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90/22 MARINE RESOURCES CONSERVATION AND DEVELOPMENT ACT

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HEARINGS

BEFORE

SPECIAL SUBCOMMITTEE ON SUBMERGED LANDS

OF THE

COMMITTEE ON THE JUDICIARY HOUSE OF REPRESENTATIVES

NINETIETH CONGRESS

SECOND SESSION

ON

H.R. 17369, H.R. 17370, H.R. 17371,
H.R. 17372, H.R. 17373, H.R. 17405,
H.R. 17407, and H.R. 17440

TO CREATE A MARINE RESOURCES CONSERVATION AND DEVELOPMENT FUND; TO PROVIDE FOR THE DISTRIBUTION OF REVENUES FROM OUTER CONTINENTAL SHELF LANDS; AND FOR OTHER PURPOSES

JULY 24, 25, 30, AND 31, 1968

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H.R. 17369—MARINE RESOURCES CONSERVATION AND DEVELOPMENT ACT, AND IDENTICAL BILLS

WEDNESDAY, JULY 24, 1968

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON SUBMERGED LANDS
OF THE COMMITTEE ON THE JUDICIARY,
Washington D.C.

The subcommittee met at 10:05 a.m., pursuant to call, in room 2141, Rayburn House Office Building, Hon. Edwin E. Willis (chairman of the subcommittee) presiding.

Present: Representatives Willis, Poff, Cahill, and Roth.

Also present: Representative Alton Lennon, Chairman of the Oceanography Subcommittee of the Committee on Merchant Marine and Fisheries.

Staff members present: Jerome M. Zeifman, counsel, and Franklin G. Polk, associate counsel.

Mr. WILLIS. The subcommittee will come to order.

I open these hearings with a deep conviction that our Nation is faced with a pressing need to apply sound conservation principles to the development of the marine resources of its coastal and Great Lakes States. This need is especially critical with respect to the revenues being derived from the intensive exploitation of the submerged lands of the Outer Continental Shelf.

Since the mineral deposits on the shelf are depleting assets—assets which can never be restored—steps must be taken to develop other natural resources of the sea at a rate commensurate with the rate of exploitation. Steps must also be taken to assure that the economies of the States and the local communities which have grown dependent on marine resources will continue to develop in an orderly fashion.

If such steps are not taken, our Nation will be faced with the prospect of having its coastal and Great Lakes regions turned into depressed areas—with their waters polluted, their fishing industries crippled, and their economy stifled.

To provide the basis for this much needed program, I, and other members of the Louisiana delegation in the House of Representatives, have introduced the proposed Marine Resources Conservation and Development Act. H.R. 17369 shall be included in the record at this point.

(The document referred to follows:)

[H.R. 17369, 90th Cong., second sess.]

A BILL To create a Marine Resources Conservation and Development Fund; to provide for the distribution of revenues from Outer Continental Shelf lands; and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Marine Resources Conservation and Development Act".

SEC. 2. Section 9 of the Outer Continental Shelf Lands Act (43 U.S.C. 1338) is amended to read as follows:

"SEC. 9. DISPOSITION OF REVENUES.—(a) All rentals, royalties, or other sums paid to the Secretary or the Secretary of the Navy under or in connection with any lease on the Outer Continental Shelf for the period beginning June 5, 1950, and ending with the day preceding the date of the enactment of this section shall be deposited in the Treasury of the United States and credited to miscellaneous receipts.

"(b) All rentals, royalties, or other sums paid to the Secretary or the Secretary of the Navy under or in connection with any lease on the Outer Continental Shelf for the period beginning with the date of the enactment of this section shall be deposited in the Treasury of the United States; and of the amount of the revenues so deposited in each fiscal year which are attributable to the portion of the Outer Continental Shelf adjacent to any State—

"(1) 62½ per centum shall be paid by the Secretary of the Treasury into a special fund in the Treasury to be known as the Marine Resources Conservation and Development Fund for use as provided in section 18; and

"(2) 37½ per centum shall be paid by the Secretary of the Treasury to such adjacent State, to be used for the benefit of the public schools or public roads of such adjacent State, as the legislature of such adjacent State may direct.

"(c) Any moneys paid to the Secretary or the Secretary of the Navy under or in connection with a lease but held in escrow pending the determination of a controversy as to whether the lands on account of which such moneys are paid constitute part of the Outer Continental Shelf shall, to the extent that such lands are ultimately determined to constitute a part of the Outer Continental Shelf, be distributed—

"(1) in accordance with subsection (a) if paid before the date of the enactment of this section, and

"(2) in accordance with subsection (b) if paid on or after the date of the enactment of this section."

SEC. 3. (a) Nothing contained in this Act or in the amendments made by this Act shall be construed to alter, limit, or modify in any manner any right, claim, or interest of any State in any funds received before the date of the enactment of this Act and held in escrow pending the determination of any controversy as to whether the submerged lands on account of which such funds are received constitute a part of the Outer Continental Shelf.

(b) Nothing contained in this Act or in the amendments made by this Act shall be construed to alter, limit, or modify any claim of any State to any right, title, or interest in, or jurisdiction over, any submerged lands.

SEC. 4. The Outer Continental Shelf Lands Act (43 U.S.C. 1338) is amended by adding at the end the following new section:

"SEC. 18. MARINE RESOURCES CONSERVATION AND DEVELOPMENT FUND.—(a) The Marine Resources Conservation and Development Fund created by section 9(b) (1) of this Act shall be available as provided in appropriation Acts for use by the Secretary for marine resources conservation and development programs, including programs for: water pollution control and abatement in the Great Lakes, on the Continental Shelves, and in estuaries and other areas immediately adjacent thereto; aquaculture; prevention of beach erosion; hurricane protection; aid to sea grant colleges; fisheries development; development and maintenance of waterfront recreation facilities; and oceanographic research.

"(b) Amounts made available from the Marine Resources Conservation and Development Fund shall be allocated and used by the Secretary for the purposes described in subsection (a) in accordance with priorities, standards, and procedures set forth in regulations which shall from time to time be prescribed by him after consultation with the advisory board established under subsection (c).

"(c) The Secretary shall establish an Advisory Board to assist him in carrying out his functions under this section. The Board shall consist of officers and employees of Federal departments and agencies, and persons selected by the Secretary from State and local governments and the private sector, who are determined by the Secretary to have special knowledge and experience in activities and programs described in subsection (a). Members of the Board from Federal departments and agencies, who shall serve at the request of the Secretary with the approval of the heads of the departments and agencies involved, shall

receive no additional compensation for their services as members of the Board. Members of the Board selected from State and local governments and the private sector, while serving on business of the Board, shall receive compensation at rates fixed by the Secretary but not exceeding \$100 per day. All members of the Board, while serving away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for persons in the Government service employed intermittently. The Secretary shall make available to the Board such office space and facilities, and such secretarial, clerical, technical, and other assistance and such information and data in his possession or under his control, as the Board may require to carry out its functions."

SEC. 5. Section 35 of the Act to promote the mining of coal, phosphate, oil, oil shale gas, and sodium on the public domain", approved February 25, 1920 (41 Stat. 450; 30 U.S.C. 191), is amended by striking out "37½ per centum" and

SEC. 5. Section 35 of the Act entitled "An Act to promote the mining of coal phosphate, oil, oil shale, gas, and sodium on the public domain", approved February 25, 1920 (41 Stat. 450; 30 U.S.C. 191), is amended by striking out "37½ per centum" and inserting in lieu thereof "60 per centum", and by striking out "52½ per centum" wherever it appears and inserting in lieu thereof "30 per centum".

The following bills, identical to H.R. 17369, were introduced in the House:

- H.R. 17370—Mr. Hébert
- H.R. 17371—Mr. Waggonner
- H.R. 17372—Mr. Long of Louisiana
- H.R. 17373—Mr. Edwards of Louisiana
- H.R. 17405—Mr. Passman
- H.R. 17407—Mr. Rarick
- H.R. 17440—Mr. Boggs

This measure would apply old and time-tested conservation principles to the new and rapidly expanding frontiers of the sea. In our Nation's interior, we have seen forests denuded, farmlands turned to dust, wildlife wantonly destroyed. In my own State of Louisiana, for example, we have seen mile after mile of valuable cypress trees cut down indiscriminately with a wanton disregard for future needs.

Once the timber was cut, the lands were left fallow and the local population destitute. This tragedy in our past has taught us that we simply must not allow our resources to be exploited without adequate conservation planning and coordination.

The bills which are the subject of these hearings apply to our coastal resources the very same principles which we wisely learned to apply for the conservation of the resources in our interior. In this regard, the major conservation measure established for the interior lands has been the so-called reclamation fund, which has been in existence now for almost 50 years.

Under the Mineral Leasing Act of 1920, the reclamation fund, in effect, receives 62½ percent of the moneys derived from federally owned mineral deposits in the interior. Under the same act, the State which owns the land surrounding the Federal mineral deposits receives 37½ percent of the proceeds of the Federal leases.

The proposal now before the subcommittee adopts the half-century-old policy of the Mineral Leasing Act and adapts it to modern marine needs. Under H.R. 17369, the Marine Resources Conservation and Development Act, 62½ percent of the proceeds of Federal leases on the Outer Continental Shelf would be used to develop a coordinated Federal program for the following purposes:

- Water pollution abatement;
- Aquaculture (underwater farming);

Fisheries development;
 Oceanographic research;
 Hurricane protection;
 Elimination of beach erosion;
 Sea-grant colleges; and
 A wide variety of other marine related uses.

Such a program will not only benefit the coastal and Great Lakes States, but it will be of enormous benefit to the entire Nation.

In my view, the sea represents one of the major challenges of modern man. Indeed, the very survival of our civilization may depend on the extent to which we can conserve and develop our marine resources.

I believe that we in Congress have a very special obligation to inform ourselves of what our Nation's needs are in these areas. The hearings which we now convene will undoubtedly help to achieve that end.

Mr. POFF. Mr. Chairman?

Mr. WILLIS. Yes, sir.

Mr. POFF. Mr. Chairman, I share the conviction that the chairman has so eloquently expressed that our Nation is faced with a pressing need to apply sound conservation measures in the development of the marine resources of our coastal States.

We are all aware of the natural wealth that lies beneath the ocean. Yet, every day, the national resources are being consumed, wastefully used, or destroyed.

History has shown that we cannot consume any of our national resources with complete abandon. We cannot take and take again without some day ruing the consequences.

The development of our marine resources is essential to our own national well-being for generations to come.

I do not believe in a program of deficit spending of our natural wealth. I do not wish to pass on to the next generation of Americans a nation bankrupt in marine resources or any other national resources.

I hope in the course of these hearings we may study the past tragedy of America's waste of our natural resources within the several States. I think that such a history would show that conservation delayed is conservation denied.

But, Mr. Chairman, the question before this Special Subcommittee on Submerged Lands is not whether conservation is necessary, but if it is necessary to establish a Federal trust fund to promote conservation in one particular area.

I recognize the need for conservation, on land and in the sea, and yet I also recognize the great urgency before the Nation of other problems, such as to mention a few—housing, jobs, education, and crime. And thus I approach these hearings with an open mind, willing to be convinced that there is a good case for establishing a marine resources conservation and development fund to guarantee on a more or less permanent basis that conservation and development of marine resources will occur.

Yet, I make that statement with the caveat that I would be equally willing to consider the converse of that statement.

I believe it is important for all the members of the subcommittee to pursue this intellectual and detached approach to the problem.

Mr. WILLIS. Mr. Roth, do you care to make a statement now?

Mr. ROTH. No, I do not, Mr. Chairman.

Mr. WILLIS. I am especially glad that Mr. Lennon, of North Carolina has requested to sit with us and participate.

As chairman of the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries, Congressman Lennon is one of the foremost authorities in the United States on marine problems. I would like to extend to him our most cordial welcome during these hearings.

Mr. LENNON. Thank you, Mr. Chairman. I am grateful for the chance to participate in these hearings to the extent I can.

I think all of us were concerned when this legislation was introduced, especially since the Administration indicated its interest in a bill that would allocate revenues to the national parks.

I look forward with interest to the hearings that will develop.

Mr. WILLIS. To contribute to our understanding of the Nation's marine problems, we have invited a number of distinguished witnesses, each of whom is an outstanding expert in his own field. We are grateful that they have come to Washington to give us the benefit of their views.

Our first witness, Dr. Jacques Piccard, enjoys special preeminence for his contribution to oceanographic sciences. He has been awarded the Distinguished Public Service Award by President Eisenhower. He has also received the Theodore Roosevelt Distinguished Service Award, the Argosy Magazine Giant of Adventure Award, and a wide variety of other citations from learned societies all over the world.

In the very near future, Dr. Piccard will lead an underwater team of six scientists in a specially designed submarine that will explore the entire Gulf Stream. These important explorations will make an invaluable contribution to our understanding of our marine resources.

We are pleased, indeed, to welcome him to these hearings.

Although Dr. Piccard speaks fluent English, he was born and raised in Switzerland and his native tongue is French.

I want to assure Dr. Piccard that we are pleased to welcome him in any language. As a result, I would also like to extend to him the French greeting: *Bienvenue, Monsieur Piccard.*

Come forward and take your seat, sir. I assume you have a prepared statement which you would like to make.

TESTIMONY OF DR. JACQUES PICCARD, EXPLORER AND OCEANOGRAPHER; ACCOMPANIED BY GERALD G. KALLMAN

Dr. PICCARD. Yes.

Mr. WILLIS. Would that be satisfactory? Suppose you describe your prepared statement. You may read it, if you wish.

Dr. PICCARD. Yes.

Mr. WILLIS. *Je crois que votre langue nationale est le français et, si vous voulez, vous pouvez faire votre déposition dans cette langue.*

Dr. PICCARD. *Je vous remercie de m'offrir cette possibilité; cependant, comme nous sommes aux Etats-Unis, je pense qu'il est préférable d'utiliser la langue de la majorité et je parlerai donc en anglais.*

Mr. POFF. I was wondering if the shorthand reporter was having any difficulty. [Laughter.]

Dr. PICCARD. Mr. Chairman and gentlemen of the special subcommittee: I first want to thank you for inviting me to testify before

you today, and to give you my views on the importance to the United States and, indeed, the whole community of nations of accelerated development of the oceans' resources.

I am certain that very few Swiss citizens have been called upon to speak to committees of the Congress of the United States heretofore, and I am doubly honored by your invitation. You may wonder why, as a Swiss, I have this deep interest in the ocean, since our country has neither a coastline nor a navy in the popular definition of the word.

Suffice it to say that the underwater world holds promise and importance for all of mankind. In my estimation, it is as vital to the Australian sheep rancher or European housewife as it is to the Gloucester fisherman or Louisiana wildcatter. The sea affects all our lives in a variety of ways, and better understanding of the seas and their mechanics can only make the lot of all mankind easier, more productive, and more satisfying.

The theme of my remarks, then, is to be the need, by whatever means you gentlemen of the Congress ultimately decide upon, for speeding the orderly exploitation and development of the riches of the Continental Shelf and the oceans, which, rather than separating the United States from its Asian, European, or African neighbors, rather provides a ready and convenient link with them.

The vastness of the subject almost makes it impossible to know where to begin. Allow me to start with some of the more familiar uses and products of the oceans and proceed to some of the more exotic, esoteric fields where today we are just piercing the surface, so to speak.

For as long as man has lived on the shores of the oceans, rivers and lakes, he has been nourished by the fish he has been able to lure, trap, snare, spear, or net from the beach or a boat. It is amazing to note that the methods of catching fish are practically the same today as they were in the earliest dawn of mankind, and certainly not much more sophisticated than those in the days 2,000 years ago when men drew their precious food from the Sea of Gallilee in straining nets and bobbing boats.

The processing and marketing of seafood have developed along technological lines, but we are still in the Dark Ages when considering the search for fish, knowledge of their habits, spawning grounds and their nutritional value. Recent developments have been made in the production of fish protein concentrate, thanks to great encouragement and financial support by the U.S. Government, and a great deal more must be done to produce and merchandise this dietary supplement for Americans and, perhaps more importantly, for those millions of undernourished people whose protein supply is inadequate.

Better organized fishing methods will not only increase the catches and yields of the commercial fisherman, but will also help guard against the annihilation and disappearance of certain species of food fish—a sad fact which has already seen the reduction to dangerous limits in some areas of halibut, salmon, lobster, and shrimp.

Finally, it should be mentioned that while every maritime nation of the world has shown substantial increases in fish production and consumption, the United States has been at a virtual standstill, with fish imports rising to the point where Americans now eat more imported fish than that caught and processed domestically. Surely this is an area which deserves more attention and support.

Linked to the food-from-the-sea activity is the problem of pollution of the sea. This is a thorny problem, but because it is manmade, it admits of a solution. We have already seen great quantities of shellfish from large areas declared unfit for human consumption because of polluted waters—in the Raritan Bay area of New Jersey, for example.

We must guard against increasing destruction of the species and upsetment of the marine environment too by dumping, radioactive waste discharging, drainage from industrial plants and even the introduction of the heated water used for cooling powerplants to normally cool fish feeding grounds. A problem such as this which transcends State borders seems to call for the attention of, if not the regulation by the Federal Government.

My father once said that exploration is the sport of the scientist, and it is in exploration that much of oceanographic activity is found today.

Gentlemen, we are standing not at a single threshold, but before a long corridor marked by a series of doors. Behind each is a new and exciting field of opportunity awaiting the imaginative, the daring, the enterprising men who are blessed with both vision and the means to exploit these riches.

Besides food, the oceans contain, or more precisely, separate man from rich mineral deposits. One authority has calculated that the seas contain 30,000 trillion tons of chlorine—that is 30 followed by 15 zeros—2,000 trillion tons of magnesium, and similarly staggering quantities of sodium, sulphur, potassium, bromide, and carbon, and so on. The interesting point is that these minerals are not found only in minute quantities in the water itself. Off the California coast, phosphorus nodules resembling large pebbles are scattered around the sea-floor at depths from 200 to 8,000 feet at least. Best known are the manganese deposits, confirmed to exist in the Atlantic, Pacific, and Indian Oceans.

While sufficient quantities of these various elements are obtainable on land, their exploitation from the seabed will receive low priority. When poorer strata are mined on land, raising production costs there, greater attention can be expected for offshore mining development. Such was the case in the petroleum industry, which is by far the leading developer of offshore resources.

Today some 70 countries are involved in the quest for oil and gas beneath the Continental Shelf. Twenty countries are producing these products, by recent estimate.

Like every general statistic about the seas, the figures regarding petroleum production and reserves defy the imagination. About one-fifth of the world's total known oil reserves of 425 billion barrels is found offshore. Currently about 5½ million barrels are produced each day from wells sunk offshore. This is about 16 percent of the world total. In another 10 years perhaps 33 percent will come from offshore—all this to meet a demand which is increasing at a rate of 7 percent a year. No need to belabor the importance of offshore oil and gas production. It is, after all, the very *raison d'être* of the legislation you are considering.

We must also acknowledge, too, that the water-starved areas of the globe see in the salty surface of the oceans, their first source of potable water, as desalinization techniques grow and hold out promise of

abundant fresh water everywhere in the world. If we could theoretically separate all the minerals from all the water in the oceans, we would have, on one hand, enough salts to fill a freight train stretching back and forth between the earth and the sun 300,000 times and, on the other, about 1,500,000 trillion tons of fresh water. I apologize for having to resort to these big numbers, but I know you gentlemen want to know the facts.

We are only beginning to fully appreciate the preeminent role of the oceans in the origin and influence of weather. If man is to accurately predict the weather, to guard against destructive waves, prepare for hurricanes and typhoons, and some day exercise a degree of control over the elements, he must learn a great deal more of the dynamics that go on where sea meets sky, and the massive movements of ocean waters from one region to another.

While these remarks have dealt with, let us say, peaceful or materially productive uses of the seas, we cannot overlook the strategic importance of the undersea world in defensive and possibly offensive warfare. Greater knowledge of the terrain, not only along the Continental Shelves, but in midocean as well, is needed to assure the safe transit of military submarines. And we must understand the acoustic phenomenon better if effective defense measures are to be prepared.

The very immensity of the seas, which, as you know, cover about 70 percent of the earth's surface, makes a concise and specific summary of ocean-related activities difficult, if not impossible. Likewise, the fledgling efforts of governments and private industry are as diverse as the problems and challenges themselves.

Many, many American industrial firms have been attracted beyond the water's edge, so to speak. And they have invested sizable sums of their own money in the oceanography market. I would like to take just a minute to describe one of these programs, the oceanographic activities in which I am presently engaged with the Grumman Aircraft Engineering Corp. in Bethpage, N.Y.

Already a leader in the design and construction of military and private aircraft and sophisticated space vehicles, Grumman in 1965 appraised the oceanographic field and, rightly, I believe, saw there great potential.

In order to contribute to solving these problems of offshore mining, fish study, national defense, and the study of basic physical phenomena, it was decided to turn the vast engineering talent of the company to the development of a submersible vehicle, a work submarine which could bring man into the undersea environment to observe and perform useful tasks there.

About this time I became an exclusive consultant to Grumman, and after several studies, it was decided to build a mesoscaph or middle-depth submarine (from the Greek words for "middle"—"meso" and "ship"—"scaph"). It was to be based on a design I had prepared for an earlier submarine, the first mesoscaph, the *Auguste Piccard*, named for my father.

Subsequently, the PX-15, as the Grumman submersible was called, was built in Switzerland at the same factory which constructed the first vessel. In about 1 year the PX-15 was practically fully completed. In early March it was partially disassembled—to allow it to pass by railroad through our Swiss tunnels to Antwerp, where it was loaded

on a merchant ship and transported to the Grumman facility in West Palm Beach, Fla.

Grumman engineers and several of my staff have been engaged since April in the final outfitting of this unique research submarine. The vehicle is built of high-strength steel and is about 50 feet long and about 130 tons in weight, making it the largest research submarine in the world. It can dive to 4,500 feet before collapsing, but we shall limit its operation to 2,000 feet. The life support system can sustain six men for 6 weeks, giving us a great deal more submerged endurance than any other research vehicle.

And 29 portholes, a closed-circuit television system as well as fixed external cameras and recording devices assure that we can observe and document the underwater secrets we uncover.

The various unique features of the Grumman-Piccard PX-15 admirably suit it for our first major undertaking, a kind of undersea adventure, with "science nonfiction" objectives.

Early next year the submarine with six men, including myself, on board will submerge off the Florida coast and drift in midwater at depths of 300 to 2,000 feet, propelled northward for 4 to 6 weeks only by the current of the Gulf Stream.

The scientists will conduct a series of long- and short-duration experiments concerning the mysterious Deep Scattering Layer, which "tricks" navigators by sending back false echoes on their fathometers and has implications in fish-feeding and marine-life cycles, on bottom topography, acoustics, marine biology, and fish habits, as well as analysis of the water's chemical properties, temperature, and speed.

The program is to be a cooperative enterprise with the U.S. Naval Oceanographic Office providing the all-important surface support ship (to give us navigational information) and two of the scientific observers on board the submarine.

