientific personnel will be able to contribute all that the national interest may require in our search for new knowledge in the areas in which the Coast Survey has developed competence. This subcommittee has already, in its hearings last year, had outlined for it the tremendous tasks which our national interest requires be undertaken in oceanography, geodesy, geomagnetism, and related fields. Our national interest demands that we assure the full availability of every scientific resource we have to meet the challenges of our time. It is for this reason that we urge the prompt favorable consideration of this bill.

I have been authorized to state that the Bureau of the Budget has authorized us to state that they favor this bill.

H.R. 8612 affects both the Weather Bureau and the Coast and Geodetic Survey. Its purpose is to simplify administrative activities of the two agencies.

Section 1 of the bill would authorize the Secretary of Commerce to fix certain rates of pay for extra compensation for members of crews of vessels when assigned to certain duties and to employees of other agencies when performing certain duties for the Coast and Geodetic Survey. At present the rates in question have to be incorporated in the annual appropriations. It also would correct certain obsolete language.

Section 2 would authorize the appointment of employees to conduct meteorological investigations in the Arctic region without regard to civil-service laws at base rates not to exceed the maximum scheduled rates for GS-12. It also authorizes the granting of extra compensation to employees of other agencies for taking and transmitting meteorological observations.

A detailed explanation of H.R. 8612 was submitted when we transmitted the proposal to Congress. There have been no objections raised to its enactment. I will not take the time of the subcommittee to repeat what has already been included in our written presentation. Enactment of this bill would be a valuable aid to efficient administration in areas involved.

Mr. MILLER. I want to congratulate Secretary Allen, and congratulate you, for the presentation.

I have no particular questions.

Mr. Pelly?

Mr. PELLY. The reference was made earlier by Dr. Revelle to 10 new survey ships which are recommended by the Committee on Oceanography. In this year's budget request from the President, I understand there was a recommendation in the amount of \$6,900,000 for three new survey vessels. Am I correct that those are just replacements of existing vessels?

Admiral KARO. They have nothing to do with this program, Mr. Pelly. They are replacement of existing ships which are obsolete or for some which we have had to dispose of because we could not keep them in operable condition any longer.

Mr. PELLY. These are just modern up-to-date serviceable vessels and would tie in with any expanded work which the service is called upon to carry out, whether it is inside present limitations or not. They are very good, new, modern vessels?

Admiral KARO. That is right. As I said, they are class 3 vessels which are the smallest type and would normally be devoted to inland-water surveys like in Alaska or some of the sounds along the east coast. They are not part of this expanded oceanographic program. They are needed to carry on our present statutory responsibilities under either concept.

Mr. PELLY. Thank you.

Mr. MILLER. Mr. Dingell?

Mr. DINGELL. Thank you, Mr. Chairman.

I was very much impressed by your statement.

There is one thing that I see too often around here and that is statements without regard to the civil-service law and I assume that when

we make exception to the basic civil service law that there is a good reason.

On page 2 of S. 2483, I see here :

conduct of meteorological investigations in the Arctic region without regard to the civil-service laws and fix their compensation without regard to the Classification Act of 1949, * * * at base rates not to exceed the maximum scheduled rate for GS-12—

How many people did you intend to have in these categories? Why should we make this exempt from the civil-service laws?

Admiral KARO. Mr. Congressman, that concerns the Weather Bureau and not the Coast and Geodetic Survey.

Mr. Grubb, from the Weather Bureau, is here and, with your permission, I will ask him to answer that.

STATEMENT OF R. C. GRUBB, ASSISTANT CHIEF, WEATHER BUREAU, FOR ADMINISTRATION

Mr. GRUBB. My name is R. C. Grubb. I am Assistant Chief of the Weather Bureau for Administration.

Shortly after World War II, the Weather Bureau, in cooperation with the Meteorological Department of Canada, established five weather stations in the north regions of the Arctic near the Arctic Circle. These five stations are operated on a cooperative basis between Canada and the United States. The duties of our employees at these Arctic stations include not only the taking of meteorological observations but the transmission of the observations. In other words, they are communicators. Some of them act as cooks; some of them act as mechanics; some of them act as laborers; so that it is impossible from a strictly civil service classification point of view to write appropriate job descriptions for the work that these employees would do or are doing.

As a result, shortly after World War II, a public law was enacted, an act of June 2, 1948 (45 U.S.C. 327), which authorizes payment of employees in the Arctic regions at rates outside of the Classification Act, and in the Appropriations Act each year is tabbed a dollar limitation which may be paid these employees.