When the Gulf Stream Drift Mission is terminated, probably 1,000 miles later off the coast of Massachusetts, the people at Grumman will make the submersible available on a lease basis to those who can best utilize its special depth, endurance, and large payload capabilities.

Just 2 weeks ago here in Washington, at a convention, we announced that the PX-15 henceforth will be known as the *Ben Franklin*, honoring your early American scientist-statesman, the man who first recognized the practical advantages of knowing and defining the limits of the Gulf Stream.

Franklin, as head of the U.S. Post Office, learned that British mail packets sailing from England, took 2 or 3 weeks longer to cross the Atlantic than Nantucket whalers returning from Europe. A conversation with some of the Yankee skippers brought the fact that they avoided the Gulf Stream while the English "bucked" the current much of the way.

Franklin then asked several of the New England whalers to make temperature readings throughout the North Atlantic, and from these reports he charted the first map of the Gulf Stream. He turned it over to the British General Post Office, and we can assume that a substantial decrease in the London-to-Philadelphia mailing time followed shortly.

Just this week at the West Palm Beach facility we will begin dock-side tests of the *Ben Franklin*, and on August 21 we will hold the formal christening ceremonies.

This Grumman program will involve more than \$4 million of company funds, and it is just one of many pioneering efforts, some supported wholly or in part by Federal money, others purely company sponsored.

The important point, however, is that basic research into the workings of the world beneath the waves is moving forward. The Naval Oceanographic Office and the Office of Naval Research are spearheading this assault on the unknown, and scientists the world over acknowledge the preeminent position these agencies along with ESSA, the Bureau of Commercial Fisheries, and others occupy in the advancement of man's understanding of the oceans.

This same sort of international recognition and esteem is directed toward your National Aeronautics and Space Administration, for the achievements of the United States in pushing back the frontiers of outer space are recognized and applauded universally.

My father, as you may recall, first penetrated the stratosphere in a kind of early space ship, a pressurized gondola strung beneath a gas-filled balloon, and his interest and, more recently, mine in the development of outer space have been keen. But if one measures the ultimate benefits to be gained from the deliberate and orderly development of the seas or "inner space," it seems to me that expenditures equaling those NASA, at least, are justified.

I have purposely directed my remarks to the oceans themselves, for this is the field I know best. It would be inappropriate for me to comment directly on the merits or features of the legislation you gentlemen are considering. I would only urge you with all my persuasiveness that you join in the effort to develop the resources of the seas.

By whatever means you, as Members of the Congress of the United States, can muster, I ask you to aid and assist in the proper exploitation of these vast riches and the solution of these problems of great consequence for mankind. Our scientific colleagues in Europe and the Orient and researchers in the so-called eastern bloc are making great strides in their own research and development programs.

How much greater can be the American contribution to progress in oceanography. It depends widely on the support you in the Congress will lend to this vitally important undertaking.

Thank you, gentlemen, for allowing me to present my views to you today.

Mr. WILLIS. Dr. Piccard, we are very grateful for your appearance. You have made a great contribution to the matters before this committee.

In 1945, the then President of the United States, Harry Truman, issued an Executive order under which he claimed for the several States the right to exploit minerals within 3 miles off their coast, and then claimed for the United States the paramount right to claim the minerals beyond 3 miles.

Subsequently Congress passed two laws.

In May of 1953, Congress passed the Submerged Lands Act, giving to the respective coastal States of our Union the right to exploit minerals within their respective boundaries.

Then following the Truman directive, in August 1953 Congress passed the Outer Continental Shelf Lands Act, asserting the right of

the Federal Government to exploit the minerals beyond the State boundaries.

In 1958, there was held in Geneva an International Conference on the Law of the Sea. I was designated by our State Department to attend that Conference as a congressional observer. Strangely enough, with the unanimous consent of the 105 nations present, including the Soviet Union, the nations of the world unanimously decided to codify the act of Congress as an international rule of law.

In other words, under the Geneva Conference on the Law of the Sea, 105 nations agree that coastal nations are entitled to exploit to the exclusion of the others the mineral resources in the Outer Continental Shelf.

Now, 2 years ago, it was proposed in the United Nations that the United Nations should have the right to go into the oil business and sulfur business and develop the resources of the sea for the benefit of underdeveloped nations.

I am a firm believer in free enterprise. I think that should be left to the entrepreneurs, such as yourself, who are interested in development of the resources of the sea.

Now, may I ask you this? I don't know your views. Would you agree that the development of submerged lands should be left to each coastal nation, or do you think it should be done by the United Nations?

Dr. PICCARD. I believe the United Nations has absolutely nothing to say in this problem. The question could have been discussed 20 years ago, or something like this, when the United Nations was led by major powers or nations, but now that it is controlled by small, underdeveloped nations, it is absolutely impossible to imagine something like this.

Every time that a scientist would have to take a sample of the bottom of the middle of the Atlantic or Pacific, he should ask the permission of small incompetent countries. It is absolutely unthinkable.

Mr. WILLIS. The majority of the nations of the United Nations are landlocked. They don't even have a coast. So why should it be given to the United Nations?

Dr. PICCARD. I agree with you except for the word "landlocked," because Switzerland is landlocked, too. [Laughter.]

Mr. WILLIS. I mean a lot of other nations.

Dr. PICCARD. Yes. Mainly what I see is a know-how and knowledge of the sea, more than where people are located, and I believe at least for now, as you said—everybody should be absolutely free to work in the oceans.

Mr. WILLIS. Let me ask you two or three questions having to do with the proposal before this subcommittee.

The basic conservation principle which underlies the bill before this subcommittee is the principle that if we exploit natural resources, we have an obligation to restore other natural resources at a rate commensurate with the rate of exploitation.

In other words, as we deplete a wasting asset at the bottom of the Outer Continental Shelf, it is our philosophy that we should be developing other resources related to the sea.

Do you agree?

Dr. PICCARD. Yes, absolutely. No question.

Mr. WILLIS. Now, let me put this question.

The world's population is increasing at almost double the rate that our food supply is increasing. Unless we take drastic steps to increase our food supply, our civilization will be in serious danger.

To what extent would it be possible for us to turn to the sea as a source of food as a means of avoiding the catastrophe of worldwide famine?

Dr. PICCARD. I believe if the sea remained free, as you recommended yourself, and as I agree it has to be, every year we take more and more food from the sea for mankind.

I would like also to point out here that if the ground, the soil of the earth itself would be well utilized, and if the world economy would be better organized, we could have enough food for all mankind just from the ground itself, without depending on the sea, but with the customs and the difficulty of transportation and the separations and frontiers all over the world, the sea is probably our best hope right now.

Mr. WILLIS. I am very interested in the knowledge to be acquired during the voyage of your submarine, the *Benjamin Franklin*.

First of all, where will your trip start and end?

Dr. PICCARD. It will start in south Florida, and we will go with the current until southeast of Cape Cod, more or less. The first part of the trip will be on the Continental Shelf, when we will go down to the bottom and make some survey of the bottom.

Mr. WILLIS. Do you believe that the knowledge that you will gain as a result of this trip in your submarines will contribute to the further development of minerals on the Outer Continental Shelf? If so, in what way?

Dr. PICCARD. We hope—of course, it is difficult to know in advance what the results of the mission will be, but we hope at least to give a small contribution to this problem.

Mr. WILLIS. In your statement, you mentioned the advantages of better organized fishing methods. Could you give us some examples of what you consider to be better methods?

Dr. PICCARD. The first thing in the general view is to understand better the problem of life and reproduction of the fishes, just to be sure we do not destroy, for instance, the young fishes. In many places people are still using explosives for fishing, and if you use explosives for fishing, you get about one fish for 100 killed.

In many cases, by using nets, you take too many young fishes, which are maturing. That is also bad.

There are more modern fishing methods, for instance, the electric one. You can put electrodes in the water and direct fish to the place where you would like to take them.

These are some of the ways that could be studied further.

Of course, we must guard not to fish to such a great extent that after a few years the fish will just disappear.

Mr. WILLIS. Mr. Poff?

Mr. POFF. Thank you, Mr. Chairman.

Can you tell the subcommittee—and I am not sure there is an answer to the question I am about to ask—what is the average width of the Outer Continental Shelf?

Dr. PICCARD. This is a difficult question to answer, but in some places,

it is just a few hundred yards, and in some places, it goes to several hundred miles.

Mr. WILLIS. It varies with the different countries. It varies even around our own United States. For instance, the Continental Shelf in Louisiana is 110 miles wide. In California, it is only 3.

In connection with the coastal states of all the world, after you go up to 600 feet deep, then you have reached the Outer Continental Shelf, and then you go precipitately to the bottom of the sea. It varies from country to country, and even within countries.

Dr. PICCARD. For instance, the North Sea is nearly entirely Continental Shelf, between England, Norway, and Germany—

Mr. WILLIS. There are great problems of development of the mineral resources in the North Sea.

England, and every country bordering on the North Sea, is claiming certain rights. England, of course, has the longest coast on the North Sea, because it stretches out for miles and miles. Belgium has only a small portion of its country bordering the North Sea.

I have seen maps allocating, or proposing to allocate, to all European nations bordering on the North Sea their proportionate claim to the mineral resources commensurate with the width of their boundaries on the North Sea.

Mr. Cahill, do you have any questions?

Mr. POFF. Mr. Chairman, I still want to ask this.

Was the figure you gave for the resources extracted—namely, 5½ million barrels per day—confined to the area of the Outer Continental Shelf?

Dr. PICCARD. Yes.

Mr. POFF. Would you care to tell the subcommittee who, or what entity, you feel has title to marine resources seaward from the edge of the Outer Continental Shelf?

Dr. PICCARD. There are two answers. From one point of view, this has to be decided by international conventions. From the practical effect, the people who have the biggest navies, and the most research submarines would take them.

Mr. POFF. Mr. Chairman, I do have a rather long line of questions. I might make a statement, if I may, so that the witness will not misunderstand if the members are obligated to leave.

Our session begins this morning at 11 o'clock, and this committee has some legislation on the floor of the House. So you will pardon us if we have to leave at that hour.

I yield to my colleague from New Jersey.

Mr. CAHILL. I apologize for not being here at the beginning of our distinguished witness's testimony. We have all been made aware through your testimony, Dr. Piccard, of the vast natural resources that lie within the ocean and on the Continental Shelf. It is tragic that every day these natural resources are being carelessly depleted.

Certainly, there is a need for conservation and development of resources in the seas as there is on land. No one doubts that. But the fact that one favors conservation and development of marine resources does not lead inexorably to the conclusion that one must support this bill.

For the real issue presented by H.R. 17369, as I see it, is how conservation and development of marine resources should be funded.

We must recognize that conservation and development of marine resources is only one of our national problems. The Federal solutions to the housing problem and the crime problem are not permanently funded. One might well ask why should this problem before us require a different approach.

It might be said in response that we are dealing here with not more than a half billion dollars a year, and that it would be unthinkable to spend anything less regardless of future competing needs. I think that focuses the issue for the subcommittee.

In your testimony, Dr. Piccard, you have admirably stated the need for conservation and development of marine resources. I appreciate that because your testimony will be of great assistance in answering the issue H.R. 17369 presents.

Moreover, I wish to indicate my great interest in this legislation, recognizing the large coastline we have in our State.

Many of the things you have said have direct application to the problems confronting the citizens of the State of New Jersey, particularly with relation to the fishing and pollution problems.

I would like to pursue what Mr. Poff started in his questioning, and I say to you, Doctor, is there any practical use that can be made to the sea beyond the Continental Shelf?

For all practical purposes is the subject matter of this legislation really limited to the coastal and the Continental Shelf?

Dr. PICCARD. No. For instance, there is one problem which had been studied before World War II, by the French scientist Georges Claud. He tried to generate energy by using the difference of temperature between the deep sea and the surface. He did not quite succeed because technology was not far enough advanced at that time.

But this is a problem which could be absolutely started again with a complete chance of success, and this would provide a fantastic amount of energy without making any kind of pollution.

This is something which has to be done beyond the Continental Shelf.

Mr. CAHILL. Do you know of your own knowledge whether there are any similar experiments being conducted by other industries in the United States along the lines of the Grumman Co. and your particular submarine, the *Benjamin Franklin*?

Dr. PICCARD. Yes, many other companies and many governmental agencies are doing the same kind of research as we are.

Mr. CAHILL. Is there any cooperative effort between the companies? Are they trying to avoid duplication? Are they trying to correlate their findings so that they can benefit everybody?

Dr. PICCARD. Yes. This is a beautiful thing in oceanography. People are cooperating much more than competing, really, because we know the sea and ocean is so big that it is enough place and enough work for everybody.

So there might be, for instance, some small techniques which some companies prefer to keep secret, but in the case of Grumman, I can tell you that everything is absolutely open to everybody, and everything can be published. There is no secret. This is the general tendency in the States.

Mr. CAHILL. I commend the company for that, and I think that is a very enlightened attitude to take, because it seems to me if there

can be some cooperative effort between the Government and independent developers, we can achieve our goals much more quickly.

Dr. PICCARD. Yes, for this it is good. And several Government agencies, the Office of Naval Research and other ones, have a way of grouping and collecting all the information, selecting the best one, and so on. Then we have the Marine Technology Society which is extremely important for this.

Two weeks ago here in Washington we had a big convention, and everybody explained new techniques.

Mr. CAHILL. I certainly want to congratulate you on the excellence of your statement.

Mr. Chairman, my views are that the ocean certainly is as important to us as a nation from the standpoint of defense and our economic growth and development as is space. We certainly should consider an investment of the ocean just the same as we are making an investment into the area of space, the exploration of space.

Thank you very much.

Mr. Roth?

Mr. ROTH. I have no questions.

Mr. WILLIS. Thank you very much, Mr. Piccard. You have made a great contribution.

Mr. POFF. I want to join you, Mr. Chairman, in expressing our appreciation to the distinguished witness. He has been most helpful to the subcommittee.

Mr. WILLIS. Our next witness is Mr. John H. Clotworthy, who is the president of the National Oceanography Association.

Mr. Clotworthy, do you want to read your statement, or speak from it?

TESTIMONY OF JOHN H. CLOTWORTHY, PRESIDENT, NATIONAL OCEANOGRAPHY ASSOCIATION, ACCOMPANIED BY CARLTON B. HAMM, EXECUTIVE DIRECTOR, NATIONAL OCEANOGRAPHY ASSOCIATION

Mr. CLOTWORTHY. No, Mr. Chairman, I have submitted the statement for the record. I would prefer to direct my remarks at this time to some of the benefits I see deriving from the passage of the bill.

Mr. WILLIS. I would appreciate that.

(Mr. Clotworthy's statement is as follows:)

NATIONAL OCEANOGRAPHY ASSOCIATION,
Washington, D.C., July 24, 1968.

HON. EDWIN E. WILLIS,
Chairman, Committee on Judiciary, Special Subcommittee on Submerged Lands,
House of Representatives, Washington, D.C.:

I'm John Clotworthy, President of the National Oceanography Association, an Association which was formed to meet the challenge of opening up our ocean frontiers. It is a composite of industry, science, education and the general public dedicated to development and use of the ocean and its resources. In business, I'm president of Oceans General, Inc., and in the recent year have served as Chairman, Division of Ocean Engineering at the University of Miami's Institute of Marine Science.

It's an honor to appear before the Special Subcommittee of the Committee on the Judiciary on Submerged Lands to discuss H.R. 17369, a bill to create a Marine Resources Conservation and Development Fund.

This bill provides that rentals and royalties collected for leases on the Outer Continental Shelf be used for marine resource development and conservation purposes, that they should act as a base for some future Federal activities in support of prudent ocean development.

It has been long noted that the Federal expenditures in support of the basic science and, at appropriate times, the applied science required for efficient ocean resource development have been small when compared with Federal revenue from offshore lease sales. It is also well known that offshore petroleum exploitation and, if pursued, mineral exploitation, are difficult to make cost effective when viewed against land-based developments. Equally familiar are the tables of critical materials imports and data regarding the decreases in proved and anticipated reserves of petroleum from onshore fields.

It follows that support research activities, the results of which could be utilized to improve the efficiency of such activities, would be a welcome and sensible course for the government to pursue.

This position was advocated by the National Oceanography Association in its May, 1968, reports on Petroleum and the National Marine Effort and on Minerals and the National Marine Effort, prepared for the President's Council on Marine Resources and Engineering Development. H.R. 17369, by its enactment, would help provide a fiscal base for proposals for the research benefiting everyone operating at sea (studies of weather and sea state relationships, improved weather and wave forecasting, the compilation of improved navigational charts and aids, the establishments of an improved structure for collecting and disseminating data arising from government oceanographic research, certain gross surveying, basic materials research, research on human engineering for ocean systems) we have recommended.

Nevertheless, H.R. 17369 must be understood to fall short of funding critical ocean research as a matter of national strategic policy. It also avoids the issue of the requirement for a fresh blueprint for self-contained, comprehensive Continental Shelf Code, to take into account the problems that are peculiar to working in the ocean environment, rather than the amending of existing legislation.

It is most important today that the total question of the development of the Outer Continental Shelf, from lease policy to research project selection and funding policy to minerals depletion, be approached anew and in accordance with the highest traditions of strategic planning. Methodologies are seldom meaningful without their being based on known and forecast priorities for national security and economic development.

It has come to our attention that the President's Council on Marine Resources and Development intends to conduct, prior to the issuance of its final report, such strategic analyses as a platform for the recommendation of priorities for Federal action. It remains that the information generated by such analysis be studied and wedded to information regarding alternatives to marine resource development so that the most fitting legislative product will result. Such a review might be conducted by the Public Land Law Review Commission and other established agencies before new methodologies are established.

We commend the author of H.R. 17369 for his vision in recognizing the need for legislative revision in this area and for proposing a sensible and constructive alternative to present policy.

While we feel that the scope of the proposed legislation is too restrictive to deal with the issue at hand, and while we would much prefer to see the issue dealt with in whole rather than in part after comprehensive study, we do support the passage of the measure.

Mr. CLOTWORTHY. It is a pleasure to appear before this subcommittee as a representative of the National Oceanography Association and to endorse House Resolution 17639 and encourage its passage.

I believe it is apparent from the action at the Federal level in the last 5 years that the United States is aware of the importance of developing marine resources, and her ability as a nation to operate effectively in the sea. But, on the basis of the number of good and valid projects for the development of marine science and technology which go unsponsored each year, there is just not enough support to maintain U.S. preeminence in the field. I will comment in more detail on that a bit later.

It seems to me that the intent of the resolution under consideration may have a very beneficial and stimulating effect on the development of marine science and technology in the United States, because it will increase the level of support for both basic and applied research. Therefore, I would like to direct my remarks to those benefits that may accrue through better utilization of our manpower, of our economic resources, and the conservation of our natural resources.

We have in the Gulf of Mexico a prime example of one facet of ocean industry in a healthy and well-established state. I speak of the offshore oil activities. Yet each year we can count significant financial losses in proportion to the total investment in the Gulf of Mexico. The insurance rates on offshore structures are running on the order of 10 percent of replacement cost. It follows then that a great deal of attention should be paid now to those factors which relate to the conservation and proper utilization of these human and economic resources in the gulf.

If we were better able to predict the weather system that operates over the surface of the earth, and to define, as Dr. Piccard indicated earlier, those mechanisms, dynamic in nature, that work at the interface between the ocean and the atmosphere above, we could improve the quality of our warning systems in the gulf. This would enable operators to take actions preparatory to the passage of a storm which would minimize, if not eliminate in many instances, the resulting damage.

Perhaps beyond that, though, is something a bit more basic. The sea is a very mysterious and challenging place to operate. Unfortunately, as man has gone to sea, he has carried with him a technology which has been largely land based in origin. We mistakenly tend to think of things in the sea in the same context as we think of things on land.

As a result, when the oil industry first moved into the offshore areas, they carried a land-based technology with them and simply put on stilts those devices that they had built on land for many years. It was apparent at the outset that the forces of the sea operating on these man-made structures were far more stringent than those experienced by similar structures on land.

Even the earliest of the designers of off-shore platforms were cognizant of the forces of waves on bases of towers, even as they were aware of the wind forces. But wave forces were obviously much more severe and complex in their action. They were generally thought of as simply acting upon the projected flat surfaces of tower supports.

It wasn't until recent years, when a number of towers collapsed for no apparent reason, and research investigations were undertaken that the complexity of the wave force on the base of a tower yielded to understanding.

Now we know better how to design towers. But we are still a long way from that day when we can predict all the forces acting on structures offshore with certainty.

Then too, the sea, being a fluid which will dissolve almost everything that appears in nature, tends to erode manmade structures.

Moreover, the sea is full of biological organisms. Two-thirds of all known life forms, except for insects, exist in the sea, and these organisms attach themselves to anything solid. So we have a combining

effect, with detrimental results of marine organisms which foul the structures and chemical agents which corrode.

The consequence is a general but predictable degradation in performance of things that man puts in the sea, a wasting away and a reduction to the point where replacement must be undertaken.

So when we talk about the basic knowledge of the sea and its processes, whether they are physical or chemical or biological, there is a need for a great deal more research, so that man may understand them and build his technology on a solid foundation.

It follows as well, looking to the future now, that our effectiveness in operating in the sea will be to a large measure dependent upon how we can improve our methods of operation, how we can improve those fundamental functions that man must accomplish in order to operate in any environment. Here, I am referring to those basic aspects of involvement in the environment such as communications. Man has a great deal of difficulty communicating among his fellow man in the sea, with men on the surface, and with the sea itself in terms of instrumentation that will allow him to understand what is happening around him.

A great deal of research, fundamental and applied, must be dedicated to the process of improving communications systems in the sea.

We must have better means of transportation as well. Dr. Piccard's submarine and those that are being built currently, either through governmental support or through the private enterprise system, are steps forward in the improvement of a part of the total transportation function. They allow man to move into the sea and operate effectively in certain aspects of his work. But there are many other facets of transportation in the sea that are as yet unmet.

Much work needs to be done as well in the field of "life support." This is the adaptation of the physical form of man to the rigors of the sea and to those special characteristics which affect his ability to survive. The basic research must be done primarily in the field of physiology and the applied research in the development of systems that will provide the adaptive mechanisms.

Finally, we need a great deal of work in the development of new tools, those things that interface with man and leverage his ability to do constructive work in the sea.

A complement of the problem solving task in each of these areas is a new class of materials to withstand the rigors of sea service.

There are applied science areas we should focus on, too, because we get closer to the problems of conservation of natural resources when we become applied.

There are many problems facing our Nation, not the least of which relates to the pollution of our estuarine areas. The pollution problems generally grow out of what may be classed as "multiple use." We have many vested interests in the general economy associated with estuarine areas. There are industrial users who see the estuary as a means of disposing of waste materials, but also industrial users who operate seaports, shipping lines and vessels of one form or another. There are commercial users as well. These may include primary developers of real estate who find a ready market for waterfront properties, ship repair facilities, hotels, marinas, and so on.

We have too the recreation user which includes the individual citizen in search of a bathing beach, an underwater park and a place to water ski or picnic. These three classes of users compete for the same space. They interact with one another, many times to mutual detriment.

Therefore, another area of research that needs a great deal of attention now is that dedicated to understanding the effects of multiple use, those factors of commercial, industrial, and recreational use that interact upon one another, and the system of constraints that affect each, be they technical, economic, or legal.

Out of this research should come economic and social models for problem simulation which will enable those in the decisionmaking position to judge between multiple users, first to establish a priority, if priority must indeed be established, but hopefully to point ways in which beneficial multiple use can take place.

Another area which I feel needs a great deal of research is involved with international law. Through my association with the University of Miami I've advocated the establishment of a research program in international law to accomplish two things: first, to train a new breed of international lawyer who comprehends the special regimes of the sea and perhaps more importantly, understands the impact of technology on the ability of nations to operate at sea.

The second thing we hope to accomplish is to do some research into the alternatives that face our Nation in charting its international legal and political course in the decades ahead.

The recent Malta resolution before the U.N. and activity in our own Congress are certainly ample indication of a need for research in this area and for people trained specifically to deal with the interacting forces, whether they are local or international, and to help establish a policy for the United States.

One final point I would like to comment on, and this comes back to my earlier statement that the need for additional financial support of research effort in the United States is amply demonstrated by the absence of adequate support for many, many good projects each year. The national sea grant program became a law a short time ago and has just finished its first year of operation.

One of the keystones of the judgment criteria applied to any project under the sea grant program is the willingness of the private sector or the State governments to supply matching funds to those funds which the National Science Foundation puts up. In effect, it is an acid test of the worth of a project.

Dr. Leland Haworth, Director of the National Science Foundation, in his testimony before the Senate Commerce Committee in June of this year, indicated that under the funding of fiscal year 1968, the sea grant program was able to support only 33 projects out of 160 that were tendered for consideration.

Moreover, I understand from the Sea Grant Office at this point that in fiscal year 1969 they have in excess of \$1 million worth of projects up for funding that will not be funded because there are not funds available, and that in excess of \$1½ million worth of projects have been turned off at the source, so to speak. That is, the sponsors of these projects have been told not to bother this year because there is absolutely no chance of achieving support.

The sea grant program, with a budgetary request of \$6 million is faced with very little room to move in fiscal year 1969 in terms of expanding the very fine work that has already been started. They have \$3.4 million of continuing commitments which must come off the top of any authorization for this year. That doesn't allow much expansion room.

That the sea grant program will be an effective means of improving the utilization of our academic and industrial muscle, in developing a better comprehension of the sea and better utilization of the sea, goes without restating at this point.

The results, even in this short period of time, are very encouraging. I note that a very preliminary report from Nicholls State College in Louisiana on a shrimp aquaculture project has indicated improved productivity.

In closing, I would like to again endorse the intent of the resolution under consideration, and to urge that all means at the disposal of the Government be put to an enhancement of the level of support of marine science and technology.

Thank you, Mr. Chairman.

Mr. WILLIS. Mr. Clotworthy, there are several questions which I have asked counsel to direct to you.

Mr. ZEIFMAN. On page 2 of your statement, you make reference to a report on minerals and the national maritime effort. Could you supply the subcommittee with a copy of that report?

Mr. CLOTWORTHY. Yes, sir; I would be happy to.

Mr. ZEIFMAN. Thank you very much.

(The document referred to appears at p. 24.)

Mr. ZEIFMAN. Also on page 2 of your statement, you say that H.R. 17369 "must be understood to fall far short of funding critical ocean research."

Now, the present Federal expenditures for marine programs are somewhere in the vicinity of \$500 million a year. At the same time, according to the Secretary of the Interior, the receipts from the Outer Continental Shelf will probably average between \$400 million and \$500 million a year over the next 5 years. That would mean that under H.R. 17369, Federal expenditures in marine programs could be increased by roughly \$300 million or perhaps \$400 million per year.

When you say that H.R. 17369 will "fall far short of funding critical ocean research," do you mean that the \$300 million a year that this bill might provide would in itself fall short? Or do you mean that if the current Federal expenditures of roughly \$500 million are coupled with the funds authorized in this bill that the total would still fall short?

Mr. CLOTWORTHY. I mean that the present level of expenditures, even if augmented by the revenues anticipated under the provisions of the bill, would fall short of what I believe is necessary funding in the years ahead.

My point in making the statement here was to make certain that no one misunderstood the fact that we were not advocating that all of the support for marine science and technology come from these sources. I would hate to see the level of expenditure in this area pegged to revenues received under the terms of the bill.

Mr. ZEIFMAN. You also suggest on page 2 of your prepared statement that there is a need for further evaluation and perhaps revision

of various policies in connection with the Outer Continental Shelf, including Federal leasing policies.

Under the Outer Continental Shelf Lands Act the leasing policy is administered under regulations issued by the Secretary of the Interior. Are you suggesting that the Congress ought to amend that act? Or are you suggesting that if there are needed changes that the changes ought to be embodied in the regulations issued by the Secretary of the Interior? Or are you suggesting there is a need for a combination of both?

Mr. CLOTWORTHY. I am suggesting the latter. And unless we get in the details of the regulation, it would be difficult to distinguish between those things that are within the purview of the Secretary to alter and those that have their roots in the legislation itself.

What I am suggesting is that the approach to the utilization of resources in the Outer Continental Shelf be handled in total, that the Public Land Law Review Commission, which is now studying this, make a recommendation for what can best be handled as a new piece of legislation, rather than a patching up of the old.

There are many things that mitigate against adequate exploration and exploitation of mineral resources on the Outer Continental Shelf. Many things place the explorer and exploiter offshore at a disadvantage as compared to his comparable number on land.

I think these can best be handled in a redraft of the entire legislation. This is my opinion.

Mr. ZEIFMAN. But you are not suggesting, however, that if there is a need for further revision of leasing policies on the Outer Continental Shelf, this legislation ought to be delayed?

Mr. CLOTWORTHY. No.

Mr. ZEIFMAN. In effect, there is nothing to delay Congress in authorizing these appropriations out of Outer Continental Shelf receipts—

Mr. CLOTWORTHY. No, there is no reason to hold up the proposed legislation for that.

My point is that, again, it is seemingly, at least in a philosophical sense, much better to do planning as a whole, rather than in parts.

Now, this bill has to do with providing a level of funding for support of research and other aspects of marine science and technology. It is commendable and should be endorsed on that merit alone. And I do so.

While I might rather see everything rolled into a single approach to marine science and technology in the United States, that is asking for much more than appears practically realizable. I did want to make the point that there are many problems facing the Nation in this field other than the one of funding. I would hope that these would receive attention in time as well.

Mr. ZEIFMAN. Thank you very much.

Mr. WILLIS. Mr. Cahill?

Mr. CAHILL. I would like to pursue your last statement. I gather from what you are saying and from what your prepared statement says that you would prefer to await the report of the President's Council on Marine Resources and Development before enacting any legislation.

Mr. CLOTWORTHY. From a theoretical point of view, I would. As a practical man, I would advocate taking the steps that are proposed at this point in time now.

Perhaps with the inability to predict with certainty what will come out of the Commission's report, much less the time that it will take to enact resulting legislation, suggests that we are better advised to go ahead with something such as proposed under the present resolution, perhaps there should be a time limit on its life, so that it must be looked at again, or that the intent of this legislation be picked up at a subsequent time and rolled into a major piece of new legislation.

Mr. CAHILL. Do you subscribe to the objective set forth in this legislation that three-eighths of the funds should go to the States for highways and education?

Mr. CLOTWORTHY. Yes, I do.

Mr. CAHILL. And you believe that if this legislation were enacted that any attempt to change that could ever be successful?

Mr. CLOTWORTHY. To change the ratio?

Mr. CAHILL. Yes.

Mr. CLOTWORTHY. I don't know.

Mr. CAHILL. Don't you think there would be a tremendous effort on the part of all of the States who were receiving this money to resist any effort whatsoever?

Mr. CLOTWORTHY. Yes, I do believe that.

Mr. CAHILL. So if there were a conflict between what this legislation proposes and what the President's Council suggests, it would be difficult later to reconcile the differences?

Mr. CLOTWORTHY. I believe they are separable issues. The legislation proposes to plow back, if you will, some of the fruits of offshore resource exploitation back into the system, and it offers a formula. But insofar as the way it would have any impact upon any recommendations from the President's Council, which will likely be largely program oriented: how shall the Nation work in the future, what programs shall it embark upon in order to assure us a continued position as a strong maritime state—I don't believe there is a conflict. One relates to funding, and the other is more program oriented.

Mr. CAHILL. How do you reconcile your statement that there is inadequate funding here with your other statement that you support a diversion of some of these moneys to State use?

Mr. CLOTWORTHY. I said earlier that there is inadequate funding at the national level to support all of the things that need to be done in the development of marine science and technology.

I think it is wholly consistent that some of the fruits of offshore exploitation be put back in support of marine science and technology, because out of that support can grow better comprehension of the medium, better—

Mr. CAHILL. I understand that, but you also support a diversion of part of it away from that.

Mr. CLOTWORTHY. I could, to take a very selfish stance—say that I would like to see all the revenues derived from offshore resources to go back into the support of a national program.

Mr. CAHILL. What you really say, in effect, is that you support this proposal but that you want additional Federal revenues appropriated for the purposes of this legislation and for other purposes that you have described in your testimony, since you feel that the funds that are coming from this legislation are not enough in themselves.

Mr. CLOTWORTHY. That is correct. I do not.

Mr. CAHILL. One last question: I gather that you are president of your association, which I presume is composed of all of the industries, or a great many of the industries, interested in the science of oceanography.

Mr. CLOTWORTHY. That is true.

Mr. CAHILL. You are presently, I understand, president of Oceans General. What company is that?

Mr. CLOTWORTHY. It is a new corporation recently formed to provide consulting and management services to ocean industry in general, but also to regions planning ocean-oriented development.

We are quite interested as well in developing the whole field of underwater recreation.

Mr. CAHILL. Thank you very much.

Mr. WILLIS. Mr. Roth?

Mr. ROTH. Mr. Clotworthy.

I would like to go back to this question of adequate funding. Are you able to give us some idea of what you would consider adequate funding for critical ocean research?

Mr. CLOTWORTHY. A number of years ago, a group of us on an ad hoc basis attacked this problem for the National Security Industrial Association, and we projected budgets in support of the development of marine science and technology at the billion dollar plus level in this period of time—in other words, twice more than what we are currently spending.

I still feel that numbers of that magnitude are in order, when compared to the job that needs to be done.

Mr. ROTH. What percentage of this do you think might come from private resources and private enterprise? Or do you think it has to be funded entirely by the Federal Government?

Mr. CLOTWORTHY. I think the Federal Government's role in this case is one of supporting the basic research more than anything else. Certainly some applied research will have to be supported as well, because the industrial involvement in any field is based first upon a technology that derives from science.

We are just without adequate scientific information about the sea and its processes, as I said, whether they be chemical, biological or physical, in order to recreate the required technology. Compared to land and space technology in this year, our sea technology is circa 1930.

I think Government's role is one of developing this basic undergirding of technology through the support of science. I have no doubt but that private industry will continue to step forward in the developmental phase; that is, when goods, services, and systems are needed, to do a particular job offshore. They will come forward and devise the things needed in accordance with the established mechanisms in our economy.

Mr. ROTH. Mr. Chairman. I regret that the quorum call has made it necessary to end any questioning.

I would like to thank the gentleman for his informative statement.

Mr. WILLIS. Those are the bells for a quorum. We will have to move on, sir.

We are grateful for your appearance.

(The document referred to at p. 20 follows:)

PETROLEUM AND THE NATIONAL MARINE EFFORT

I. INTRODUCTION

These brief recommendations follow informal discussions with Dr. Edward Wenk, Jr., and representatives of NOA late last year, and pertain specifically to the future national program as it might relate to offshore petroleum resources of the U.S. The earlier discussions are supplemented here by further discussions within NOA and by consideration of various industry panel and committee recommendations.

The petroleum industry has already become a very important and viable part of our national effort to develop domestic marine resources. Consequently, the discussion which follows does not recommend significant federal action in this area. In general, the most important factors are perhaps a request for federal administrative continuity in order to permit long-range planning by the industry, and an emphasis of the high risks and high costs involved in marine work, especially in the recovery of petroleum resources in remote or deep-water areas on our continental margins.

II. ADMINISTRATIVE

In its report, "Industry and the Ocean Continental Shelf", the Ocean Science and Technology Advisory Committee (OSTAC) of the National Security Industrial Association (NSIA) noted that the irregularity of federal and state offshore lease sales restricts the ability of petroleum companies to make long-term plans and efficient allocation of their capital and personnel resources. We concur in their recommendation that such sales should be planned on as regular a basis as possible and announced well ahead the sales dates.

Petroleum exploration and production is extremely expensive in offshore areas. This is especially true as the depth of water increases and as the area of exploration becomes more remote from reasonable shore facilities. It is not unlikely that added incentives may be necessary if petroleum resources are to be developed soon in remote or deep-water areas. Such incentives could possibly include an increase in the primary lease term, an increase in the size of such leases, and an increase in production allowables.

We believe that a firm multiple-use policy, equitably and consistently administered is a fundamental necessity if the resources of our continental margins are to be efficiently and adequately developed. This is especially necessary in regard to the marine mineral resources. Wise administration of our marine areas must include consistent application of this multiple-use principal.

III. INTERNATIONAL INVESTMENTS

The international petroleum industry has been an important long-term contributor to a favorable balance-of-payments situation for the U.S. Every effort should be made to encourage a viable involvement of U.S. companies in the important international resources market and to protect these major investments in foreign areas.

IV. RESEARCH SERVICES

The U.S. petroleum industry has developed unique technologic and engineering capabilities for successfully doing useful work at sea. We see no need nor desirability for specific federal efforts to further the industry's capabilities to discover or develop our marine petroleum resources.

The industry would, however, encourage those broad federal research efforts and services which are of value to everyone operating at sea. As examples, studies of weather and sea state relationships should be continued. The ability to forecast the marine environment, especially in regard to major storms (perhaps eventually controlling such storms) are of particular value.

Related services now provided by the federal government to everyone operating at sea are of similar value. These would include, for example, weather and wave forecasting services, and navigation charts and aids. The anticipated release by the Navy of the satellite navigation system for public use will provide an adequate satellite navigation system to assist in many operations.

The federal government should designate and properly structure some central scientific organization for collecting and disseminating government and government supported oceanographic and related research fundings in order to maxi-

mize private use of public research data and to prevent wasteful duplication of private and public research activities.

Industry has in the past offered, free of charge, the use of an increasing number of offshore platforms as a basis for synoptic studies of sea and air. Such facilities should be used for these purposes wherever possible.

Broad mapping of the bathymetry and geology of the U.S. continental margins is probably a worthwhile federal research effort, but the expensive studies related to exploring for marine minerals and evaluating marine resources potential should continue to be carried out by the industry.

V. LEGAL

The development of our marine mineral resources is not presently being impaired by the terms of the 1958 Geneva Convention on the continental shelf; petroleum leases have already been granted by the federal government in waters 1500 feet deep. If in the future it should become necessary to define a seaward limit to U.S. marine mineral rights, care should be taken to assure that the potential resources of our continental slope and rise are included within that limit, and also that reasonable and equitable leasing arrangements are available to U.S. industry beyond those limits.

Similarly, the definition of the seaward extensions of our international boundaries, as with Canada and Mexico, presently pose no barrier to exploration. However, this will undoubtedly become important in the future and should be resolved as soon as possible.

Conflicts between state and federal governments have in the past seriously delayed offshore petroleum development. Many of these conflicts have not yet been settled.

MINERALS

The development of the mineral resources of the ocean has barely begun. Therefore, recommendations for federal action in this area tend to be in terms of new policies and programs rather than in terms of the modification of existing policies.

I. LEGAL

There are indications that the rules governing the oil and gas industry are being extended without due deliberation to cover mineral exploration and development of the continental shelf. This could be detrimental to the nascent offshore mining industry.

The mining industry has only relatively recently attacked the problem of geologically concealed mineral targets on land. The problems surrounding the marine environment are even more complex. Development of the potential of continental shelf mining is going to require something in the nature of a breakthrough in philosophy, technology, and economic encouragement. Unlike the petroleum industry, techniques of resource extraction cannot be platformed and pushed out to sea.

It is our belief, therefore, that the Public Land Law Review Commission prepare and recommend to the Congress a fresh blueprint for a self-contained, comprehensive Continental Shelf Mining Code, rather than simply a series of amendments to existing laws. Such a Code would take into account the problems that are peculiar to the ocean environment.

The first aspect of such a code would deal with pre- and post-discovery tenure. In this area, we recommend that any U.S. flagship on the U.S. Shelf be allowed to do geological and geophysical studies freely, including the taking of sea floor samples by grab, by chain and bucket dredge, and by coring devices normally used in oceanographic research and studies. No permit should be required for these studies, and the results should be considered proprietary to the person making the study. This extends to the marine environment the country's basic philosophy that mineralization is found most often by allowing the citizenry to prospect freely and in an unfettered manner. During this stage, no rights to the minerals on the sea floor, in the overlying waters, or in situ, are involved. This stage of operation is central, however, in that broad regional studies are a necessary prelude to deciding what areas do have sufficient interest to acquire rights and engage in more definitive and involved testing.

For modern exploration to be economically feasible, land tenure over these large areas of interest that are detected must be granted before a discovery is made, because the time and dollars spent prior to discovery are normally quite

high, with little assurance that the result will be successful. The explorer's program must avoid unnecessary expenditure and must progress at an optimum pace until either a decision is made that nothing of interest will be found or that a discovery of worth has been made. As the explorer proceeds, the greatest share of the territory originally of interest will not show discoveries, at which time he should be prepared to yield his tenure over such portions. But it is unrealistic and uneconomic for him to begin costly exploration without exclusive tenure over the large area of initial interest for a sufficient length of time to test it.

We believe that a federal prospecting permit for exploration of the continental shelf should be obtainable under the following conditions:

A. Exclusive exploration rights should be awarded to the first responsible filer in a U.S. land office, where all notices, proofs of labor, etc. would be recorded. Filing fee, nominal in amount, should be specified by statute.

B. The right of exploration should provide a time period of sufficient length and an area of coverage of sufficient size to insure that the explorer can engage in a logical exploration sequence that requires a minimum investment of time and money. This would insure that the explorer's money is spent in actual testing of the ground.

C. The permit grant should include rights to mine all hard minerals (excluding oil and gas), including the right to exploit serendipitous discoveries.

D. Work requirements needed to validate and continue tenure must be economically and technically reasonable, not punitive in amount or so minor as to encourage holding large acreages indefinitely without any real effort to test their value.

E. The permittee must have the right to obtain exploitation tenure at a cost which is known to him before a valuable mineral deposit is discovered. Otherwise, the permittee's economic and occupancy security while exploring is jeopardized. If the cost of exploitation is not known in advance of discovery, later imposition of levies and charges could arbitrarily, yet innocently, make the deposit uneconomic or, at least, unattractive. Without secure exploitation tenure conversion rights, the explorer takes the risk that he may not be able to mine his discovery and reap the natural rewards of his efforts.

F. The costs of the exploration permit, if any, and subsequent exploitation rights to a valuable discovery must be set at a level which recognizes the high costs of exploration and production of marketable materials, and the need for a sizable profit potential to entice the entrepreneur into the ocean in the first place.

G. The permit should be terminable in whole or in part by filing notice of termination-abandonment.

Such provisions will help make the offshore mine competitive with onshore equivalents.

The second aspect of such a Code would deal with actual mining on the continental shelf, the first issue of which is tenure. We believe the conditions of tenure should include:

A. Vertical boundaries on all sides.

B. Abolition of the placer-lobe distinction.

C. Record of all notices, affidavits of labor, etc., in U. S. land offices. Failure to file proper notices should result in cancellation of the claim.

D. Assessment work should include any non-repetitive work that is beneficial to the preparation of a discovery for extractive operation. This should include, but not be limited to, work on mine development, mill process development and construction, as well as additional exploration.

E. The cost of patent should be set on the basis of cost per square mile, and be of an order which covers administration costs, with the charge to be reviewed periodically by Congress.

F. The entryman acquires fee title, or its equivalent, if known minerals give the land additional value as mineral lands, even though those minerals cannot be immediately produced and marketed at a profit. This protects the entryman's investment of time and money in those cases where exploitation may have to wait for right timing in a market place or a technological improvement.

G. Minimum expenditure requirements should be set which include total costs of exploration, mining development and mining, to be accrued since the establishment of original tenure and which can be demonstrated to have benefited the claim.

As specific legislation governing prospecting, development and extraction of minerals on the continental shelf, we recommend the following:

A. Exclusive exploration permits should be issued in the order received by the local U. S. Land Office. Each permit could cover up to a square measuring two

nautical miles on a side. Only a portion of the possible four square mile area need be applied for. Any applicant could apply for more than one permit.

B. The permits could be relinquished in whole or in part at any time.

C. The minimum work obligation, as defined above, would be five dollars per acre for the first twelve month period.

D. If the minimum work immediately above has been done satisfactorily, the permit can be extended, upon application for a second and again for a third twelve month period provided additional work has been done within the permit area during each successive twelve month period totalling at least five dollars per acre for each acre to be included in the renewal.

E. Beginning with the fourth twelve month period, the minimum work obligation should be ten dollars per acre.

F. All of the above expenditures plus all amounts similarly expended above these minimums, can be capitalized for income tax purposes if any ore body is developed. These monies could be amortized over the life of the mine or a five year period, whichever is shorter, when the deposit is placed into production. If the permit area is abandoned, in whole or in part, expenditures spent upon the abandoned portions can be written off in the calendar year the area is abandoned.

G. If and when the permittee delineates a mineral concentration which, in his opinion holds reasonable expectation and promise of being capable of commercial production, at that time or in the future, the permittee could convert all or a portion of his exploration permits into exclusive exploitation rights, and thereafter pay an annual assessment of ten dollars per acre.

H. The accrued ten dollars per acre annual cash assessments prior to production could be treated for tax purposes in the same manner as work expenditures.

I. All minerals, other than sand and gravel and common building materials, produced from the below mean low tide level of the United States continental shelf would be allowed the same depletion allowance as it allowed on minerals produced elsewhere in the United States.

Such legislation, if enacted, would act as encouragement to entice the mining industry into the sea in the interest of the exploitation of this resource by American interests.

II. FREEDOM TO EXPLORE

The mining industry wishes to be free to explore for its resource anywhere on the continental shelf. As yet, questions of the deep ocean have not arisen. Nevertheless, the industry expects the government to act so as to protect this right for the future on the basis of exploratory capability. This is in the best interests of both the nation and the industry.

Ventures on the continental shelves of other nations are subject to the same risk of expropriation as in the case of petroleum, although the issue will not be faced so immediately. Indemnifications developed for petroleum resources may serve as a model for such indemnifications as may come in time to apply to mining.