To answer your specific question regarding the number of employees involved, we have about 5 employees at each of the 5 stations for a total of 25. What is being proposed in section 2 of H.R. 8612 is, rather than naming a maximum dollar amount, to tie the pay rate to an established GS grade so that it will not be necessary for the Bureau to submit to the Congress a request for change in the appropriations language in the Weather Bureau's Appropriations Act when classified rates change.

Mr. DINGELL. Why should we not see to it that the Appropriations Committee has an opportunity to scrutinize these each year? Is there any cogent reason for that?

Mr. GRUBB. No; except that for the type of work being done by these employees in the Arctic, it is generally recognized by the Civil Service Commission that the rates that are being paid there are reasonable and realistic in accordance with the established Government pay scale.

What section 2 proposes is to authorize a maximum figure not to exceed the top of the GS-12 grade.

Mr. DINGELL. Would it not be just as well to let it go on and be handled through the Appropriations Committee with the fixing of the rates being done by the Appropriations Committee each year?

Mr. GRUBB. The rates, Mr. Dingell, are not fixed by the Appropriations Committee. They fix a maximum figure and the Bureau, within this maximum limitation, establishes the pay rates. At the present time, the actual pay which we are giving these employees as base rates up there is somewhat below the base rates authorized in the Appropriations Act.

Mr. DINGELL. Thank you very much.

Thank you, Mr. Chairman.

Mr. MILLER. Mr. Curtin.

Mr. CURTIN. I would like to ask the gentleman just one more question.

We read in the paper in the last week or two about a station that had to be removed because the ice broke up under the personnel. Was that one of your stations?

Mr. GRUBB. That was a station we were operating, I believe, in cooperation with the National Science Foundation.

The ice floe broke up. We were taking observations up there somewhat comparable to the observations being taken at the five stations to which I referred.

Mr. CURTIN. That is all.

Mr. MILLER. Mr. Oliver?

Mr. OLIVER. Mr. Chairman, I want to say that I have enjoyed the statement of the Under Secretary of Commerce, Mr. Allen, and of the admiral here in this regard. I think it is a very forceful statement, a brief one, right to the point.

I would like to pay tribute also to the persuasive powers of somebody, either the Secretary or Under Secretary or yourself, to get the Bureau of the Budget to take an affirmative position in support of this bill in view of the fact that this probably will call for expanded appropriations; will it not?

Admiral KARO. Yes, sir; and I think earlier some of the questions were about the lack of controlled appropriations. I think that indicates that the Bureau of the Budget feels that Congress, through the executive branches, will have complete control of any appropriations that will be made under this effort.

I would like also, if I may, to say something about this question of duplication that has been mentioned here by some of the other witnesses.

We cannot see why the enactment of the proposed legislation would result in any more duplication of responsibility than already exists.

Section 7392 of title 10, United States Code, states that the Secretary of the Navy under regulations as he prescribes may, (1) have the Hydrographic Office prepare maps, charts, and nautical books required in navigation and have such materials published and furnished to navigators.

Section 246 of the act of August 6, 1947, authorizes the Coast and Geodetic Survey to "compile, print and distribute charts of the United States and its possessions."

This is a duplication of authorization rather than responsibility insofar as the coastal United States and territories are concerned.

We have also always had close coordination to see that there is no duplication of effort.

I fail to see why, with the committees that will be set up to administer the oceanographic phase of this bill, there will be any duplication.

After all, the oceans of the world are so big, as pointed out by Dr. Revelle, that there is plenty of room that we can all operate and, as long as we know where the other man is operating, there will be no duplication of effort and this coordinating committee will see to that.

Mr. OLIVER. Thank you very much, Admiral.

I have nothing further, Mr. Chairman.

Mr. MILLER. Mr. Counsel?

Mr. DREWRY. Admiral Karo, you mentioned that there would not be any duplication. Have you had difficulties in the past stemming from the concept that your capabilities were not specifically authorized to go beyond the coastal waters? For instance, with the capability that the Coast Survey has, undoubtedly you have been called on in connection with Arctic programs and other things.

Have you encountered any difficulty in making yourself available to those projects?

Admiral KARO. Well, we have particularly in the Antarctic. We have been asked to take on certain phases of that. We turned it down. We have had refusal on some other areas, not oceanography, when we wanted to go afield and the Budget Bureau has not approved it because of this gray area.

It is a matter of removing doubt as to where we can operate in the national interest in case it is required.