III. RESEARCH

There is a considerable role that the government can play in performing much needed research in the service of offshore mining ventures. The mining industry believes that goals for the development of its resource can best be realized if the government encourages private industry to master the environment through the conduct of basic research and arbitrates any conflicts between users.

Specifically, the National Oceanography Association was disturbed by a statement which appeared in "Marine Science Affairs," the first report of the President to Congress on marine resources and engineering development. This statement was to the effect that it is the role of the government to explore for mineral deposits, develop technology to exploit them, and make economic analyses of identified deposits. NOA believes that industry should be encouraged to conduct these functions and that the proper role of government is the conduct of basic research and support of those institutions engaged in basic research programs.

Physical forces information will be as important to the offshore miner as to the petroleum industry. Each of the research areas specified for petroleum will come to have meaning as exploration progresses (information of wave action and force, ocean currents, and air-sea phenomena affecting weather).

The industry also supports collection of geological and geophysical data that is in the realm of gross survey, that stops short of the identification and location

of specific mineral resources. The acceleration of programs for ocean bottom mapping are stressed.

Basic materials research will also assist the industry. The industry can make use of information on concrete made with sea water and its potential in preventing metal corrosion; new metal alloys; and plastics.

The precise nature of technology for mining the continental shelf is undetermined; therefore, it is difficult to say whether special human engineering studies pertaining to man-in-sea operations will be beneficial. Vehicle research, however, is very likely to be helpful.

Basic research leading to the development of new tools is also recommended. Better tools are required for the taking of samples. Present tools are limited both as depth of water at which operations can be conducted and depth of the sub-surface core.

The accuracy of geographical position is often in doubt. Both geophysical and coring operations can be conducted on a relative position basis by using anchored acoustical beacons for position fixing; but this does not imply accurate positioning with respect to latitude and longitude. Ultimately, there is the necessity of establishing precise legal demarcation of offshore property rights.

The mining industry will soon become concerned with its status as relates to conflicts of use of the marine environment. Because of the difficulties involved in making oceanic resources cost effective, it feels it should receive preferential treatment in matters of conflict where large investments are involved. We support the government's role as a conflict manager and urge the conduct of such research as is necessary to determine methods of conflict resolution for the ocean environment. Once more, it is urged that technological forecasting be used as a tool by government to avoid oversights that could serve to restrain the development of the mineral resources of the continental shelf.

IV. INFORMATION TRANSFER

The mining industry has not had the considerable experience of the petroleum industry in using federal oceanographic data. Nevertheless, it recognizes the requirements for placing such data in the public domain quickly and in usable form.

The prescriptions for the direction of an information transfer program recommended in "II. Petroleum" seem to apply to the future situation of ocean mining companies.

V. ORGANIZATION

The mining industry is also somewhat regional in nature, and subscribes to the prescription for organization of the national program recommended in "II. Petroleum."

Mr. WILLIS. We stand in recess until tomorrow at 10 o'clock.

(Whereupon, at 11:35 a.m. the subcommittee recessed, to reconvene at 10 a.m. on Thursday, July 25, 1968.)

MARINE RESOURCES CONSERVATION AND DEVELOPMENT ACT, AND IDENTICAL BILLS

THURSDAY, JULY 25, 1968

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON SUBMERGED LANDS
OF THE COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2141, Rayburn House Office Building, Hon. Edwin E. Willis (chairman of the subcommittee) presiding.

Present: Representatives Willis, Poff, Cahill, Railsback, and Roth. Staff members present: Jerome M. Zeifman, counsel, and Franklin G. Polk, associate counsel.

Mr. WILLIS. The subcommittee will come to order.

The first witness for this morning is Congressman Wydler, a Representative in Congress from the State of New York. Mr. Wydler, it is a privilege to have you with us.

TESTIMONY OF HON. JOHN W. WYDLER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. WYDLER. Thank you, Mr. Chairman. I am sure you will be delighted to know that I have no prepared statement and that my comments this morning will be brief and to the point.

Mr. WILLIS. That is always easy to follow.

Mr. WYDLER. I know the limitations because the House is going into session at 11 o'clock this morning.

Mr. Chairman and members of the subcommittee, I am here to express my agreement with the legislation. Although I haven't sponsored this legislation yet, I undoubtedly will or some bill similar to it in intent.

I think the idea contained in the legislation is a good one mainly because it is apparent to me and I think it should be to the other parts of our Nation that the development of oceanography is one that truly has a great future for our Nation.

This bill would make it possible, I think, to properly fund these programs in the future and that alone would make the passage of the legislation worthwhile. Of course, my own State would in some ways benefit from this. That does not make me unhappy, but I think from a much more important point of view it would be good for the country as a whole.

So I do support this legislation, Mr. Chairman. The main reason I come here this morning is to welcome two very distinguished people from Long Island who are going to testify before the committee;

Mr. John Woog, who is the legislative counsel to the Long Island Association which is our local organization for development in the area, and Dr. John Baiardi, who is one of our leading educators and who is truly a remarkable gentleman in not only being an educator, but being a dynamic individual putting together on Long Island a project for a research center in oceanography.

This type of facility will, of course, be intimately connected with the future of this bill and it will relate to it. So I think these two gentlemen will give the point of view of our State and our area because Long Island is the New York State oceanographic center. There is no other alternative. We are the outlet of the State to the sea. We are going to play the leading role in New York State in oceanography and we hope that that role will be one of the leading roles in the world. These two gentlemen represent that future for our State.

So I am pleased to come here this morning to support the legislation and urge that this bill be brought to the floor of the House at an early date for vote and consideration.

Mr. WILLIS. Thank you, sir.

Let me ask you this question: The proposal before us is based on the principle that as a national resource is depleted, other related resources should be restored at a rate commensurate with the rate of depletion. Do you agree with that principle?

Mr. WYDLER. I do.

Mr. WILLIS. Here we have some natural resources, in some areas oil and gas. After a few years they are gone. Under H.R. 17369 we would use some of the funds from oil and gas to develop other natural resources, for example, fisheries. In other words, I repeat, we take the position that as we deplete a natural resource we should develop and help and augment another. Do you agree with that?

Mr. WYDLER. That is a good conservation practice, Mr. Chairman. I would not oppose it. I don't think any right-thinking person would. But it is apparent to me that we are going to need some type of ongoing program if we are going to do this properly. I think this bill is the vehicle for getting such a program underway.

The CHAIRMAN. I am pleased to have your views.

Mr. POFF. Mr. Chairman, thank you.

First, I apologize to my distinguished colleague because I was late. I want to comment simply for the record that I have always found the gentleman extremely well informed and I know of his continuing interest in this legislation. I hope he will make available to this subcommittee the benefit of his knowledge and expertise in the field that we consider so important.

Mr. WYDLER. Thank you, gentlemen. Thank you, Mr. Chairman.

Mr. WILLIS. Our next witness is Congressman Wolff, from New York. Mr. Wolff?

We welcome you, Mr. Wolff, and look forward to receiving your views. You heard my question to Mr. Wydler. Do you agree that if one natural resource is being depleted that we should try to use the wealth from the natural resources being depleted to help restore or develop another? For example, under this bill as we deplete oil and gas, we would use the money to help out the fisheries. Do you agree with that principle?

TESTIMONY OF HON. LESTER L. WOLFF, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF NEW YORK

Mr. WOLFF. I wholeheartedly support the principle.

The CHAIRMAN. I think that is a good conservation practice, too. I remember when I was a very young man in Louisiana and we had mile upon mile of cypress trees. Nonresident corporations bought them out. In those days you could buy swamplands for as cheap as a dollar an acre. Nonresident corporations bought out hundreds of thousands of acres of cypress trees. The boom lasted about 10 years, but after 10 years the cypress trees were gone and there was nothing left but swamps.

I think that is unfortunate. I don't want to see this happen with respect to oil and gas. I think that if the money comes from the sea, we should plow it back, because that is a good conservation practice.

For instance, one of the purposes of my bill would be this: We would use that money to develop sea-grant colleges. Over a century ago, the Federal Government made huge grants to a university in each State. Those universities are there today. They are called land-grant universities. My own State of Louisiana has such a university.

I can visualize that if properly developed, the revenues from these natural resources—oil and gas and so on—could be used to develop sea-grant colleges. I think you will agree that that is a good approach.

Mr. WOLFF. I certainly do, Mr. Chairman. I congratulate you and the committee for taking the initiative in this matter. Ours is not a bottomless pit of natural resources.

Mr. WILLIS. That's right.

Mr. WOLFF. As such, we must be thinking of the coming generation in this Nation as a result of which I think the steps you have taken initiating this legislation is a great contribution to America.

The CHAIRMAN. Proceed Mr. Wolff.

Mr. WOLFF. Mr. Chairman, I thank you for the opportunity for coming here before your committee and giving you my views in this very vital hearing discussing the question of our replenishment of natural resources.

I too want to echo the statements that were made by our colleague, Mr. Wydler, with reference to two of the witnesses that you will have here this morning, Mr. John Woog and Dr. Baiardi. Both have taken on leadership in the area of oceanography and its relevance and reference to Long Island.

Representing the district on the north shore of Long Island I have been active in the fight to preserve and protect our waterways. Long Island has a vital interest in the waterways surrounding us. In 1967 the Nassau-Suffolk Regional Planning Board estimated that maritime-related industries on Long Island were grossing \$180 million annually. Boating, fishing, and other recreational activities on Long Island bring \$250 million annually. More importantly, no price tag can be placed on the invaluable resources of our beaches, the Long Island Sound or the ocean front.

There is a particular urgency for steps to preserve, protect, and restore maritime areas of the Nation for without prompt action we will continue to lose the irreplaceable and invaluable natural resources found along our shorelines. In New York, for example, a survey made

in 1959 by the New York State Conservation Department and the U.S. Fish and Wildlife Service indicated that 12.5 percent of high- and moderate-value wetland habitat areas had been destroyed since 1954.

The survey also predicted with accuracy that 30 percent of the remaining wetlands were in danger of destruction within 5 years and that an additional 39 percent of the remaining lands were likely to be lost in the foreseeable future. The results of such destruction are magnified in the manner of a geometric progression. Destruction of marine resources affects the entire balance of nature. We must take immediate steps to protect these areas of our Nation.

Ever since I have been in Congress I have been actively involved in efforts to restore our waterways to their natural beauty and to end the destructive pollution of our waterways. I was gratified to have coauthored legislation with my good friends and colleagues, Representatives Dingell and Tenzer, which authorizes the Secretary of the Interior, in cooperation with the States, to preserve, protect, develop, and restore our estuarine areas in this Nation. This legislation is now awaiting the signature of the President. I have also introduced a number of other measures related to the conservation of our shorelines, the pollution of our waters and the creation of quasi-public corporation for oceanographic research and development.

The bill which is before your subcommittee today, Mr. Chairman, is a vital and necessary piece of legislation. It provides for necessary programs of water pollution control—programs which must be considered of the utmost importance. Too many of our lakes and streams have become infected and polluted. Sports such as fishing and boating cannot be fully enjoyed anymore. Additional positive steps such as those called for in this legislation, are critical if we are to restore the true beauty to our Nation's waterways.

There is one section of H.R. 17369 in which I have a particular interest. This is the promotion of oceanographic research. Ever since I have been in the Congress I have attempted to promote interest in this area and have also attempted to stimulate the growth of such oceanographic industries on Long Island. As I indicated before, I have introduced a bill, H.R. 8470, which provides for a study of the feasibility of establishing a quasi-public corporation for oceanographic research and development.

Science has brought us to the threshold of a new frontier. We are about to explore the only unknown geographic territory on this planet—the environment under the sea. We are going to explore it because men have gone under the sea and come back and told us of its riches. It is sometimes hard to believe that the answers to many of our problems on earth will be found in the ocean's depths; that the main problem which has always afflicted man, that of scarcity, might be terminated. In the next decade the exploration of the sea will be as important as was the exploration of space in this generation. It is essential that we prepare for it, and that we not enter the next decade in the second place under the sea.

Mr. Chairman, I think in our long-range planning for ocean research, the type of institution on which we depend for the development of that area is most important. And in selecting the institution we must naturally look to the objective we are pursuing, and the job to

be done. A wholly public institution may be appropriate for the exploration of space, because the space program activities are primarily devoted to public purposes, and wholly supported by Federal funds.

However, the development of the sea is for a purpose which is in the interest of both the private and public sector. There will be a very basic role for private capital in the exploration of the sea. The private consumer will be interested in and will benefit from the transfer of these resources from the sea to the land. On March 21, 1967, Dr. Edward W. Wenk, Jr., executive secretary of the National Council on Marine Resources and Engineering Development, expressed very nearly the same idea. He said, in part :

* * * in the space program the activities are primarily devoted to public purposes and primarily supported with Federal funds. In the oceans, the purpose embraces both the public and private sector.

The reason I am recommending a quasi-public corporation is that, unlike the space program where there is nothing we can bring back from the moon, there are commercial aspects and profits to be made in the exploration of the sea. In this and the next generation the exploration of the sea will open up a treasure chest which will pale the space explorations of this decade into insignificance. I do not want the Federal Government competing with private industry in the exploitation of these resources.

In recommending that the sea be developed in this way, I am suggesting a course of action which we have followed before. We developed the West in this way. Government support of the railway opened up new areas and opportunities for everyone living on the continent. The Government has had a similar role in fostering the growth of agriculture, steel and space industries.

The magnitude of the task before us is tremendous, is every bit as dangerous and uncertain as the exploration of space. The area to be explored covers what lays beneath the entire water surface of the earth. To understand the phenomena of the sea, to develop techniques and instruments for dealing with the physical problems we shall encounter, to convert her riches to economic products which man can enjoy—this is the task of the explorers of the sea. It is a task which this legislation helps to promote.

However, soon we venture forth, we may be sure of success. Previous activities in the ocean's depths have already yielded information and indicated that there is much to be gained by these explorations.

We must accelerate our activities now and go forward into this new area. We must look upon the exploration of the oceans as an investment. For there is an answer under the sea to many of the world's problems, and we should seek that answer and seek it now.

In conclusion, Mr. Chairman, I urge that while we spend billions exploring outer space, we expand our exploration of this comparatively unexplored and exciting area of the earth which holds great promise and potential. I urge that the subcommittee report this measure favorably for prompt consideration by the full committee so that the House can act on this vital legislation during this session of Congress.

I ask the opportunity in presenting into the record a statement by Dr. Edward Wenk, relative to the exploration.

Mr. Willis. All right, that will be done.

(The document referred to follows.)

OCEANOGRAPHIC RESEARCH AND DEVELOPMENT

(Congressional Record, April 12, 1967)

The SPEAKER pro tempore. Under previous order of the House, the gentleman from New York [Mr. WOLFF], is recognized for 5 minutes.

(Mr. WOLFF asked and was given permission to revise and extend his remarks and include extraneous matter.)

Mr. WOLFF. Mr. Speaker, science has brought us to the threshold of a new frontier. We are about to explore the only unknown geographic territory on this planet—the environment under the sea. We are going to explore it because men have gone under the sea, and come back and told us of its riches. It is sometimes hard to believe that the answer to many of the problems of the earth will be found in the ocean's depths; that the main problem which has always afflicted man, that of scarcity, might be terminated. But evidence has been adduced of rich deposits of food and minerals in the sea.

In the next decade, the exploration of the sea will be as important as was the exploration of space in this generation. It is essential that we prepare for it, and that we not enter the next decade in the second place under the sea.

I have introduced today an amendment to the Marine Resources Engineering Development Act of 1966—Public Law 89-454—which would make recommendations to the Congress with respect to the feasibility of establishing a quasi-public corporation for oceanographic research and development. This corporation would be similar to the Communications Satellite Corp., and would differ from NASA.

Mr. Speaker, I think in our long range planning for ocean research, the type of institution on which we depend for development of that area is most important. And in selecting the institution we must naturally look to the objective which we are pursuing, and the job to be done. A wholly public institution may be appropriate for the exploration of space, because the space program activities are primarily devoted to public purposes, and wholly supported by Federal funds.

However the development of the sea is for a purpose which is in the interest of both the public and private sector. There will be a very basic role for private capital in the exploration of the sea. The private consumer will be interested in and will benefit from the transfer of these resources from the sea to land. On March 21, 1967, Dr. Edward Wenk, Jr., Executive Secretary of the National Council on Marine Resources and Engineering Development expressed very nearly the same idea:

The NASA analogy may not apply. . . . because in the space program the activities are primarily devoted to public purpose and primarily supported with Federal funds. In the oceans, the purpose embraces both the public and private sector. Offshore public lands must be developed with private incentive if we are to follow the present pattern of free enterprise. Where the risks are high or the profits long deferred, interests may be combined. It is here that an alternative arises in, for example a COMSAT-type organization.

The reason I am recommending a quasi-public corporation is that, unlike the space program where there is nothing that we can bring back from the moon, there are commercial aspects and profits to be made in the exploration of the sea. In this and the next generation the exploration of the sea will open up a treasure chest which will pale into insignificance the exploration of space. I do not want the Federal Government competing with private industry in the exploitation of these resources.

In recommending that the sea be developed in this way, I am suggesting a course of action which we have followed before. We developed the West in this way. Government's support of the railway opened up new areas and opportunities for everyone then living on the continent. The Government has had a similar role in fostering the growth of the agricultural, steel, and space industries.

The magnitude of the task before us is tremendous, is every bit as dangerous and uncertain as the exploration of space. The area to be explored covers what lays beneath the entire water surface of the earth. To understand the phenomena of the sea, to develop techniques and instruments for dealing with the physical problems we shall encounter, to convert her riches to economic products which man can enjoy—this is the task of the explorers of the sea. It is a task we should be thinking of getting under way now, since it promises a solution to so many of our problems. Moreover, we are assured of being involved in intensive competition with other nations. But because of the great amount of capital and resources available to us, we ought to be a great distance

in the lead in exploiting the ocean. The technologies which we have developed for other industries will be useful to us in our search of the sea.

However soon we venture forth, we may be sure of success. Previous activities to the ocean's depths have already yielded information and indicated that there is much to be gained by these explorations.

I believe that we should accelerate our activities now, and to go forward in this new area. When resources are released by the termination of the conflict in Vietnam, we should accelerate more. For there is an answer under the sea to many of the world's problems; and we should seek that answer, and seek it now.

I include in the RECORD at this point a copy of Dr. Edward Wenk's speech given before the IEEE International Convention in New York on March 21, 1967:

"MARINE SCIENCES—ITS PRESENT AND FUTURE

"(Keynote address by Edward Wenk, Jr., executive secretary, National Council on Marine Resources and Engineering Development, before the IEEE International Convention, New York City, Mar. 1967)

"I am honored by this platform and by this distinguished audience. I am also grateful for the opportunity to discuss marine sciences with a group that so well understands its relationship to our national welfare. I want to examine with you some of the sea's new dimensions that will assure our continued leadership for world order, and the attainment of scientific, technological, social and economic progress.

"A FRESH IMPETUS TO UNDERSTAND AND USE THE OCEANS

"The United States has embarked on a demanding new venture to explore our last geographic unknown territory on this planet, the marine environment. This venture was inaugurated not by a Magellan, or a Columbus, nor a Lewis and Clark, but by the passage of PL 89-454¹ by the Congress. It was approved by the President in June, 1966, and has been implemented vigorously and promptly. A high pace of program decisions has been sustained by the National Council on Marine Resources and Engineering Development created by the Act and chaired by Vice President Humphrey. As Executive Secretary to the Council, I assure you that the Cabinet members and agency heads who make up the Council are dedicated to translating this new mandate into a program for action—to meet today's problems and tomorrow's challenges. We are embarked on one phase of planning for Century 21.

"Our mission is: To understand our marine environment, and to use that understanding in effective action for national security, for economic growth, for enhancement of the quality of life. In this context, understanding the marine environment means perceiving the principles of its physical characteristics and of the life that it bears. The geographic exploration is itself a great task in sheer magnitude, extending over the water surface of the Earth and in its depth and seabed. The technical problems of understanding physical phenomena of the oceans and life supported by the oceans comprehend most of the scientific disciplines. They call increasingly on instrumentation and other technologies from the frontier fields of engineering development. As knowledge matures and economic applications proliferate, the engineering and managerial skills of numerous additional industries will be needed to join those now engaged in ocean-related activities.

"This new venture is based on the recognition that our previous scientific activities in the ocean sciences have borne fruit. The time is now ready for the transition to an emphasis on development and on economic sustainable production from the oceans to serve national purposes. The time perspective of our activities thus is 3-fold. We must simultaneously:

"a. continue our research in fundamental sciences of the ocean processes in keeping with our tradition;

"b. apply the technologies which our economy has developed in such great measure to the development of feasible ocean-based industries;

"c. look ahead to the needs of the next generation as we plan the use of ocean-related resources.

¹The Marine Resources and Engineering Development Act of 1966.

"OUR PURPOSES

"This new emphasis on the oceans, which we have explored and measured and used to some degree for a long time, must be considered in terms of investment. This program has emerged as the result of an orderly development of interest, sparked by demonstrations of potential benefits, based solidly on the work of the past in fishing, oil development, weather forecasting and other ocean-related activity. The decision to focus our efforts and accelerate them was not haphazard. Nor was it a response to narrow special interests of the businesses or industries already active in the oceans, or to the interests of the ocean science community.

"To the contrary, our purposes are to serve the Nation's objectives, in pursuit of mankind's shared human concerns. The President emphasized some of the key opportunities in transmitting the first report to the Congress on marine resources and engineering development² a few days ago:

"The resources of the oceans can help us meet many of the challenges that face our Nation and the world today.

"The vast food reserves of the sea must be developed to help end the tragic cycle of famine and despair.

"The continuing pollution and erosion of our seashores, bays, estuaries, and Great Lakes must be arrested and reversed to safeguard the health of our people and to protect the resources of the sea.

"The influence of oceans on the environment must be understood so that we may improve the long-term forecasting of storms, weather, and sea conditions; protect life and property in coastal areas; and improve the prediction of rainfall in the interior.

"The wealth of the ocean floor must be freed for the benefit of all people.

"Finally, the seas must be used as pathways to improved international understanding and cooperation.

"The President envisions new solutions to the pervasive problems of famine, hazards to health, degradation of irreplaceable resources, and threats to national security. He sees potentials for economic gains by protection against extreme weather conditions through further improvements in our ability to forecast, and by economically feasible increases in the harvests of marine resources; fish and minerals. These tangible 'second-stage' activities require the imaginative focus of many professional skills, including adapting techniques and equipments developed for other recent fields of intensive application—the space program being a striking illustration.

"Complementing the search for understanding of the oceans and the development of utilitarian applications of such knowledge, we seek ways to advance these programs through international cooperation. The Marine Sciences Act specifically calls for the Council to 'coordinate a program of international cooperation in work done' pursuant to the Act. That provision is consistent with the spirit of fundamental scientific work in oceanography as long practiced by our academic and research institutions and the civilian agencies of the Federal Government.

"APPROACH

"These objectives markedly expand the main concerns we have recognized in the oceans in the past. A transition is under way. The size of the challenge and the rate of change demanded by the opportunity shape our approach. Basically, the strategy is a) to use fully the resources engaged in various facets of the oceanography field, b) to secure policy-program coordination to attain maximum effectiveness without sacrificing the distinctive imagination and initiative and ideas of each, c) to welcome into the field fresh ideas from all sectors of our society, and d) to encourage private investment and public private cooperation.

"The Marine Resources and Engineering Development Act has three main provisions. One established the new national policy to intensify study of the marine environment and to develop its unrealized potentials in the national interest. A second created the National Council on Marine Resources and Engineering Development chaired by the Vice President to advise and assist the President in implementing the policy and carrying out its objectives. Finally a

² "Marine Science Affairs—A Year of Transition," March 1967, U.S. Govt. Print. Office, Washington, D.C.

national advisory commission appointed by the President was provided for to recommend a national plan in marine sciences.

"The Council through membership by the Department Secretaries and the heads of agencies which have marine science responsibilities, is a new means for exchange of information and mutual alignment of policy orientation at the Executive branch level, and for development of new policy. It has met five times since August. The Commission, appointed in January, has already met twice, and fifteen members from industry, universities, and State and Federal Government, together with four Congressional advisory members, are under way in their assignment. The Council and the Commission have established a pattern of cooperative, but independent, endeavor.

"To achieve the arduous objectives established by the Marine Sciences Act will call for application of the finest skills and technical resources the country can muster. We have a fine record of invention and innovation in translating science into useful technology. It is our considered judgment that the Nation has the technical readiness to solve these problems for the marine environment. To apply this technological expertise we look to the pattern of Government and industry partnership, well proven in military development and again in the space program. In the marine sciences, there has been lively participation by universities and private laboratories, which we hope will be increasingly fruitful. A number of coastal States have active programs in marine sciences, which have a vital role to play in this cooperative venture. Professional societies, like your own, share in various degrees in developing the field. All of these inputs are valued resources; all are essential to accomplishing our ambitions for the Nation—more effective use of the oceans.

"THE PROGRAM

"For Fiscal Year 1968, the President has recommended to the Congress a Governmentwide budget of \$462 million for marine science activities, up 13% from the \$409 million for FY 67. The scope embraced by this program is somewhat broader than the 'national oceanographic program' that for many years has spelled out budgets of the eleven Federal agencies concerned. Within that part of the total program, however, budgetary proposals amount to \$278 million, up 21% from the \$229 million for FY 1967.

"Of the increase, approximately \$41 million represents program areas selected by the Marine Sciences Council for priority emphasis. These were chosen after a careful review of well over 100 recommendations by the President's Science Advisory Committee, National Academy of Sciences and the Federal agencies. The nine concern:

"a new 'food-from-the-sea' program, especially through oversea demonstration projects utilizing fish protein concentrate;

"implementation of the sea grant program to strengthen education, applied research and information transfer;

"a new study for improved collection and utilization of oceanographic data;

"use of the Chesapeake Bay as a model to study the effects of estuarine pollution and remedial measures;

"a pilot plan for offshore minerals exploration;

"an expanded ocean observation system to improve nearshore weather prediction and accuracy of long range forecasting;

"a strengthened program of deep ocean technology especially to develop a future capability to recover lost equipment;

"a new ship to accelerate research in sub-Arctic waters; and

"programs for international cooperation to promote peaceful use of the oceans.

"Over half the \$462 million is devoted to defense. The seas conceal the critically important POLARIS component of our deterrent forces. In the future, such systems may operate in a much wider range of ocean environment and require a far greater understanding of those qualities of the seas that make it transparent for our own purposes while maintaining our ability to operate free from detection.

"The military search and recovery mission is a clear ocean engineering function related to national defense. The loss of unarmed nuclear weapon off the coast of Spain is related to our national security, and the capability to find and retrieve such objectives is one purpose of the Navy's deep submergence program.

"National security, however, depends on more than military strength. Implicit in our concept are the non-defense activities focused on the vast untapped resources that have the potential to meet broader national goals.

"For the longer term future, it is premature to chart with definitiveness specific lines of frontier development. Some of the areas of concern almost certainly will include:

"Development of increasingly sophisticated systems for detection and measurement of resources in the sea water and on and beneath the ocean floor;

"Gradual national elaboration of an ocean observation and prediction network to the degree justifiable by improvements reasonably attainable in forecast capabilities. This will involve sensors, transmissions, and analytic capabilities not now available;

"Data systems evolution, based on the interim study now being initiated;

"Expansion by orders of magnitude of our capabilities for operations—beneath the ocean surface;

"Creation of institutions to protect the ocean heritage; to encourage development and exploitation of replenishable resources at sustainable levels, and to protect irreplaceable resources from uneconomic degradation.

"The Council report, in reciting nine areas for priority emphasis, coincidentally identifies the problems that would conspicuously benefit by application of high technology. The first of these concerned a new program to increase the harvesting of food from the sea. Its purpose is to help meet protein deficiencies throughout the world. Since this topic has received a fair amount of good news coverage, I would refer you to press comments, or the report itself, for more details.

"A second area where marine activities are becoming increasingly significant concerns the preservation of the nearshore environment and utilization of resources on the Continental Shelf.

"The United States has some 13,000 miles of coastline. Nearly 75 percent of our population live in the states bordering the oceans and Great Lakes. This concentration may well increase, for people always have been attracted to seaside locations. So have commercial interests. Paradoxically, while we find increasing populations seeking to utilize our seashore, the resource itself is being degraded, often by man's own actions. The by-products of technological progress continue to detract from the value of coastal areas. In all too many instances, oil-covered beaches, polluted harbors and bays, and eroded shorelines have accompanied economic developments along our coasts.

"Intensive, well-founded programs of marine research can help alleviate this problem: first, by better understanding the effects of pollution; second, by seeking alternatives or treatment measures; and third, by defining positive ways in which the nearshore environment can be *used* but not *abused*. Urban planning no longer can end at the water's edge. Pilot studies for pollution control are one of our immediate goals.

"WHAT STEPS MUST WE TAKE TO REALIZE OUR GOALS?"

"We must first understand better the role of the oceans in our national thinking. Sea power considerations, in the broadest sense possible, must become inherent in our formation of national policy. This applies not only to the military and maritime activities of our national life, but to research and development as well.

"We gain some perspective on our present status when we consider that only three percent of our national research and development effort, as reflected in budgets, contribute to marine interests. A gain of just one percent in national R & D expenditures, both Federal and private, would effectively increase the intensity of our effort by one-third.

"Second, we must meet the technical challenges that confront us. These involve the engineering and development of protective devices, new underwater equipment, and shore facilities for advanced research and development. We must solve ways of improving communications and devise techniques for assuring man's safety in the hostile environment of the sea's depths.

"Third, we must attract more talent into the ocean sciences. Admittedly, ours is a young profession. The first degree in oceanography was granted only 35 years ago. Even today, of 2,650 persons employed in the marine sciences and technologies, only 630 have oceanographic degrees.

"The fourth step to achieve the goals of this new legislation concerns the study of institutional arrangements to obtain maximum effect. The legislation assigns directly to the Commission the primary task of recommending an organizational plan for the future. This may be one of the most important elements of current study. I would suggest that the broadest possible variety of options be considered that include complete innovation in Government structure. I am sure that the Commission will do more than consider the reshuffling of existing elements.

"There have been proposals to reorganize or consolidate the present array of Federal agencies. Some have characterized that development as the birth of a "wet NASA." The NASA analogy may not apply, however, because in the space program the activities are primarily devoted to public purpose and primarily supported with Federal funds. In the oceans, the purpose embraces both the public and the private sector. Offshore public lands must be developed with private incentive if we are to follow the present pattern of free enterprise. Where the risks are high or the profits long deferred, interests may be combined. It is here that an alternative arises in, for example, a COMSAT-type organization.

"In short, when we consider the future, we must recognize that progress may critically depend upon a wise selection of the institutional envelope. To that end, we must recognize that growth and achievement involve a genuine partnership with the private sector.

"A scant ten years ago we did not have a national space program. Today, the Moon is within our reach. We have launched hundreds of satellites for communications, meteorological, warning, exploration and other purposes. Our astronauts have traveled in space. We have rocketed instruments past Venus and Mars.

"Three things have made these feats possible. One is the national leadership of the program at the executive level and the support of the people through Congress. The other is entrepreneurship as demonstrated by American industries. The third is the creative contributions by our universities. This triad of independent institutions is our strength; we must focus this capability on new challenges.

"These substantial resources, I submit, are available today for oceanographic research and development. Congress has passed legislation, supported by both parties, and the President has soundly endorsed it. The Vice President, as Chairman of the Marine Sciences Council, has spoken widely and worked tirelessly in the cause of marine progress. Twenty-three bureaus in eleven Federal departments or agencies are engaged in the activities encompassed by the national program and their efforts are being coordinated by this Council.

"May I conclude with further comment by the President :

"The depth of the sea is a new environment for man's exploration and development, just as crossing the West was a challenge in centuries past.

"We shall encounter that environment with the same conviction and pioneering spirit that propelled ships from the Old to the New World.

"We shall bring to the challenge of the ocean depths—as we have brought to the challenge of outer space—a determination to work with all nations to develop the seas for the benefit of mankind.' "

Mr. WOLFF. Thank you, Mr. Chairman. I appreciate the opportunity you have given me.

Mr. WILLIS. We are very grateful to you for taking the time to come forward with your statement. Thank you so much.

Mr. CAHILL. First of all, I want to join in welcoming our distinguished colleague.

I would like to have Mr. Wolff's comments on the formula that is established in this bill for the distribution of the funds.

Mr. WOLFF. I feel that it is an excellent way for us to reinvest in the future by having those who destroy what we use up, the natural resources, put back into the land that which they have taken out.

Mr. CAHILL. Do you subscribe to the provisions of the bill; first, that a portion of this money should go to the States to be used for schools and highways and second, that all of the money that is coming in from these leases be earmarked for such specific purposes?

Mr. WOLFF. Yes, because we have a great transportation need in this Nation. We also have a great need for schools to educate young people to the potentialities of the oceans in sea-grant colleges. These will bring us the future people to add to the scientific knowledge that is necessary to proceed in the future ocean exploration.

Mr. CAHILL. Your thought, then, is instead of having these funds go into the General Treasury so that the Appropriations Committee might decide what was the relative necessity of an item at a given time, you would want to legislate at this time that these funds be directed according to this formula and that they be used exclusively for the purposes set forth in this legislation?

Mr. WOLFF. I would say that I do support this, yes, sir.

Mr. CAHILL. You would prefer earmarking funds for these purposes even though there might be an acute need for, say, housing. You would not believe that any of these funds should be diverted for any reason other than those specified—

Mr. WILLIS. Will the gentleman yield?

Mr. CAHILL. Yes.

Mr. WILLIS. I want this committee to know that we will work on that if and when we mark it up. There may be some extremely important purposes that I didn't think about in drafting the bill. So I have an open mind on that.

Mr. CAHILL. I also have an open mind, Mr. Chairman. I am trying to get some assistance from some of the knowledgeable witnesses who are here. Knowing that Mr. Wolff has a great interest in this field, I wanted to get an expression.

Mr. WOLFF. I believe we also have physical resources in this Nation. I think that transportation and schools in this Nation need immediate attention. I feel this is one way of adding to those funds which are already available.

Mr. WILLIS. Mr. Railsback?

Mr. RAILSBACK. I thank the Chairman for yielding. I want to join in commending the witness for a fine presentation.

I wonder if from your experience you can tell us what inconveniences and disadvantages fall to the adjacent State by reason of the operations that are carried on in respect to the Continental Shelf—

Mr. WILLIS. Will the gentleman yield on this point?

Mr. RAILSBACK. I will be glad to yield.

Mr. WILLIS. The offshore workers get the benefit of police protection, of schools and roads and other services. They are enjoying the facilities of the States and that is what causes a great burden.

Mr. RAILSBACK. I was wondering, Mr. Chairman—and either you or Mr. Wolff may respond as you wish—if there is any protection afforded by the State to the operations carried on outside of the 3-mile limit. In other words, I am wondering if a State does provide police protection, fire protection, or any other service in respect to any of these operations that are carried on in an area adjacent to the State.

Mr. WOLFF. I can't say that those police services are provided outside of the State line. However, certainly there are supporting services within the State and the adjacent land that certainly could be or would be utilized.

Mr. RAILSBACK. I thank the gentleman.

Mr. WILLIS. Thank you so much, Mr. Wolff.

Mr. WOLFF. Thank you.

Mr. WILLIS. Our next witness is Dr. Peter Badgley. Dr. Badgley is connected with the Gulf University Research Corp. and I see our good colleague, Mr. Young, is present. Would you care to give us the background of the qualifications of this witness, sir?

Mr. YOUNG of Texas. Mr. Chairman, gentlemen of the committee, it is a pleasure and honor doubly for me to be here today and I appreciate so much your thoughtfulness in allowing me to appear here with Dr. Badgley who holds a distinguished position in the field of oceanographic and marine research down in the gulf coast area, the Gulf of Mexico.

He has a distinguished career and is specially equipped to discharge the duties which he holds as program director for the Gulf University Research Corp. We are very proud of the effort that is being made down in our area in the field of marine research generally.

We are very much interested in the commendable objectives of H.R. 17569 and I simply want to appear here and commend to this subcommittee the comments of this distinguished and very capable man in this field. I thank you very much for having heard me. I want to excuse myself with your permission because I have another committee which is running at this time.

Mr. WILLIS. Thank you.

Dr. Badgley, you may proceed in your own way.

TESTIMONY OF PETER C. BADGLEY, PROGRAM DIRECTOR, GULF UNIVERSITIES RESEARCH CORP.

Dr. BADGLEY. Mr. Chairman and gentlemen, it is a pleasure to be here.

I am Peter Badgley, as Congressman Young has said, and program director of the Gulf Universities Research Corp., and I am appearing on its behalf to speak on the subject of the "Marine Resources Conservation and Development Act." Although time has not permitted a detailed review of my prepared statement by members of the GURC board of directors, I feel that the position which I shall present here is in accord with a consensus of their views.

I also feel that the comments I shall be making are quite representative of the thoughts of the marine resources community nationally. I have had some acquaintance with the activities of the Marine Resource Council and others in this regard.

Gulf Universities Research Corp. is a nonprofit research consortium concerned with marine resource problems in the gulf region, representing 16 gulf coast universities and two research institutes. They are as follows: The Texas A. & M. University, the Texas Technological College, University of Miami, Louisiana State University, Florida State University, and the University of Florida, University of Houston, Southern Methodist University, Texas Christian University, the University of Mexico, the University of Southern Mississippi, Rice University, University of Texas, University of Alabama, the Southwest Center for Advanced Studies at Dallas, and two research institutes, the Southwest Research Institute, San Antonio, and the Gulf South Research Institute.

Ten major corporations interested in natural resources which have engaged in offshore work hold advisory membership in GURU. Members of Federal and State agencies serve on GURC's advisory board and research committees. GURC thus represents a very comprehensive spectrum of organizations concerned with the development of natural resources on the Continental Shelf of this country.

Our views are in very close accord with H.R. 17369 the Marine Resources Conservation and Development Act, recently introduced by Congressman Edwin E. Willis, for the following reasons:

1. The revenues accruing from lease sales on the Continental Shelf are derived from industrial concerns based for the most part in the adjoining coastal areas. The petroleum industry does not just go and recover petroleum from the Continental Shelf without creating a whole set of offshore and coastal data and facility requirements. These supporting requirements have a profound impact upon the coastal States. Expanded educational and communication facilities are among the supporting requirements which the coastal states are called upon to provide, and because there is no severance tax to the States, they consequently bear an increased financial burden at the present time. In addition to these current increased costs to the coastal States, some provision must be made for such a time in the future when offshore mineral resources have been completely extracted. The coastal States deserve to be left in an economically viable position to meet this future state of affairs.

Actually the industrial activity on shore starts to decline well before extraction is complete. In my view the time to invest in our other marine resources which cover a broad field of activities is now rather than after environmental problems have become too extreme.

My second major point: As a result of the offshore natural resource work, a great deal of associated industrial activity has developed in the coastal areas. This increased industrial use of the coastal region has created a number of pressing conservation and environmental problems. Because of this greater use of the coastal region, the need for each of the following items has greatly increased:

- (a) Air and water pollution studies and controls.
- (b) More accurate bathymetric charts.
- (c) More coastal navigation aids.
- (d) Detailed coastal land use planning—there are now more and more industrial and other competitors for the scarce coastal lands. The coasts of this Nation are intimately made up of both water and land. This is a very complex environment. There are many people competing for this nearshore environment. If you look at the last annual report of the National Marine Council, they point out significantly that a very substantial portion of this Nation's people live close to the shoreline.

This concentration of people in our coastal areas is continually on the increase. These lands and coastal waters must be preserved for the most valuable and best use, but we need planning for that purpose.

(e) We need studies of the effects of coastal construction upon the adjoining coastal land and water areas.

(f) Detailed understanding of the legal problems of the coastal margin.

(g) Collection of offshore environmental data—for example, better understanding of air-sea interaction relationships.

(h) Monitoring of the biologic productivity of estuaries and coastal waters.

(i) Evaluation of the resources of the sea floor, other than petroleum—of course, we need petroleum also.

These and many other problems must be attacked vigorously if our valuable coastal areas are to be preserved and yet utilized to their full-

est potential. The situation is particularly acute in the Gulf of Mexico because of the broad expanse of Continental Shelf in this area, because more than 50 percent of the runoff from the Nation's rivers flow into the Gulf (which accentuates the pollution created by coastal industry) and because of the severe meteorological conditions in this area.

Thirdly, although existing Federal agencies have recognized a number of these important problems, very few of them are being adequately studied and implemented because of inadequate funding.

Fourthly, any studies and actions which would add to our knowledge of environmental conditions in the Gulf region would permit the oil industry to work more effectively in these hazardous offshore areas. This, in turn, would increase the royalty income accruing to the Government.

The proposed Marine Resources Conservation and Development Act is thus justified for a number of important reasons.

Many of the problems listed are regional in scope and can be attacked more effectively and economically on a cooperative regional basis. In order to solve some of these broad problems, GURC has defined and documented a number of program which are vitally needed. We believe that these are the kind of programs that might be funded by the proposed Marine Resources Conservation and Development Act. These programs include the following:

(a) The Gulf research and environmental measurements program.

(b) The Gulf marine resource potential and priorities program.

(c) Land and water-use program for the coastal zone of the Gulf of Mexico.

(d) Legal problems of the Continental Shelf and coastal margin in the Gulf of Mexico.

(e) Submarine coring program for the Gulf of Mexico.

(f) Fishery resource program for the Gulf of Mexico.

Planning sessions by scientists at GURC member institutions have been held in each of these program areas and detailed proposals have been prepared for items (a) and (b). Preliminary planning documents have been prepared for items (c) through (f). Both items (a) and (b) have been endorsed by a wide segment of the scientific and industrial community including representatives from our universities and Government agencies, but insufficient funds have been available to date to initiate these very worthwhile endeavors.

In conclusion, the proposed Marine Resources Conservation and Development Act is urgently needed to provide adequate support for the many pressing conservation and coastal environmental problems facing our Nation and in order that this country may maintain a leading position in the marine resources field.

I feel that prompt action is needed and anything that this subcommittee can do to bring this bill rapidly before the House is urgently recommended.

Thank you, gentlemen.

Mr. WILLIS. Thank you very much, Dr. Badgley, for the penetrating views expressed this morning. By the way, there is the use you propose to which the funds derived from the bottom of the Continental Shelf would be used; that is, to provide a study of and, if possible, the extermination of hurricanes before they reach shore.

In fact, two of them are present right now. All the hurricanes are somehow given feminine names by the people who have charted this.

So we are very grateful to you, Dr. Badgley, and appreciate your views.

Mr. POFF. I would like to address a few questions to the witness which I believe probably are well within his domain of expertise.

What revenues from resources other than gas and oil might we anticipate we could find in the subsoil and seabed of the Outer Continental Shelf?

Mr. BADGLEY. There are many types of nonmetallic and metallic mineral deposits which can be expected. Placer deposits such as the ones well known in the Bering Sea are one of these examples.

Mr. WILLIS. I might add that off the coast of the gentleman's State of Virginia and the Carolinas, the scientists have discovered that there are deposits of phosphorite and other minerals.

Mr. BADGLEY. That is correct. There are, of course, not just metallic and mineral deposits but for example, off the South Atlantic coast (Florida) a large group of scallops I believe was found in the last year, a very substantial reserve of this valuable food resource.

Mr. POFF. Will there be any chemical resources in the waters above the Outer Continental Shelf?

Mr. BADGLEY. Yes, I believe so. The chemical extraction is from the waters themselves is one thing and then, of course, the mineral resources near the surface of the sea bottom and below the sea bottom.

Mr. POFF. The reason I inquire is that the Outer Continental Shelf Lands Act, I believe, particularizes with respect to the claim of the United States and asserts sovereignty in the subsoil and seabed, but specifically reserves the waters above the Outer Continental Shelf in their high seas capacity.

That being true, would any resources that might be extracted from such waters, including fish and other marine life, constitute revenues for use in resources which would contribute to what this bill proposes?

Mr. BADGLEY. Certainly there is revenue to be derived from that production. Whether it is tied into the way the bill is written I would have to go back and study the bill in that regard.

Mr. POFF. My next question probably has no answer. I can concede that any witness who attempts one very likely would be making only an educated guess. But do you have an educated guess about the potential total revenues that might reasonably be expected in the foreseeable future from the subsoil and seabed of the Outer Continental Shelf seaward from the 3-mile limit?

Mr. BADGLEY. It has been estimated by the oil industry that—this is an educated guess—over the next 10 to 15 years somewhat in the order of 20 percent—it may be plus or minus 5 percent (I don't have the figures in front of me) of the oil production from this Nation will come from these offshore areas.

Mr. POFF. What volume is that?

Mr. BADGLEY. I don't have the volume figures at my fingertips. But I can say this: That as of the present time there have been on the order of I believe \$1.5 billion spent on offshore lease sales. This is a rough figure. There was a recent sale for example off the coast of Texas in which the total dollar figure was around \$600 million.

There have been sales off Louisiana coast and California coast in the same general order of magnitude. That is why I came to the \$1.5 billion figure. I would expect this order of magnitude to continue for say 5 to 10 years perhaps, perhaps 5.

The oil companies who are putting up these funds certainly expect to much more than recover that dollar volume. They have to make a multiple of three or four times or they don't make these investments. So we are talking in the order of I would say a minimum of \$5 billion worth of natural resources production coming from our offshore areas.

I would say the figure is going to be substantially above that when we consider all the resources that are possible in these areas.

Mr. POFF. When you use the word "revenues," you mean the revenues from the leases which the Federal Government makes, or do you mean the total value of the resources extracted?

Mr. BADGLEY. The first figure I quoted, \$1.5 billion, was the sale of the lease themselves and this money returned to the Federal Government.

When I quoted the multiple, I said the oil companies have to not only recover that, but no major oil company goes and buys offshore leases unless it is going to make three or four times that amount in profit.