Also, I might mention here, that I believe some mention was made in the report on the other committee about an understanding between the Coast Survey and the Defense Department which would allow Defense to use this as necessary, but I also would like to quote that this memorandum agreement says, "Within the limitations of the Coast and Geodetic Survey Enabling Act of 1947," which, if you take the narrow interpretation, would not allow us to do the work required in the national interest.

Mr. DREWRY. So that, aside from the questions of whether this will bring about any duplication, it actually will bring about increased efficiency in your operations.

Admiral KARO. That is our expectation, yes, sir.

Mr. DREWRY. And avoid steps and arrangements that otherwise would be time consuming that you would have to go through?

Admiral KARO. That is correct.

Mr. DREWRY. I have just one more question.

In the other bill, the one concerning the crews of vessels, those are the crews of what vessels?

Admiral KARO. Our ships.

Mr. DREWRY. It applies only to your ships?

Admiral KARO. That is correct, sir.

Mr. DREWRY. Would it apply in case of survey work which might be done on an incidental basis by other ships? Is that contemplated?

Admiral KARO. No, this is strictly our own authorization where each year we have to include in our appropriation language authority to pay, shall we say, the recorders and instrument men, people we

train on a seasonal basis to do specific jobs for which they should be compensated something extra.

This is to pay a man for higher skills which he develops on a short-time basis.

Mr. DREWRY. That is all.

Mr. MILLER. Mr. Bauer?

Mr. BAUER. I have just one question, Admiral KARO.

Is it not correct that the important thing in determining the depth of the ocean and the bathymetry at any point is the location of the ship at that particular time?

Admiral KARO. That is correct. If you are going to have an accurate bathymetric map and make it meaningful you have to know where you are as well as how deep the water is.

Mr. BAUER. Am I also correct in assuming that if you were going from a position A on the surface of the earth to position B, and would traverse an unknown, uncharted, unexplored area of the sea, that it would not make any difference between a great circle or a rhumb line for the course you took?

Admiral KARO. If you are after information, no.

Mr. BAUER. Thank you, sir.

Admiral KARO. But if you are interested in economy of operation, yes.

Mr. BAUER. Which would be the cheapest?

Admiral KARO. Naturally, if you are on a scientific investigation, you would run a systematic series of lines so that they would have definite relation to each other.

If you are on a rhumb line, that is strictly the shortest distance between two ports, and I do not believe it has any bearing on the full development of the scientific information that you are trying to get.

Mr. BAUER. You mean a great circle, not a rhumb line?

Admiral KARO. Yes, sir.

Mr. MILLER. Thank you very much, Admiral.

Admiral KARO. Thank you, sir.

Mr. GRUBB. My only comments had to do with the payment of payments in the Arctic region outside the Classification Act.

If you have any other questions, I will be glad to answer.

Mr. MILLER. Thank you very much.

Capt. H. G. Munson, hydrographer of the Navy.

Captain, we welcome you. We are always happy to see you.

STATEMENT OF HENRY G. MUNSON, CAPTAIN, USN, HYDROGRAPHER OF THE NAVY AND HYDROGRAPHER IN COMMAND OF THE U.S. NAVY HYDROGRAPHIC OFFICE IN OCEANOGRAPHY

Captain MUNSON. Mr. Chairman, I am very appreciative of the opportunity to appear before you for the purpose of presenting the position of the Department of Defense relative to the enactment of H.R. 8611, to remove geographical limitations on activities of the Coast and Geodetic Survey.

The Department of Defense regrets that it does not favor enactment of H.R. 8611 in its present form, but does believe that a satisfactory compromise wording can be arrived at which will insure the objectives of the bill as originally worded and yet meet the views of the Department of Defense and that such a compromise is necessary.

The reason behind the position of the Department of Defense is as follows:

(a) The bill, as worded, can conceivably result in a duplication of statutory responsibilities in the field of hydrographic surveying and charting in support of the safe navigation of the vessels of the U.S. Navy and the U.S. Merchant Marine. It must be noted that the volume and coverage of the cartographic and navigational material produced on a worldwide basis by the U.S. Navy Hydrographic Office, together with the numerous commercial sales outlets covering all oceans of the world, are causing a large and increasing number of foreign merchant vessels to turn to the Hydrographic Office for hydrographic and navigational information. A number of maritime nations linked to the United States in the NATO and SEATO organizations are in part dependent upon the U.S. Navy for emergency provision of this material. The Corps of Engineers of the U.S. Army and the Aeronautical Chart and Information Center of the U.S. Air Force have overseas geodetic and charting responsibilities in support of the missions of the Department of Defense.