It has to have some profit or it doesn't go offshore. The costs of the production have to be paid for, too. So we are really looking at perhaps a production figure for the total sale value of the offshore petroleum of perhaps 10 times those original lease sale figures.

There has to be enough for profit and there has to be enough to pay for the costs. They won't go in and pay for these offshore lands by a lease sale figure unless they can see a certain percentage of profit.

Mr. POFF. What would you anticipate would be the total amount of revenue which would become subject to the allocation provisions of this bill in the year 1973?

Mr. BADGLEY. Could you review the royalty allocation provisions for me?

Mr. POFF. I asked for the total; the share that would be distributed to the Federal Government would be 62½ percent and to the adjacent State 37½.

Mr. BADGLEY. These would come from a certain percent royalty production figure. That is the figure I wanted to get from you if you could recall that.

Mr. POFF. I beg your pardon?

Mr. BADGLEY. There must be a certain percentage figure placed upon production which you are referring to.

Mr. POFF. The bill in section 2 provides that all rents, royalties, or other sums paid to the Secretary or to the Secretary of the Navy under or in connection with any lease on the Outer Continental Shelf shall be distributed in the portions I indicated.

What I really need to know, I think, is what would be the typical total to be subject to that allocation, say, 5 years hence?

Mr. BADGLEY. I don't have at my disposal at the moment what that royalty percentage figure is. It may be 10, 20, or 25 percent. That is why I am not able to answer that question.

Mr. POFF. Would it be possible for you to get that and supply it for the record?

Mr. BADGLEY. I think this general question could be worked up and an answer could be provided, yes.

Mr. POFF. I think that is critical to our consideration of the legislation. I ask unanimous consent that the witness be permitted to supply it.

Mr. WILLIS. Yes.

(Mr. Badgley's response appears at p. 50.)

Mr. WILLIS. I might say that the Secretary of the Interior estimates that the returns from oil and gas alone in the next 5 years would be in the order of between \$400 and \$500 million a year.

Mr. BADGLEY. Yes.

Mr. WILLIS. This comes from the Secretary of the Interior.

Mr. BADGLEY. This is in line with the figure I mentioned a few minutes ago on the sale of the leases themselves rather than the royalties from the production. That money becomes available as soon as the leases are sold.

Then downstream when the production starts coming in there is a royalty income also. That was the royalty percentage that I didn't have at my fingertips. It varies from place to place and so forth.

Mr. POFF. Do you care to comment upon the formula for distribution? Why was the figure 62½ percent selected and why was the figure 37½ percent selected? Is that within your particular knowledge?

Mr. WILLIS. That is based on the precedent established in the Mineral Leasing Act of 1920.

Mr. POFF. I have no further questions.

Mr. CAHILL. I want to compliment the witness on a very enlightening statement and to say that I observe that this organization which you are the director of, Mr. Badgley, is composed not only of a great number of universities but, as you have indicated, some 10 private industries.

One of the former witnesses indicated that in another area of the country similar explorations and similar associations have been formed and similar investments were being made by private enterprise for the purpose of these explorations. I am interested in knowing whether or not there is a liaison between the many individual organizations and universities and societies that are exploring this.

Is there any effort to establishing a clearinghouse to receive and disseminate this information lest there be duplication in this research?

Mr. BADGLEY. Yes. There are several coordinating groups at the national level. Of course, Dr. Wenk's group at the Marine Council, which is as you know associated with most of the Federal agencies, do some of this coordination.

There are several professional societies, the American Society of Oceanography, for instance, which attempt to make public some of the findings of the more local groups.

I think the regional concept that we are involved in makes a certain amount of sense, too, in that marine instrumentation and facilities are expensive, if they are not utilized all the time during the year. Thus regional consortiums are an economic way of attacking an expensive problem and that is why we become into being. The results of our findings are made available to several Federal groups such as the Marine Council, on request generally.

Mr. CAHILL. What is the principal repository of the acquired knowledge?

Mr. BADGLEY. One of the repositories at the national level is called the National Oceanographic Data Center located here in Washington in Alexandria, I believe. There are several regional data centers starting to come into existence, too.

Mr. CAHILL. If I were personally interested in knowing how the royalty percentages are determined and what the royalty percentages are on all the leases, where would I find it?

Mr. BADGLEY. This you could find from the Department of the Interior as one source. The oil industry, of course, keeps up on this, too, and from my point of view if I wanted to answer that question I would get help from both of those sources. I used to be in the oil industry myself. So I did have these figures at my fingertips at one time. That is a number of years ago.

Mr. CAHILL. One of the things that your testimony brought to light as far as I was concerned was the fact that there would be a wide difference in the advantages accruing to the various coastal States because of the varying width of the Continental Shelf along the coastal waters of these States.

That varies as I understand it considerably from place to place.

Mr. BADGLEY. Yes, it does. As a matter of fact, I do have some illustrations which I can make available to this committee showing some of these problems and some of these variations. One of the figures I have with me which does show the width of the shelf.

Mr. CAHILL. That would be very helpful as far as this member is concerned.

(Mr. Badgley's response appears at p. 50.)

Mr. CAHILL. Would it be your thinking that the distribution of these funds to the States should be related to the extent of the Continental Shelf or that all of the funds from the entire coastal waters of the United States should be pooled and then distributed on a different basis, perhaps a population basis?

Mr. BADGLEY. This is a very tough question to answer. I think that both should be looked at. Certainly one of my arguments—that for giving money back to the States—was that the States bear a burden because of increased population.

So you have got to take some consideration of population. At the same time we have got to keep in mind that we are not just talking about offshore oil resources. We are talking about other offshore marine resources also.

Some of these haven't been exploited yet. But they will bring in revenue in the future. So we have a complex problem here that is I think both population and the width of the shelf, both of these formulas perhaps should be given some consideration.

Mr. CAHILL. Are there any study groups in your organization or any study groups in being that you know of that are giving any active consideration to this problem?

Mr. BADGLEY. Our group, for example, is getting very interested in the use of the coastal land and in developing and land use planning. In doing that we have started to take a look at the population figures. The Department of the Interior has recently issued what they call a national land use map at a very small scale. It shows population density distribution and other things that relate to the use of the land.

So there are various sources of this information.

Mr. CAHILL. Recently, I am sure you know, the Congress in its housing bill provided a plan for flood insurance which is going to require a great deal of work by the Corps of Engineers in making surveys and determining just where the flood areas are located in the country.

It would seem to me that there should be some great coordination between that study and the studies that are apparently going to be essential as far as this particular work is concerned.

Do you subscribe to that view?

Mr. BADGLEY. Yes, entirely. Of course, the work of many of the existing Federal agencies starts to overlap quite a bit. You need to continually maintain coordination. Where the work of the Coast and Geodetic Survey stops and where the work of Interior starts, and so forth, is quite complex and one has to continually maintain a friendly coordination.

Mr. CAHILL. This leads me to my final question: Apparently it was found that in the exploration of space that one agency, NASA, was perhaps best equipped and best suited to handle that field. What is your feeling about a similar agency to handle oceanography and all its facets, which we are now beginning to recognize?

Mr. BADGLEY. That is a very tough question. I used to be a civil servant myself with NASA. So I have an appreciation for the problem. I think probably that the utilization of the existing Federal agencies should be maintained but we should at least have a coordination body perhaps small that keeps continual liaison with these various groups.

I think there is a feeling around the country that the continual creation of new agencies is not necessarily a good thing, that we have got quite a proliferation as it is. All of them are trying to do a good job.

So I would probably go along with the existing agencies but just make sure the coordination is continued.

Mr. CAHILL. Thank you very much.

Mr. ROTH. In your statement you make a comment about the impact that the petroleum industry has on the States and that there is no severance tax.

I wonder, doesn't this industry provide any kind of revenue to the States through other means, such as a property or income tax?

Mr. BADGLEY. Yes; there is no doubt that they do pay property taxes. I have not at my disposal detailed figures showing what the extent of that tax is and so forth.

Of course, you have got to bear in mind that the income coming from this offshore production is issued by the corporate offices perhaps of many of these major oil companies and gets distributed around the country as dividends to stockholders. The expenses, however, for the field operations occur in the local States.

I just don't have at my disposal any figures which would indicate the extent of what those property taxes are and whether they are adequate. I have a feeling that property taxes in general are not adequate to pay for all of the States' burdens. Property taxes are paid in the mineral producing areas and yet there is a severance tax in these areas also.

So if it is justifiable in those cases, for example, in the Rocky Mountain area where oil is produced, the oil producing companies have offices and pay property taxes, too, and yet a severance tax exists in case of coal and copper and oil production on land.

Mr. ROTH. What interested me is the implication that the industry is not paying its just share of the cost of the impact it has on those adjacent States.

My only question is whether your organization would have any facts or figures that could show whether or not this is true?

Mr. BADGLEY. We don't have them currently. But we might be able to help get some of those figures.

Mr. ROTH. Mr. Chairman, I would ask unanimous consent that this information be furnished.

Mr. WILLIS. It will be supplied.

(Mr. Badgley's response appears at p. 50.)

Mr. ZEIFMAN. Dr. Badgley, in reference to the tax problem, as a legal matter the coastal States do not have the power to impose taxes on the activities on the Continental Shelf. So as a result when you mentioned property taxes imposed on the petroleum industry I assume your reference is only to property taxes that might be imposed with respect to property actually located within the jurisdiction of the State.

Is that correct?

Mr. BADGLEY. That is correct. Onshore offices, for example.

Mr. ZEIFMAN. For example, the States do not have the power to impose ad valorem property taxes, or sales or use taxes, on the rigs themselves located on the Continental Shelf. Likewise they cannot impose income taxes on the income which is derived from the activities on the Continental Shelf.

Is that correct?

Mr. BADGLEY. That is my understanding, yes.

Mr. ROTH. Would the gentleman yield?

Is it necessary to have the onshore facilities in connection with these offshore activities?

Mr. BADGLEY. Yes; it is certainly necessary to have the onshore activities.

Mr. ROTH. Because of these onshore facilities, would it be permissible to allocate any of the offshore revenues to the State tax base for income tax purposes?

Mr. BADGLEY. I really am not in a position to answer that question. That is a question for the legal counsel of the individual States. I don't have that expertise. I think what Mr. Zeifman was asking me previously was relating to the property tax to office buildings located on shore, for example, in New Orleans and Houston and so forth.

There are certainly some property taxes going to the municipalities. I don't know that any of those taxes go to the State. I am just talking about property taxes here. I would say that legislation—I am not in a position to answer that question when it comes to income.

Mr. ZEIFMAN. In your statement you mention the problem of diminution in the future with respect to oil production. Are you suggesting that there is a danger that the coastal regions of the Gulf of Mexico are in danger of becoming depressed areas as the oil production diminishes?

Mr. BADGLEY. Let us say in answering that question the comments I have had from the oil industry are that it is very expensive to operate offshore. They have not really begun to make much of a profit. But they are forced because of the continual need to find new reserves to explore these areas. However, there are other sources—large sources—of oil reserves which could come into play and have a profound effect in relatively near future.

One of these is the oil shales in Colorado, another one is what are called the tar sands in the Province of Alberta, Canada. These are both large reserves of oil which are just now becoming tapped because of the cost factor.

Up to the present time it has been just a little cheaper to find reserves offshore and in land areas by drilling methods than by extraction. But we are approaching the point where the cost could be cheaper in these areas (Colorado and Alberta).

If the extraction costs suddenly started to tilt in favor of oil shale extraction, I would say that this could have a significant bearing upon the economies and life of offshore oil production.

I think in any case regardless of that we have to look ahead and say that the peak activity of any oil producing area is during the exploration phase. We are now in the exploration phase offshore in Louisiana, getting into that in Texas and we are in it in the California area.

These peak periods of activity last from my experience in the order of 5 to 10 years. Although oil production is still extracted from those areas afterward, the number of people employed by the oil industry decreases somewhat and you have somewhat of a lag of employment therefore.

Mr. ZEIFMAN. Recently in Business Week, there was an article which indicated that in the very near future there may be a 50-percent reduction in the cost of production of shale oil.

If that is the case, would that not contribute substantially toward the depression of the economies of the coastal regions along the Gulf of Mexico?

Mr. BADGLEY. If this 50-percent figure that you quoted is accurate that would have quite a profound effect, yes.

Mr. ZEIFMAN. Thank you very much, Dr. Badgley.

Mr. WILLIS. Thank you very much, and you have made a good contribution to our hearing.

(The information referred to at pp. 46, 47, 50 is as follows:)

GULF UNIVERSITIES RESEARCH CORP.,
College Station, Tex., August 5, 1968.

HON. EDWIN E. WILLIS,
House of Representatives,
Rayburn Building,
Washington, D.C.

DEAR CONGRESSMAN WILLIS: At the time I testified before your special subcommittee on Submerged Lands on July 25, you and your colleagues requested that I provide you with detailed information on a number of questions. I have listed these in Enclosure I.

These are complex, difficult, and vital questions which should be investigated in considerable depth. It will be difficult to get the answers without an organized approach. We in the Gulf Universities Research Corporation have available in our member universities the experts (geologists, economists, lawyers, petroleum engineers, fishery resource experts, etc.) needed to gather, synthesize, and assess the information necessary to answer these questions. Late last winter, we submitted to the NSF Office of Sea Grant Programs a comprehensive proposal

entitled "A Study of Marine Resource Potentials and Priority Requirements for the Gulf Coast and Adjoining Regions." This proposal was endorsed by a wide segment of marine resource interests in the Gulf region. Under the terms of this proposal, we planned to investigate many of the critical and most pressing resource problems of the coastal area and continental shelf, and would be happy to include the questions raised by your subcommittee. Mr. Able's office (NSF) has wanted to initiate this study but has had insufficient funds available to date. The Gulf Universities were prepared to put up their share of the matching funds required. Without some federal support, we just do not have the resources to put our investigators to work.

We would like to help your subcommittee collect this very important background information, and it is quite possible that you may be in a position to help NSF react more rapidly to our proposal; or it is possible that Congress itself has some research funds available to support such investigations directly. We are prepared to help in any way that can be worked out.

I am enclosing a copy of the proposal we submitted to NSF together with the endorsement letters received.

I am looking forward to your comments.

Sincerely yours,

PETER C. BADGLEY,
Program Director.

Enclosures:

- (1) Questions raised by Special Subcommittee on Submerged Lands, July 25, 1968.
 - (2) Copy of GURC proposal to NSF Office of Sea Grants Program.
 - (3) Copy of Endorsement Letters on above proposal.
- (The above enclosures are in the files of the subcommittee.)

Mr. WILLIS. Is Mr. William J. Casey with us?

TESTIMONY OF JOHN F. WOOG, LEGISLATIVE COUNSEL, LONG ISLAND ASSOCIATION OF COMMERCE AND INDUSTRY

Mr. Woog. Mr. Chairman and members of the subcommittee. My name is John F. Woog. I am legislative counsel for the Long Island Association of Commerce and Industry. I am pinch-hitting here today for William J. Casey, the association vice president.

I was privileged to serve as assistant counsel of the House Judiciary Committee in the years 1950 through 1953. I am glad to be back.

First, I would like to submit for the record a statement relative to this bill from the Assemblyman Perry B. Duryea, Minority Leader of the New York State Assembly.

(The statement follows:)

REMARKS ON H.R. 17369 BY HON. PERRY B. DURYEY, MINORITY LEADER, NEW YORK STATE ASSEMBLY, JULY 25, 1968

Mr. Chairman and members of the committee, I am Perry Duryea, Minority Leader of the New York State Assembly. I am happy to be with you today to talk to you of the importance which we in New York State attach to the field of marine science and to urge your help in the important tasks which lie ahead.

The wise use of our marine resources is a matter of concern to all in New York State. The State's economy reflects the intensive use of these resources for both business and pleasure. It has been estimated that commercial fisheries of New York State add more than \$50 million annually to the state's economy from fin fish and shellfish. Recreational fishing adds another \$75 to \$100 million. In addition some 50 million pounds of fish are processed for industrial uses. If we were to add to that the \$300 million spent annually by motor boat enthusiasts in New York State, we would find that water sport and fishing activities are responsible for more than one-half billion dollars of the vibrant economy we enjoy in New York State.

Clearly, the wise use of our water resources is of prime importance to New Yorkers.

But important as these resources are to us even now, their vast potential is as yet barely tapped. New fields and new uses are being opened to us by marine science. For example, research already under way in New York State and elsewhere, stimulated with federal aid of the kind proposed here today, could transform much of the 50 million pounds of industrial fish mentioned earlier into fish protein to feed our people and starving people throughout the world.

New York State in concert with local governments, private industry, colleges and universities is at this moment undertaking what we feel to be a significant step in recognition of the need to protect our ocean environment and to tap the fantastic promise our waters represent.

In the last session of the legislature, a sum of \$250,000 was appropriated as the state's primary contribution to the development of an oceanographic institute on eastern Long Island. This Institute, drawing on and combining the staffs of five universities in the New York City-Long Island area will offer programs mixing both engineering and ocean science and pure and applied research. The Center will provide a link assuring a constant dialogue between industry and the universities. The individual research efforts of a variety of institutions will thus be blended while, at the same time, duplication of facilities will be avoided.

The possibilities of the center's research are vast and extend into areas which at first might seem to be only indirectly related to study of the sea. As a recent report stated, "The mineral cornucopia, food resources and drug potential, not to mention meteorology, weather reporting and the solutions to problems of beach erosion are but a few of the areas which hold great promise."¹

The establishment of this oceanographic center naturally represents an opportunity for great scientific gain. It also represents, however, the growing cooperation between different levels of government and between government and industry in seeking goals. New York State, recognizing the importance of marine science in the development of our water resources, is helping to support the center financially. However, the magnitude of the research program and the speed at which we are able to come to grips with the myriad of problems involved surely depends on financial resources beyond the capabilities of the state and local governments involved. The final promise for accomplishment will only be met if the federal government makes a greater contribution not only to institutes of this kind but to the vast and unmet needs of research and conservation in this most vital area.

I'm afraid we in New York until very recent years took our unique water resources for granted. In a sense, we awoke one morning to find our drinking water in short supply and our rivers badly polluted. You are probably aware that we are now dealing massively with this emergency. A \$1.7 billion Pure Waters Program is well underway and we look to the federal government for a significant contribution to the staggering but necessary cost of this project.

The State's further concern is reflected by the statement of conservation policy passed over-whelmingly this year by the legislature as the first step toward a Constitutional amendment. This "conservation bill of rights" explicitly defines the policy of the State of New York as one, "to conserve and protect its natural resources and scenic beauty. . . . The legislature, in implementing this policy, shall include adequate provision for the abatement of air and water pollution and of excessive and unnecessary noise, the protection of agricultural lands, wetlands and shorelines, and the development and regulation of water resources." This language, we hope will make clear our recognition of water resources and their wise use as a vital part of conservation.

New York, then, has a clear commitment to the development of marine resources and support of marine science. It is demonstrating this support now and will continue to do so in the future. It is helping other units of government, private industry and educational institutions to tap the largely unexplored potential of the sea. We hope that the Federal Government, too, will join in making possible this research and these policies. Its support in this area is vitally needed and would benefit us all.

Mr. Woog. The Long Island Association of Commerce and Industry is a regional chamber of commerce representing the business community of geographic Long Island. Geographic Long Island, for your information, extends eastward from the Island of Manhattan, 120

¹ From: "In Behalf of an Oceanographic Center—A Presentation to the Board of Supervisors of Suffolk County," p. 5.

miles into the sea. The Atlantic Ocean and the Long Island Sound bound the south and north sides of the island.

From 1636 to date, the ocean has had a significant influence on the history of our area. From the colonial whaling fleet based at Sag Harbor, to the Dutch Hudson River trading posts, Long Island has been the gateway for international travel and trade.

From the days of the Shinnecock Indians to the present, off-Long Island has been the leading fishing center on the Northeast coast.

The catch over the past few years, even with our Russian visitors a little more than 3 miles offshore, has exceeded 100 million pounds annually of all types of fin fish worth an estimated \$3.5 million at the docks. Islanders harvest 10 million pounds of shellfish worth more than \$6 million annually.

I am sure that I don't have to remind you either of another of our famous waterborne creatures, the Long Island duck with our 8 million white Pekins traveling to market and bringing back \$12 million annually to our farmers. Parenthetically, we are in need of some additional research funds to solve the problem of water pollution caused by duck farming.

Indeed all of these seaborne food sources when added to the \$45 million in potatoes, cauliflower, corn, and strawberries make our island the greatest agricultural county in the State of New York.

But Long Island is more than this. We are 2,468,000 people in our two easterly counties, Nassau and Suffolk. In 1985 we shall be over 3,500,000 strong.

Long Island is the fourth largest retail market in the United States, ranking directly behind New York City, Los Angeles, and Chicago. Nassau and Suffolk Counties comprise the area of the largest effective buying power per household at \$12,111 compared with the next city, Washington, D.C., where, thanks to steady Government employment, the effective buying income is \$10,073.

Why, then, you may ask, is oceanology of such interest to Long Island. Long Island was and is the cradle of aviation with Roosevelt Field, where Lindbergh left for his most renowned adventure.

We are, and continue to be, a leader in aviation, as well as outer space, with Grumman Aircraft Engineering Co.'s Lunar Excursion Module (LEM). We are fast becoming the leader in innerspace with Grumman's "Benjamin Franklin" experimental submarine.

Behind California, Long Island's electronics industry is second to none. We have the largest atomic acceleration in the United States at Brookhaven National Laboratory. In short, we are a technically oriented area with an abundance and richness of educational institutions and scientific personnel.

Aircraft, space, scientific instrumentation, nautical, marine, electronic instruments, and systems account for 54 percent of the total manufacturing jobs on Long Island.

Four years ago, in Nassau and Suffolk Counties, there were 187 industrial research laboratories employing 8,000 scientists, 5,500 technicians, and 6,500 supporting personnel.

No wonder I sound like a representative of the chamber of commerce—an alert one, I hope—for we have to use all of our enthusiasm and know-how to prepare for the newest of frontiers, the world of the ocean.

We support Congressman Willis' bill, not so much for the offshore revenue sharing concept—that is, having the funds deposited with the Secretary of Interior and distributed back to the States in part—but more for its significance in pointing out and emphasizing problem areas that must be the subject of intensive commitment for solution. Together with adequate funds to do the job.

We have a great interest in the following areas: water pollution abatement, aquaculture and fisheries development, hurricane and beach erosion protection, undersea mining and oceanologic research.

We believe that with a sound system of financing, such as anticipated in the Willis bill, more can and should be done at more rapid rate to structure and fund research efforts in the vital field of oceanology. Four Long Island universities, Adelphi, the State University at Stony Brook, Long Island University, and Hofstra, have recognized the need to work together to broaden education and research in the marine sciences.

Dr. Baiardi will follow me and give you a greater insight into that.

The Long Island Association, therefore, strongly recommends that emphasis be placed upon deciding how the science of oceanology can best be advanced in a cooperative Federal, State, and local government entente with education and private enterprise all playing interrelated roles in providing the tools, facilities, and technicians to harvest the underseas rewards of tomorrow.

The application of spacecraft technology to oceanology with resulting improved techniques for resources development must result from a properly funded accelerated effort.

Our support of this bill indicates our commitment to this important program.

Mr. POFF. Thank you for your contribution.

Mr. ROTH?

Mr. ROTH. I have no questions.

Mr. POFF. Counsel?

Mr. ZEIFMAN. Can you give us some indication of the extent to which the industrialization of Long Island is devoted to technical instrumentation?

Mr. WOOG. I would say, Mr. Counsel, that of the manufacturing work force on Long Island and perhaps even with respect to plant, capital, and equipment, that over 50 percent of our economy rests now in the sophisticated areas of electronic and mechanical systems and components; and much of this is related to the defense and space efforts.

It is our hope to broaden the base of our industrial and scientific community by becoming one of the forerunners of industrial efforts to provide hardware for underseas technology.

I think this would be a very significant area in which the island and its industry itself would contribute to the overall development of the tremendous reserves that the United States has under the seas.

Mr. ZEIFMAN. Then one of the advantages of this bill to Long Island perhaps would be that it would facilitate the conversion of industries which are now devoted to defense, if the need for defense facilities were decreased in the future?

Mr. WOOG. Yes, I would say one of the major problems that faces our Long Island industrial community is that we have for years spe-

cialized in fulfilling military and space requirements. Conversion from national defense effort to broader peacetime applications provides an opportunity to solve a serious economic problem. In that regard, the introduction of a new industry with new requirements and new demands for our instrumentation and for the use of our facilities would indeed be most beneficial.

Mr. ZEIFMAN. Thank you very much.

Mr. WOOG. Thank you very much.

Mr. WILLIS. Thank you for your statement. We are very grateful. Is Dr. John C. Baiardi with us?

TESTIMONY OF JOHN C. BAIARDI, VICE CHANCELLOR, LONG ISLAND UNIVERSITY, AND COORDINATOR OF A CONSORTIUM OF UNIVERSITIES INCORPORATED AS AFFILIATED COLLEGES AND UNIVERSITIES, INC.

Mr. WILLIS. Mr. Baiardi is vice chancellor for development of Long Island University Administration Center.

You may proceed.

Dr. BAIARDI. Thank you, Mr. Chairman.

Mr. Chairman, my name is John Baiardi. I am vice chancellor of Long Island University and the coordinator of a consortium of universities seeking to establish a major oceanographic center on Long Island.

I am honored for this opportunity to address myself to the Special Subcommittee on Submerged Lands of the Committee on the Judiciary.

It would be redundant, if not facetious, for me to reiterate the premise that the seas contain vast reservoirs of food, minerals, and energy sources such as oil and gases.

It has been stated that the riches of the sea can supply sufficient food to feed the world, and minerals in such large quantities as to last for thousands upon thousands of years.

The problem is not in recognizing the existence of these resources, nor in failing to evaluate the worth of these treasures, but rather knowing how we can best exploit these riches wisely, efficiently, and quickly.

What is holding us back from "diving into the seas and reaping this harvest?" Is it money? In part, yes; but moneys can be made available. Some funds may have to be diverted from other uses, but once so diverted will produce more revenue which can be spent on other programs.

Is it technology? Yes, but technology is only the manifestation of the mind of man. It is the result of man's intelligence, perseverance, intuition, and productivity.

The one major limiting factor is trained manpower. We do not have the ocean scientists, ocean engineers, and technicians who are required. Such trained men and women are not produced overnight.

Like the ripening of good wine, the process takes time and care. Following the general law of propagation, that is, "like begets like," it takes trained scientists to educate and train still other scientists.

Dr. William Nierenberg, of Scripps Institute, in comparing the manpower pool of the ocean sciences with that of the space program, stated that—

On March 15, 1955, the American Physical Society had 11,704 members, and physics was well represented in the curricula of nearly every university in this

country. This was about the time of the beginning of our space program; and despite a tremendous growth in solid state physics, there was still an adequate manpower base which, when coupled with that supplied by the aircraft industry, was sufficient to staff a burgeoning space industry.

On June 1, 1965, the American Physical Society membership was 21,870, an increase of about 17,000 over a 20-year period. However, this growth was far less than that of the atomic energy and space programs which the pool of trained personnel helped to initiate.

This contrast with applied ocean sciences is clear. The equivalent pool of ocean scientists is about 1,000, and even this estimate may be too generous.

The current academic programs in the ocean sciences are rather scanty when compared with the physics programs that existed at the universities. Depending on the stringency of the definition, the number of institutions which offer programs in oceanography and related sciences in our Nation varies between 30 and 70.

Dr. Edward R. Wenk, Jr., executive secretary of the National Council on Marine and Engineering Development, at the recent A.S.O. symposium on "Manpower for Oceanography," pointed out that the "ingredient vital to the solution of major problems in any field is manpower. Certainly, manpower is the vital ingredient of the ocean sciences."

He alluded to a report now in preparation which shows that the full-time enrollment and doctoral degrees granted in the ocean sciences have grown from 105 students with nine Ph. D. degrees granted in 1961 to an estimated enrollment of 980, with 60 doctorates produced in 1967.

He attributes this growth to Government funds supplied through the Navy's contract research program, as well as through the National Science Foundation. We all recognize that this growth, although encouraging, falls far short of the demands—demands which reflect the diversity and quality, as well as quantity, of trained scientists.

It is true that if we can recruit the right caliber of young people to the field of ocean sciences, our job will be easier. It is equally true that if we review the training and education programs to which these young recruits are exposed, we may find a better way of accomplishing these goals.

For the most part, the programs currently in progress in our institutions, in the opinion of many scientists, must be restructured and developed in a more integrated manner.

Scripps Institute was one of the first to recognize this need. They reorganized their structure and curriculum by eliminating the three departments which comprised the school, namely marine biology, earth sciences, and oceanography, and substituted one department for the entire school, thus demonstrating the interdisciplinary approach which is demanded today.

Thirty or 40 years ago, the limits of marine science research, for the greater part, enabled the investigator to work with relatively simple equipment. Today, however, major research projects of national interest or of long-term duration cannot be undertaken by such modest laboratories.

The equipment of a modern oceanographic center might well include large, complicated, and expensive equipment—computers, large ships, submersible vessels, and even airplanes. These are beyond the means of many individual colleges and universities; yet it is within

these institutions that the education of the scientists and the development of science must take place.

Further, today ocean science has become integrated. Just as the new field of biomedical engineering came from the merger of biologists, chemists, physicists, engineers, and physicians, so, too, does modern oceanology require the participation and technical cooperation of men and women of various science disciplines, working together on a common problem.

If I may paraphrase Dr. Willard Pierson, a close colleague, this integration is described as the entire sphere of the sciences which bear on the ocean.

Biology, which includes agriculture, aquaculture, fish farming, marine ecology, microbiology, and antibiotics from sea plants and animals;

Mathematics, the essential tool for the study of waves, ocean currents, turbulence and air-sea interaction;

Physics, which includes not only the properties of light and sound, but lasers and the general field of electronics;

Chemistry, and its many ramifications;

Geophysics, and its interaction with physical oceanography, marine geology, and marine meteorology;

Engineering, including naval architecture, marine engineering, chemical, civil and mechanical engineering, material design, structural design, the behavior to environmental changes, and the corrosiveness of sea water;

Electronics, as a tool in communications; computer technology, constant recording devices, and instrument design.

Recognizing these demands and noting that, with few exceptions, most universities have oceanographic programs, each with a fine, but small, cadre of scientists generally concerned with one small area of the ocean sciences and engineering, it was deemed advisable that a consortium of universities join forces to establish an integrated oceanographic center, structured similarly to the Brookhaven National Laboratory.

The latter, you will recall, was established in 1947 to satisfy the needs of scientists for large, complex, and expensive equipment which no one university could afford.

The planned oceanographic center will make possible the pooling of human resources which are in great demand but, unfortunately, in short supply.

In essence, this center would foster scientific research, expedite the diffusion of scientific knowledge, share in the education of young scientists for careers in oceanology, and promote the association of scientists from this and other institutions for their mutual assistance in common scientific endeavors.

The center would supplement the academic and research programs at the subscribing institutions and fill in the gaps which become apparent.

It would encourage the growth of the ocean science departments of member institutions.

It would help educate and prepare the manpower needed, since regionally we are impoverished of qualified personnel.

It would develop a strong liaison between ocean engineering and the ocean sciences.

It would provide facilities for joint use that would be too costly for individual member institutions to obtain.

It would form a solid base beyond which the sphere of activities now at the institutions can be broadened.

It would offer programs affording a mixture of engineering and ocean sciences; of pure and applied research.

It would make research space available to subscribing institutions, both for their scientists and their graduate students.

It would encourage industry to take space at the center and work alongside their colleagues in the academic world.

And it will promote three-way contracts between the universities, industry, and the center; hence making it possible to blend the research interests indicative of the academic researcher with the development of concepts characteristic of the industrial researcher.

I am pleased to advise this body that the consortium has been established as "Affiliated Colleges and Universities, Inc." It has been incorporated as a nonprofit educational research institution in New York State, and consent has been given by the New York State Board of Regents for the filing of its certificate of incorporation.

As seed money, it has been granted a stipend of one-quarter of a million dollars for the first year of operation by New York State, and has received a pledge of \$300,000 for that same period from the counties of Nassau and Suffolk, matched by \$150,000 from the subscribing institutions.

A primary site selection is underway for the housing of the main laboratory, with satellite stations throughout Long Island for particular projects.

Support has also been promised from industry in the form of staff, equipment, scholarship, stipends, and in some cases for the use of their special facilities in some of our research programs.

Support is now being sought from foundations and Federal agencies. Without doubt, the success and growth of this project, which we hope will be a model for others to follow, will of necessity depend upon receipt of large sums of public funds, sums that only the Federal Government can supply, which in the past have made possible the success and growth of national laboratories such as Brookhaven National Laboratory.

The panel on education and manpower of the National Academy of Sciences Committee on Atmospheric Sciences very wisely advocated that, "The responsibility appears to be shared by ocean scientists, the universities, the engineering community, and the Federal Government."

The cooperation between and among university administrators in developing the oceanographic center, enforced by their contributions financially, with faculty, and with graduate students attests to their faith and support.

The scientists have provided the initiative, the motivation, and guidance in the conception and development of this oceanographic center and its new research-academic role, and have agreed to actively participate in the programs developed at this center.

Industry, too, has assumed a substantial role, as have both local and State governments, as well as our elected Federal officials and community leaders.

It remains now for the Federal Government to recognize its responsibility by providing stable financial support that will permit the fulfillment of the scientific and technical achievements and potential of this center and of those of other major programs in oceanology.

This bill proposed by Congressman Willis makes available some of the funds realized by the exploitation of our marine resources, to be reinvested toward the further development and even conservation of these riches—and this is how it should be.

We strongly urge support of this bill and thank you for the opportunity of this presentation.

Mr. WILLIS. Thank you very much.

You have made a good contribution. I want counsel to direct a few questions to you.

Mr. ZEIFMAN. Dr. Baiardi, you indicate that there is a shortage of trained manpower in the United States in the marine science field. Do you have any information concerning the relative position of the United States in developing trained manpower as compared to other countries and, in particular, as compared to the Soviet Union?

Dr. BAIARDI. No.

I know that many other countries have invested more money and effort in developing their ocean sciences than we have. Some of these countries such as Japan have been doing this for many years because of necessity.

I venture to guess if the Russians had, for example, sent out an oceanographic ship rather than Sputnik, perhaps we would be far advanced now in our oceanographic program as we are in our space program. We are not. I do not believe we are ready yet to exploit the seas to the best advantage because of lack of trained personnel.

Other countries have been forced to exploit the seas much before we have. Therefore, they have been spending more time and effort in that endeavor.

Mr. ZEIFMAN. Yesterday Dr. Piccard testified before this subcommittee and indicated that the United States in recent years was falling far behind other countries, including the Soviet Union, in fisheries development.

Dr. BAIARDI. Yes.

Mr. ZEIFMAN. The United States is importing more and more fish.

Dr. BAIARDI. Yes.

Mr. ZEIFMAN. In your opinion, would this bill contribute significantly to closing this gap?

Dr. BAIARDI. Of course. If we can spend the time and effort to improve what we characteristically call aquaculture techniques which we have not done, corralling fish much like we corral and herd cattle—the Japanese have done this quite successfully as many other countries—in improving our oyster beds, our clam production, we can increase the gross national product in this area many, manifold.

Just this morning I read in the new issue of *Oceanology International* that within the next 5 years they estimate that the fish consumption of the American public will more than double.

Now it seems the supply of fish products in this country has dropped at least 5 percent. They feel certain that this accounts for the reason why the importation of fish products has more than doubled.

Mr. ZEIFMAN. Has there been any significant decrease in the fishing industry off the coast of Long Island and in Long Island Sound as a result of the water pollution?

Dr. BAIARDI. Yes. As a matter of fact, some fish processing factories have completely shut down in Long Island. The yield on the Long Island shore of fish products such as the clam and other shellfish, the blue-claw crabs, has been vastly reduced.

On the north fork of Long Island, for example, this used to be the main source of income. There is hardly any of that now.

Mr. ZEIFMAN. I understand the waters of Long Island Sound are substantially polluted and can't be used for swimming.

Are there programs underway right now to eliminate water pollution in Long Island Sound?

Dr. BAIARDI. There are some small programs which are now in existence, concerning the problems of pollution and what causes it. But the programs, because of lack of money and because of lack of manpower, are not significant.

So it would take a greater effort on our part to try to make a "dent."

Mr. ZEIFMAN. So that if Federal funds from mineral leases on the Outer Continental Shelf were to go into a coordinated program, which had as its purpose the development of various phases of marine technology, such a program would be of substantial benefit with respect to such areas as Long Island Sound.

Is that correct?

Dr. BAIARDI. There is no question about it.

As a matter of fact, as I tried to point out in my presentation the science of oceanology is really an integrated science. It is a merger of many sciences. Unless we can have the various scientists—the people who are experts in water pollution, in the life cycle of shellfish, and in water motion and problems of that nature—come together and attack this problem, then we are only serving a "quadrant" sometimes perhaps incorrectly.

Mr. ZEIFMAN. One of the current problems is the lack of integration and lack of coordination. The academic program you have been talking about places great emphasis on the coordination of all phases of marine science.

Dr. BAIARDI. That is correct.

Mr. ZEIFMAN. In that sense your program and the philosophy of this bill are very highly consistent. Is that correct?

Dr. BAIARDI. That is correct.

Mr. ZEIFMAN. Thank you very much.

Dr. BAIARDI. Thank you.

Mr. WILLIS. Thank you, sir.

This subcommittee will stand adjourned until next Tuesday at 10 a.m.

(Whereupon, at 11:45 a.m. the hearing recessed, to reconvene at 10 a.m. Tuesday, July 30, 1968.)

H.R. 17369—MARINE RESOURCES CONSERVATION AND DEVELOPMENT ACT, AND IDENTICAL BILLS

TUESDAY, JULY 30, 1968

HOUSE OF REPRESENTATIVES.
SPECIAL SUBCOMMITTEE ON SUBMERGED LANDS
OF THE COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2141, Rayburn House Office Building, Hon. Edwin E. Willis (chairman of the subcommittee) presiding.

Present: Representatives Willis, Poff, Cahill, Railsback, and Roth.
Staff members present: Jerome M. Zeifman, counsel; and Franklin G. Polk, associate counsel.

Mr. WILLIS. The subcommittee will come to order.

Our first witness this morning is our colleague, Bob Wilson of California.

Mr. Wilson, we are pleased to have you here. Please proceed in your own manner.

TESTIMONY OF HON. BOB WILSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WILSON. Mr. Chairman. I appreciate the opportunity to testify in support of H.R. 17369, the Marine Resources Conservation and Development Act.

In recent decades our Nation has spent billions of dollars on outer space research and development. Yet we have neglected one of our most valuable unexplored resources here at home—the seas around us. Only one example of the benefits to be reaped from greater ocean development is its prospect for solving the critical shortage of food for the world's spiraling population. Yet, the ocean bottoms contain an abundance of nutritious foods which can be exploited to feed the hungry billions of today and the future. Unfortunately, oceanographic development has been seriously hindered by inadequate funding and overdiversification of effort by governmental agencies. The marine resources conservation and development fund to be created by this act from leases of the Outer Continental Shelf would be an important step in providing a consistent source of funding in the field of oceanography. Private and Government research in ocean-related fields would profit greatly from the fund. It is particularly fitting that marine research and development funds be provided by the use of our ocean mineral resources.

The second portion of this legislation, which would return 37½ percent of the Outer Continental Shelf revenues to the adjacent State,

is a valuable concept. In the past, adjacent State and county governments have derived no revenues from Continental Shelf leases, and I wholeheartedly support the portion of this bill which would return 37½ percent of the lease revenues to the neighboring State, as is done with inland mineral leases.

However, I do feel that a requirement that this money be used solely for schools and public roads is too inflexible. In view of the vast complexity of problems facing each State today and the financial crisis faced by our State governments in attempting to secure sufficient funds for vital programs, I would suggest that the bill be amended to allow greater flexibility for each State to determine its areas of greatest need in the use of these funds. Adequate school and road funding certainly is essential; however, the Federal Government has in recent years provided substantial moneys to the States and local communities in these two areas. Greater liberality in allowing the States to determine the most critical needs for their portion of the funds would greatly enhance the State's ability to cope with major problems in dire need of funding.

I am hopeful that favorable consideration will be given by the subcommittee to H.R. 17369 and appreciate the opportunity to testify in support of the legislation.

Mr. WILLIS. Thank you very much, Mr. Wilson. Your testimony has been interesting.

Our next witness is our friend and colleague, Ed Reinecke of California.

Mr. Reinecke, the subcommittee is pleased to have you appear this morning. Please proceed.

TESTIMONY OF HON. ED REINECKE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. REINECKE. Thank you, Mr. Chairman.

I apologize for being a bit tardy.

Mr. WILLIS. I might add that Mr. Reinecke is on several very important committees of the House of Representatives.

Proceed, Mr. Reinecke.

Mr. REINECKE. I do not have a prepared statement and I simply would like to insert into the thinking of the committee one point that has not had general publicity that will have a direct bearing on the consideration before you today.

Specifically I am referring to the activities going on in our State Department and at the United Nations concerning the possible transposition of the rights to administer and to acquire revenues from lands beyond the Continental Shelf. This is as a result of a resolution introduced by the Ambassador from Malta into the United Nations last fall. Numerous Members of the Congress testified before the Foreign Affairs Subcommittee on International Organizations and Movements to ask that no action be taken because of the premature aspects and because of the very great quantities of unknown information in this arena. Unfortunately, our Ambassador to the United Nations, while he indicated that we did not want to go ahead rapidly at this point, did suggest the appointment of an ad hoc committee on the oceans.

The general assembly adopted this, put it on the agenda and passed

the resolution. This ad hoc committee was formed. They have just finished their second meeting this year. The second meeting lasted 3 weeks. They are going to start a third meeting in the month of August in South America which may last for a similar length of time.

Mr. WILLIS. I would like to say that I introduced a resolution memorializing the President that it was the sense of the House that these resources should not be transferred.

Mr. REINECKE. I appreciate that, Mr. Chairman. I am aware of that. Many of us have, but I am afraid that the State Department has a deaf ear to many of the desires of the Congress. I was in a committee meeting on oceanography yesterday at which State Department people were present. I was in another meeting with State Department people last Thursday with the Fascell Subcommittee on Foreign Affairs. It appears to me, and I have documentation if reference is desired, that the State Department is moving very rapidly in this direction and I think the subcommittee should be aware of this because it may have long-range implications with respect to the subject you are discussing today. The first and foremost requirement, I believe, is an adequate definition of what the Continental Shelf is or what defines it.

The gentleman before the subcommittee last week, Mr. Pecora, head of the U.S. Geological Survey, indicated he would like to see a definition based on a geological definition and I certainly agree with this. Unfortunately, this definition is very arbitrary. Right now it is very indefinite.

As you are aware, the 1958 Geneva Convention which was finally adopted in 1946 is set up for review again next year but there is at the present time no internationally agreed upon definition of the Continental Shelf and as such we are dealing with vast areas of potential oil and gas revenues as well as other minerals that may be within or without. If the shelf definition falls close to the terrestrial shoreline as some are indicating, even to the 200-meter definition, which is the tentative agreement of the Geneva Convention, then we are talking about a great deal of potential mineral wealth that will lie outside of the Continental Shelf and, therefore, will come under the purview of the United Nations.

Now, one of the points of consideration in the United Nations at the present time is that a substantial, and this word substantial is likewise not defined, portion of the revenues coming from these minerals shall go to the developing nations. This may very well, because of the makeup of the General Assembly, force the royalties off these lands so high that they will not be economically exploitable. This is something on which we have to wait and see. I believe what I have said here is the essence of what I wanted to bring to the committee today because this is a matter of very serious consideration and in the chairman's bill I believe you speak of the Outer Continental Shelf.

Mr. WILLIS. That is right.

Mr. REINECKE. This again is something that is not clearly defined, at least not in terms of international language, and inasmuch as the ocean apparently becomes an international concern we must talk in terms of these definitions as well. So it has a great effect on what the committee does here today, and likewise the committee should safeguard itself so that its desires will be carried forth in spite of what our State Department might do. In that regard I might say that the

proposal of our own State Department was that there be no grandfather clauses involved in this international agreement. Once the United States agrees, or once an international body agrees upon a definition of the Continental Shelf, all prior agreements will be void and brought to the line which the U.N. body happens to agree to. I brought the specific question up with respect to the recent oil leases off of California, and I am sure you are aware of these, some \$600 million in revenues and bonuses to the Federal Government—many of these are in water to depths of 4,000 feet, which are obviously beyond the present 200-meter Continental Shelf definition—I said what is going to happen to these? Will the United States have to suffer the liabilities of its treaties or its contracts? Obviously there is no good answer at this point but I think it is very important that the committee recognize this and deal with this in a realistic manner because we may find ourselves in a position of being obligated to buy back the very contracts that our Department of Interior is making these days with respect to offshore oil.

Mr. Chairman, I believe that is all I have to say.

Mr. WILLIS. Thank you very much. There is to be a Democratic caucus in just a few minutes. On this subcommittee we don't play politics. I will let a Republican preside.

Dick, will you take over.

Mr. POFF. Yes. Thank you very much.

Mr. WILLIS. I will be back.

Mr. POFF. (presiding). Mr. Chairman, may I join in a welcome to our colleague from California. All of us know that he is well informed on this subject. What he has told us this morning is a welcome contribution to our hearings. It becomes increasingly important, of course, that there be some definite and final international accord on the definition of the Outer Continental Shelf. One of the many reasons is that the technology of the industry is becoming so sophisticated. Moreover, isn't it possible today to extract those resources from much greater depths than it was a decade ago? I believe the Santa Barbara Channel is an example.

Mr. REINECKE. Yes, sir.

Mr. POFF. You are down to 600 feet of water now.