(b) Overlapping responsibilities and functions, unless clearly defined and agreed to with proper provision for coordination, are very often unsatisfactory in that they lead to unnecessary duplication of effort and split responsibility so that the situation may arise where a necessary task may remain unaccomplished because of a misunderstanding as to which agency would perform it. One of the most important characteristics of cartographic and textual material prepared for the use of the mariner is that changes in all categories are frequent and continuing, hence very heavy effort must be continually expended to insure that the information displayed is kept current and accurate. Clearly duplicate or divided responsibility can lead to navigational disaster from failure to publish a change essential to the safety of navigation of a ship.

(c) Extra territorial survey operations of any description, except those carried out in the open ocean beyond territorial limits, invariably require diplomatic negotiations with a friendly foreign nation and the securing of the consent and often the cooperation of a friendly foreign power. Participation by agencies other than those having clearly assigned statutory responsibility, and recognized internationally by the corresponding cartographic activities of the other power, can result in confusion and dissatisfaction on the part of the other nation. The confusion resulting from a friendly foreign power having to deal with two U.S. agencies rather than one will result in difficulties in negotiating the necessary diplomatic clearances if not refusal of entry. In this connection, it is particularly pertinent to the problem to note that surveying and mapping in most foreign countries is under the control and supervision of their military agencies and that, from long established practice and common interest, they prefer to deal with their military counterparts in the United States.

(d) A word must be said about the nonclassified international exchange of hydrographic material, a procedure which is sponsored and encouraged by the International Hydrographic Bureau at Monaco of which the United States is a member. This particular aspect of international relations is being implemented by the U.S. Navy Hydrographic Office in a manner which is extremely advantageous both to the United States and to the foreign countries concerned. There now

exists chart-exchange agreements with Canada, Western Germany, and the Philippine Republic and within the month just past we have successfully concluded a corresponding agreement with the Government of Brazil.

These agreements provide for the exchange of unclassified navigational material which could only be acquired by the United States at a stupendous cost, if at all.

Under the terms of this agreement the participating nations agree to permit each other to copy each other's charts, with such modification as they may wish to do, and to reproduce and sell them at the cost established by the originating nation. The saving in time and money to the United States and the time advantage gained in permitting the participating countries to quickly issue to the naval and merchant mariner new navigational charts is very great. The charts carry an announcement that they are modified copies and that the copying has been done with the consent of the other government, hence it is seen that the prestige of the originating country and its financial interests are fully protected. In effect, these agreements are resulting in the pooling of the hydrographic ability of the countries party to the agreements to the mutual advantage of the navigators of not only the two countries concerned but of third-party nations who may be customers of the principles for the cartographic products.

I should like at this point to stress very strongly that these agreements can only be executed by and with the complete support of the Director, U.S. Coast and Geodetic Survey, inasmuch as the cartographic material supplied to a foreign nation by the United States is very often of Coast and Geodetic Survey origin. It is considered that this cooperative support of the Coast and Geodetic Survey is but one more indication of the pleasant and harmonious relation that has existed between the U.S. Coast and Geodetic Survey and the U.S. Navy Hydrographic Office for so many years.

If you will permit the digression, I take pleasure in informing this committee that this relationship between the two agencies has often been held up as a model of friendly and efficient cooperation between two distinct Federal offices and it is a relationship which both agencies are extremely proud of and most anxious to protect and continue.

(e) Surveying and charting operations in support of marine navigation and classified military projects invariably call for offshore logistic support which in many cases is provided by the cooperating nation but more often than not is effected through the regular organizations of the Department of Defense by means of the Military Sea Transportation Service, the Military Air Transportation Service, the replenishment vessels of the U.S. fleet, and the various overseas bases of the Department of Defense. It is contended, therefore, that the Department of Defense through its worldwide organization and its contacts with the counterpart agencies in the foreign countries, is completely and demonstrably ready to conduct survey efforts at a great distance from the territorial waters of the United States in the most efficient and economical manner.

Moreover, the Department of Defense, through its system of military attachés attached to the staffs of the diplomatic representatives of the U.S. Government throughout the world, is in the best position to furnish information as to the status of work in foreign countries,

to advise on what is being done by local agencies which can conceivably be coordinated with and support the work of the Department of Defense, and to make the necessary diplomatic and liaison arrangements when coordinated effort with a foreign power is of advantage to the interests of the United States.

In this connection, I would like to point out that the Department of Defense through the three agencies of the Army Map Service, the Aeronautical Chart and Information Center, and the U.S. Navy Hydrographic Office, hold by far the world's largest collection of cartographic and mapping data in the world; a treasury of geographic, geodetic, and geophysical information which is of vital importance to the defense of our country.

The Department of Defense is most fully cognizant of the vital importance of the task confronting this Nation in increasing the oceanographic effort of the United States. It is considered that Dr. Harrison Brown's Committee on Oceanography, sponsored by the National Academy of Science, has performed a most important service to the Nation in creating the plan for an expanded U.S. oceanographic effort. The Department of Defense can only express its heartiest applause for this work. It is realized that the plan proposed, which is now before the Congress for study, authorization, and implementation, is monumental and that the survey task alone will far exceed the ability of any one agency of the Government to carry out. It is clear, however, that the bulk of the effort in the oceanic offshore surveys will have to be divided between the Navy Department and the U.S. Coast and Geodetic Survey and, speaking on behalf of the Navy, I say that we most heartily welcome this forthcoming partnership with this able cooperating agency. It is clear from a study of the enabling laws of the U.S. Coast and Geodetic Survey that a change must be effected to enable them to participate in this vital national effort.

For the above-stated reasons the Department of Defense, therefore, strongly recommends that H.R. 8611 be modified to include statements which will insure proper and effective coordination of any proposed extra territorial work by the Department of Commerce with the Secretary of Defense and other interested Federal agencies in order to insure nonduplication of responsibilities of the other departments of the Government and, contrariwise, to guarantee that the Secretary of Commerce has full authority to carry out his expected responsibilities under the national Oceanographic program.

The above statement is a coordinated view of the Department of Defense and I am the authorized spokesman of the Department of Defense insofar as this legislation is concerned. The Bureau of the Budget advises that they strongly support this bill.

Mr. MILLER. Thank you very much, Admiral. Excuse me, Captain—it ought to be "Admiral."

Captain MUNSON. Time must go by.

Mr. MILLER. You do suggest that there is clarifying language needed in the bill?

Captain MUNSON. We do, sir, entirely. We like and vote for the authority. It is clear from reading the laws that they are in a hazy position.

Mr. MILLER. Have you or has the Department of Defense any suggestions to amend the bill?

Captain MUNSON. Not that we are prepared to offer at the present time, sir, although I think that, should the committee request it, the Department of Defense stands ready to render drafting service.

Mr. MILLER. I think, at your convenience or as quickly as you can, perhaps this should be submitted to the counsel who can get together with the people from the Navy and the Department of Commerce and see if we cannot work out something that will be mutually satisfactory to all concerned.

Captain MUNSON. We stand ready to assist you.

Mr. MILLER. This becomes now a lot of semantics and legal hodge-podge which most of us are not capable of understanding.

If you would do that, Captain, I think it would further the matter a great deal.

Captain MUNSON. We stand ready to do that, sir.

Mr. MILLER. I am very happy to see this type of statement coming in from the Navy.

Mr. Pelly?

Mr. PELLY. I would like to clarify, Captain, in my own mind as to just exactly what your objection would be.

As I understand, the system that the Defense Department has for interchange of information is one of purely a military nature?

Captain MUNSON. No, sir. I was really referring to open hydrographic information which benefits all mariners. It is true that the Department of Defense does have, let me say, classified exchange arrangements of certain information, but I did not contemplate that in this statement.

Mr. PELLY. There is an interchange of a purely scientific nature; is there not?

Captain MUNSON. There is, but that, I might say, is a third class and is quite open and free and is a matter which is accelerated.

Mr. PELLY. Would you judge from Admiral Karo's statement that there would be no objection to a clarification in the law?

Captain MUNSON. Not the slightest.

Mr. PELLY. Therefore, the legislation with this little change or two would satisfy both services?

Captain MUNSON. That was precisely my understanding of his statement.

Mr. PELLY. That is all, Mr. Chairman.

Mr. MILLER. Mr. Dingell?

Mr. DINGELL. I have no questions, Mr. Chairman.

Mr. MILLER. Counsel?

Mr. DREWRY. I have no questions, Mr. Chairman.

Mr. MILLER. Mr. Bauer?

Mr. BAUER. I have no questions.

Mr. MILLER. Thank you very much, Captain Munson.

I thank all the witnesses who have come here this morning. This has been a very interesting session and I think, with a little cooperation, we can get along.

If there is nothing further, we will stand adjourned until the call of the Chair.

(Whereupon, at 11:45 a.m., the subcommittee adjourned, subject to the call of the Chair.)