Mr. REINECKE. Well, the recent leases were down as deep as 4,000 but they are producing into depths of over 600, yes.

Mr. POFF. That is what I meant. But ultimately it will probably be possible to exploit the resources at a greater depth than at present.

Mr. REINECKE. Yes. As a matter of fact I might say to my friend from Virginia that there are devices being tested on the bottom of the floor now that do not require a pipeline between the surface and the floor, that is, it is a bottom drilling device that sits on the bottom. It would be a bottom-locked platform, operated by remote control that will do the drilling and then the connection between the bottom and the barge or whatever might be used to carry the oil away is simply a flexible hose, so that depth becomes very much an independent factor at this point.

Mr. POFF. And then I am told after retrieval that it is possible to store large quantities beneath the surface at almost any depth.

Mr. REINECKE. Yes, that is right.

Mr. POFF. Well, I thank the gentleman. I have no further ques-

tions. If the gentleman cares to appear later with a formal presentation, he will be welcome.

Mr. REINECKE. I thank you.

Mr. POFF. Our colleague on this committee and in the Congress, the honorable Don Edwards of California, was scheduled next to introduce the witness who would follow him. He is unavoidably absent, in attendance at a Democratic caucus of the House, and for that reason I will perform his chore and introduce the next witness, the Honorable Kenneth Cory, chairman of the Joint Committee on Public Domain of the California State Legislature, and in lieu of Congressman Edward's statement without objection—I find no colleague to object—we will insert at this point in the record a letter from our colleague addressed to the chairman of the subcommittee.

(The letter referred to follows:)

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., July 30, 1968.

HON. EDWIN E. WILLIS,
Chairman, Special Subcommittee on Submerged Lands,
Rayburn House Office Building.

DEAR MR. CHAIRMAN: I had intended to be present at today's meeting of the Special Subcommittee on Submerged Lands to introduce California Assemblyman Kenneth Cory who will testify on the Marine Resources Conservation Bill. Unfortunately an important Caucus of the Democratic House Members has been called for 10 a.m. this morning so I will be unable to introduce Assemblyman Cory personally.

Assemblyman Kenneth Cory is one of the most distinguished members of the California Assembly. He is Chairman of the Joint Committee on Public Domain, Chairman of the Assembly Education Subcommittee on School Finance, Vice Chairman of the Assembly Education Committee and a member of the important Revenue and Taxation Committee and of the Finance and Insurance Committee.

Mr. Cory is regarded by the entire California House of Representatives Delegation and indeed by the people of California as one of the brightest stars in our legislative constellation. I regret that I cannot be with you personally and I am sure you will find Mr. Cory's testimony important and thoughtful.

Sincerely,

DON EDWARDS,
Member of Congress.

TESTIMONY OF HON. KENNETH CORY, CHAIRMAN, JOINT COMMITTEE ON THE PUBLIC DOMAIN, CALIFORNIA STATE LEGISLATURE

Mr. CORY. Thank you.

I have a prepared statement. Have you received a copy of that statement?

Mr. POFF. Yes, I have. I think it would facilitate orderly consideration if you would proceed to read from the statement. Do you object to your being interrupted for questions during the course of the text?

Mr. CORY. Not at all. I sometimes tend to bore myself when I read.

Mr. POFF. Thank you.

Mr. CORY. I am a member of the California Legislature and serve as chairman of the joint committee on public domain. This is a committee of the two houses composed of both senators and assemblymen and our committee, both senators and assemblymen, have discussed this resolution, the general concept of apportionment of funds from the Outer Continental Shelf to the adjacent States, and there is unanimous accord of the members of this committee for this type of legis-

lation. Our committee has under its jurisdiction the State-owned and controlled tidelands out to the 3-mile limit, in essence which was adjudicated and given to the States, and we oversee that area and have that legislation under our province. In view of that, and my membership in the California Legislature I presume it comes as no great surprise to you that I am in favor of this legislation.

My self-interest is rather obvious and I want to place it in the record first and foremost so that my later remarks can be taken with this self-interest in mind, but that aside, I think there are some other points that can be made.

In addition to serving on the joint committee on public domain I also serve on the revenue and taxation committee and am acutely aware of California's revenue difficulties. Last year it was our misfortune in California to be in the position of having to increase State revenues almost 20 percent. It appears that we are still having difficulty in financing many of our growing needs in California. If you have any specific questions as to these needs I will be glad to try to respond to questions in that area, but I wish to assure you that we have a Mother Hubbard story that could bring tears to your eyes if you would care to hear it. However, I think most States have similar problems.

Mr. PORR. May I interrupt to ask if you feel that the restriction of the use of the quota assigned to the States for public roads and public schools is a wise restriction or should the States have more flexibility in the use of those funds?

Mr. CORY. Further on in the prepared statement I make reference to the fact that this does not bother me personally. If we had to poll the committee members, because each has his own personal pet interest, they would, I think, say they would like greater flexibility. However, from my experience in California, where we have dealt with tidelands and the relationship between the State government and local governments and where we have a restriction placed upon local government revenues from those tidelands funds, I have found that the restrictions is indeed beneficial to the State as a whole and, therefore, would say that I think these moneys derived from the Outer Continental Shelf are something that you people here in Congress should set the priorities for, and I think that is the most crucial part of your bill. I think this is the thing you should concern yourself with, in essence, setting up a trust where we would act as trustees for those funds.

I think it is important that you spell out what you want done with the funds and, if it is spelled out clearly, I think we can efficiently administer that trust and do a good job of it. It also tends to solve some of our political problems which I will try to get to in a moment.

Mr. POFF. Go right ahead.

Mr. CORY. If I can relate to you how the California tidelands have been developed and use an analogy between local government and the State of California as compared with the State government and Federal Government, I think I can make a better case for enacting H.R. 17369 into law. In California, we develop our oil and gas deposits on tidelands in two distinct ways: The first is by bonus leases issued by the State of California which are not unlike Federal leases on the Outer Continental Shelf in the Santa Barbara Channel. We rebate a

percentage of these revenues to the local city or county for beach maintenance and recreation facilities. This is a rather small percentage but is administered by the State government and the local government does get a piece of that action.

Secondly, we develop our tidelands deposits by overseeing local agencies develop tidelands grants that have been given them by the State legislature. A classic example of this is the East Wilmington Oil Field which was granted to the city of Long Beach. This field was leased by the city of Long Beach not on a bonus lease, but instead on a net profit lease, the net profit lease price where 96 percent of the profits are received by governmental agencies, is, I think a fair and equitable arrangement, probably maximizing our return in this particular case where we had a known deposit. There was not any wildcatting involved. It was just a question of how much oil they were going to take out of that particular area.

The city of Long Beach retains a share of these revenues but it must use its share within restrictions imposed by the original grant. The grant limits the use of these revenues to the tidelands, in essence to the furtherance of commerce and navigation and fisheries. The city dispenses the funds. In the particular case of Long Beach they built the Port of Long Beach, which is one of the major ports on the west coast. This port has provided a substantial boost to our economy and to the State of California, particularly in the southern California area, not limited to the city of Long Beach. The entire southern California area is quite directly affected by the input of these funds.

All of this is on the positive side and perhaps I should stop with this part of the analogy and leave well enough alone. But there is a negative side that I also wish to tell you about and I do so with a certain degree of reluctance. This reluctance stems from the fact that I do know the State legislature in California and some of its weaknesses. These weaknesses may or may not exist here in Congress. I leave it for you gentlemen who are Members of this august body to determine whether or not it is, indeed, applicable. With that disclaimer, I venture in where angels fear to tread and will criticize the body to which I belong.

The California Legislature is, in fact, a political body and it behaves in classic textbook fashion. We are guilty of following the path of least resistance and solving this year's problems at the expense of the long range. This weakness manifests itself in what the State does with the revenues received from oil leases. These revenues were anticipated and were committed to finance very worthwhile and ongoing projects in California.

The first portion of these funds were committed to the State water project which is a project bringing the Fresno River water from northern California down to the arid southern California region. Funds in excess of those earmarked for the water project were further marked to provide pay-as-you-go financing for the capital outlay program for construction of colleges and universities. However, the recent history in California has been that those funds not left to the local agencies have been diverted and have been used as a "cookie jar" to finance other projects. For example, we spent recently \$11 million to provide financing for some increased costs in our State water project; spent another \$5 million to provide a drain project in the San Joaquin Valley; \$1.8 million to finance sewage disposal in Lake Tahoe; another

\$2 million annually on an ongoing basis for control of the water feeding Lake Tahoe; another half million dollars to solve a unique problem in the department of motor vehicles.

So, thus far we have had no oil revenues to put into higher education capital outlay. Instead, the money has been used to solve immediate fiscal and political problems that the California Legislature finds itself confronted with. Many of these problems have political overtones of solving a particular problem of the body politic. Both the legislature and the executive have been guilty of this "cookie jar" financing and I think we both share equal blame in this fact, but it just appears to be the lesser of evils at the immediate time to go ahead and tap the "cookie jar" for our oil revenues rather than finance these projects out of other tax moneys.

The only area in which we have remained resolute is in those cases where we made a commitment to local government. Somehow we in California are willing to obviate our commitments we have made to ourselves and are willing to honor those we have made to external parties.

In the case of the city of Long Beach they have provided us with a substantial increase in our economy not only for the city of Long Beach but for the entire southern California region and we have not tried to dip into those funds.

I am not saying that you will necessarily experience similar problems here in Washington but I felt it might be worth sharing our experiences with you in that regard. I am convinced that the one area that we can look to where we have received substantial ongoing benefits is the money that we have left to local government rather than the money we have kept to ourselves. Somehow it ends up burning a hole in our pocket.

It is at this point in the prepared testimony that I make reference to the restrictions that you asked the question about. I do feel that it is extremely important if we are to proceed as a trustee in essence in a partnership relationship that you spell out what things you want done with that money and if you spell them out we can then go forward understanding what you want done and we can live up to that desire. I think that is much better than leaving either the California Legislature or other adjacent States to their own devices and then after the fact deciding that we weren't acting with the wisdom that we should have and changing your mind and maybe accruing all the revenues here. I think it is much better that you spell out what you want.

Mr. POFF. May I interrupt you at that point.

Mr. CORY. Yes.

Mr. POFF. Of course we can write such restrictions into legislation and you would be obliged to abide by them, and yet it is difficult to write restrictions in such a way that a State would be unable to de-emphasize a particular program. To be specific, if your State or my State knows that money will be coming into this "cookie jar," it is possible that we can reduce expenditures for public roads for the next fiscal year in anticipation of extracting cookies from that jar. What I am saying is that when the money pours in on one side it relieves the pressure on the other and the State does have maneuverability.

Mr. CORY. There is no question that it does provide us with flexibility and release of revenues. I would suggest in the area of education and public roads, taking first the case of public roads, we have

all of our gas tax funds earmarked for roads in California. We have no toll roads in California whatever. We have quite a few freeways, as they are referred to out there, and are building more all the time. We also have a rather substantial lobby, the California Automobile Club, whose interest is best served by building more roads, and I can assure you that they will make sure that we are honoring our commitments in that area. In the area of education I suggest to you that you might want to further define what area of education you want moneys to go to.

In California we have the kindergarten through the 12th grade in the public school system, normal elementary and secondary schools. We also have a vast junior college system which provides free education for the 13th and 14th years of education.

We still have at this point tuition-free State colleges and universities which are more or less independent of each other. Our higher educational system is somewhat separated from the elementary and secondary. It is established by a master plan for education. These various areas are competitive for funds and it might well be to your advantage to define where you want to allocate them. The demands for additional funds are far greater than we can appropriate at the present time, including all of the funds that you are giving to California education from various Federal agents.

Last year in addition to the increase for ADA for enrollment we increased our appropriations by \$145 million to the public schools. To put that in perspective, our total budget in California is in the neighborhood of \$5 billion. There was an increase required because of enrollment of about \$60 million, so there is about a \$200 million increase in 1 year, last year. We are contemplating about another \$200 million increase this year, so that given the size of our budget we have some pretty stiff commitments and it is awfully hard to meet them. I would think the revenues would be taken as additive because of the commitments that we have out there and the interest groups that will keep us on our toes.

Mr. POFF. And that increase projected for the next fiscal year would come out of general revenues, would it not?

Mr. CORY. Yes.

Mr. POFF. If you knew that next year you would have \$200 million coming into the "cookie jar" and that this was restricted to education and highways, would it be possible for you to reduce the commitment from general revenues?

Mr. CORY. I don't believe we could in this particular case because we want certain things done with that and I doubt that we could get away with putting further strings on our school districts. A substantial portion of this \$200 million we are contemplating now would be to reduce local property taxes to change the relationship between the local property taxation and the State general fund. The history of school financing in California since 1963 has been one of trying to improve a system. With each increase in funds we usually make some gains on the educational establishment about the way we want them to conduct their affairs. I doubt that we could get the gains we wanted with your money. If the legislation were enacted as it is now written, my recommendation would be, with strong bipartisan support in the legislature, for allocating these funds to the area where we are trying

to get our own tideland revenue, shifting over to the pay-as-you-go financing for capital outlay which is currently financed through bonds, which is more expensive. In the long run our savings, to be totally candid with you, would be the savings in interest on those bonds that we are now issuing to the tune of about \$100 million a year.

Mr. POFF. Thank you.

Do you want to continue with your statement?

Mr. CORY. Yes. I think there are a lot of other arguments that can be made for this legislation. A few of them are obvious and I did not want to dwell too much upon them, but the general concept that an adjacent State assumes an obligation for providing roads, schools, police and fire protection for those citizens who come to the area to develop the Federal resources on the Outer Continental Shelf I think is demonstrable and something that does happen. I think that these new citizens, welcome as they may be, do create an abnormally high demand for these services the first few years they are in the community. In the long run I don't think any reasonable person would deny that the State is better off for having them but in the first few years they do create a negative cash flow, if you will, and this source of revenue would tend to offset that.

We in California are in the process of doing certain things to encourage the development of these Federal resources and in this session of the legislature we passed out of the house, and now have before the senate floor, assembly bill 1964, which grants a sales tax exemption for the items used in the development of the resources of the Outer Continental Shelf. This willingness to facilitate development is evidence that we are aware of the long-range benefits to our community, but it will possibly cause us a loss in revenues although perhaps the revenue loss could have been avoided due to the geography of the whole area.

I think the final reason for sharing these funds is found in the interrelationship between the State-owned tidelands and the Outer Continental Shelf. If the adjacent State has a financial interest in the development of the Outer Continental Shelf, it will be much easier to have a coordinated policing program rather than a competitive one. It is quite obvious in the case of California that the oil producers do not have sufficient capital to bid on all of the potential territory at once. I think it is extremely important that the State and the Federal Governments let leases in a coordinated fashion if they are to maximize the amount of revenues that the public sector is to receive from these public deposits. This is particularly true in the bonus leasing concept that has manifested itself in Santa Barbara Channel. Because the Federal Government was going to lease, our State lands commission found very little interest in any of the State tidelands until after those leases were actually opened. There were people bidding on them, making commitments of their own reserves. As soon as they lost out there they were immediately ready to look at the State tidelands. However, some of the big fellows who had gotten the Federal leases don't have the revenues to put up for the bonuses so we fell off. I think vice versa you may find yourselves in the same position and since we have a mutual interest, and it would be much better to coordinate this area.

The second phase of this interrelationship is best discussed by the geologists. I am not one. This is the interrelationship between the actual pools of oil. It is my understanding from the geologists that it is pos-

sible that a well in the State-owned tidelands can actually be extracting mineral deposits from the Outer Continental Shelf and vice versa and if there is a financial interrelationship it tends to mitigate any squabbles over who is going to punch holes next door to the other guy and when. I think these two areas are something that are well worth considering as a reason for providing some financial incentive to the State to cooperate in these areas.

Finally, getting back to I guess the first point I made, I would like to conclude by saying that we can certainly use the money. I don't deny that fact and try to make that statement quite openly so you can take what I say with that grain of salt.

Mr. POFF. Well, my own State of Virginia can use the money as well, but my State, like yours, is a coastal State. I am not quite sure that the State of Iowa, for example, shares quite the same enthusiasm for this legislation. Indeed, I wonder how we in the coastal States are going to answer the question asked: "Why should the coastal States, simply because they are on the water's edge, be entitled to this share of the revenue from the Federal domain when interior States have no physical opportunity for such a share?"

Mr. CORY. I think there are two points. The first one is that those people who are going to develop that resource are going to be residing and be domiciled in the adjacent State.

Mr. POFF. And presumably be paying taxes to the State.

Mr. CORY. That is not necessarily true as to how much taxes they are going to pay. In California we derive our revenues basically from a bank corporation tax, personal withholding, and sales tax. In the case of the sales tax I think it would be quite easy for somebody to circumvent any sales tax imposed upon items consumed on the Outer Continental Shelf. We have no jurisdiction over that. That is one of the main reasons for passing AB 1964. A person could buy drill pipe in Texas and ship it through California to be used on the Outer Continental Shelf. We do not impose that sales tax or the use tax. We would have none of that revenue which is the normal type of revenue derived from the business. All the protective services would have to be provided on the coastline for that enterprise.

Secondly, with the bank corporation tax the apportionment formula as to the amount of money actually derived to California from their activities would be rather small. A corporation which bids, gets a lease on the Outer Continental Shelf, for the most part is not a California corporation. These are large leases, usually Delaware corporations, Texas corporations, New York corporations. We will derive small portions of their proceeds from what they are doing on the Outer Continental Shelf. We have no jurisdiction over that and the income produced there would be excluded from the formula I think to a large degree.

And finally with the personal income tax, we in California, rightly or wrongly, do not have a withholding system so it is very difficult for us to determine how much money a person is actually making. If a person, say, is hired in Texas or Louisiana and comes to work in California working on the Outer Continental Shelf, I think we are going to have one serious time finding him unless he is there for 3 or 4 years.

I think a man has a fairly decent case that he is not deriving revenue in the State of California. He may be sleeping every night in California but he is actually working where we have no jurisdiction. If he was hired in Texas and comes out and is living on a platform building drilling, and comes in on the weekends I am not so sure that we can really even tax the individual to any great extent. He can still claim he has Louisiana or Texas residence. The income is derived from his work performed outside the State of California in the strictest sense and I don't know how much taxes we will actually derive from these people. In the long run, true, we will benefit by it. There is no question about that. That is the first phase of justifying it. I think the second phase is that those of us who do have coastlines assume the additional burden of providing services for all the people from Iowa. I know in the case of southern California, Iowans seem to be more numerous every year when we look at our beaches and see the number of people who are out there. We have to provide the life-guard facilities, we have to provide parking facilities, and although we have a few merchants along the coastline who derive revenues from providing for them, that is done in about a 3-month period and the rest of the time those beach facilities are sitting idle. The guy who has the hotdog stand usually goes back to Iowa or travels around the world the other 9 months and works about 3, so we do assume certain burdens for our inland sister States that they don't fully participate in financing.

Mr. POFF. I thank you.

Mr. CAHILL. I would just like to say that I want to apologize to the assemblyman for not having been on time to hear what I know must have been a very informative statement. There is one thing on which I would like to have your views. I understand that it is your thinking that the funds that would be allocated by the Federal Government to the State governments should be specifically earmarked by direction of the Federal Government. In view of the fact that each of the States has individualized problems that vary from State to State. I am wondering what is the basis for that observation or conclusion of yours?

Mr. CORY. First, I guess I should disclose that my constituency in California is Orange County. Perhaps you have heard of the conservative nature of Orange County back here on the east coast. There are a lot of people in Orange County who have a great many fears about the Federal Government. I do not share those fears. I first of all think that this is a resource that is owned by the Federal Government. The point has been adjudicated. The State owns it basically for 3 miles and the Federal Government has it from there on out. I think it is your money, gentlemen, to do with as you see fit. You should insure that we don't make an error in judgment in trying to guess what you want done with those funds so that after the fact you do not get angry with us and take them all away. I think we are much better off in the long run if you tell us what things you think we should spend the money for.

Mr. CAHILL. What you are really saying in effect is that you believe those funds should be directed toward a national purpose rather than the particularized or specific needs of the individual State.

Mr. CORY. Yes; I think education and roads are classic examples of that and ones which would provide some relief for us in the coastal

States who are providing services. Particularly schools and roads are tremendous negative cash flows from new residents. We in California are experiencing quite a bit of growth and we are very proud of that but it is putting, quite frankly, a hellish burden on us and the number of schools that we have to build. We are building in California one complete elementary school a day just to stay even. We are bonding ourselves \$300 million every 2 years for that purpose.

MR. CAHILL. So you feel that these two items that are now under consideration are needed in all the States and you feel that direct along those lines is not only beneficial but in your judgment necessary?

MR. CORY. Yes, and the only thing I do hope is that you will define what you want. Both sides will understand what you want so that at a later date you don't say, "Well, you are frittering away this money." I think we can do a good job if we understand what you want done.

MR. CAHILL. Thank you very much.

MR. WILLIS (presiding). Counsel has some questions.

MR. ZEIFMAN. Mr. Cory, are the views that you have expressed here today your personal views or do they also reflect a position of the joint legislative committee of which you are chairman?

MR. CORY. The joint committee is in favor of legislation of this type sharing the funds with the adjacent States. That particular point has been discussed and it was unanimously the opinion of that committee that they favor this type of legislation. On the views relating to the restrictions, I think some of my more conservative colleagues might not agree with me. That is my own personal philosophy and one which I think in the long run we are going to be better off with. However, of all the members of the committee there would be a few members who would say "give us the money and don't put any strings on it." There are some people who have rural constituencies within California who don't particularly think that roads and schools are the best way to spend money. They would rather build a wildlife refuge or something like this. So I would say that there is a mixture of factors but the basic premise is unanimously supported by the committee. There was no dissent in any of our meetings and there was enthusiastic support from everyone who was talking. The only reason there are not other members here to substantiate these facts, is that for some reason we have been unable to conclude our deliberations this year and we are still in session.

I came out late last night and am going back today. Hopefully we can get out of session as soon as the Senate gets some of its work done.

MR. ZEIFMAN. At the beginning of this session of Congress, the President, in his state of the Union address, spoke about the need for programs to preserve California's redwood trees. Later on in the session bills were considered in both Houses to amend the Land and Water Conservation Fund Act. One of the bills, as introduced by Senator Jackson in the Senate, would have earmarked Outer Continental Shelf receipts for the purpose of expanding the national park program. This, in turn, would have enabled California to receive some assistance with respect to the redwood problem. Later on the Jackson bill was amended on the Senate side to eliminate the earmarking. Then later in conference a compromise was worked out so that the Outer Continental Shelf receipts would not be earmarked unless Congress failed to appropriate sufficient funds for the land and water conservation fund.

Do you view the present bill before this subcommittee as a program which competes in any way with the program in California with respect to the redwood trees?

Mr. CORY. No, I don't believe it is competitive. Our committee did follow that action back here rather closely and had some concerns about the original proposal of earmarking the revenues for that purpose. Not that we were opposed to financing the redwood project, which is looking at the long-range best interests of California, but we thought that the redwood was a project that should be able to stand on its own merits. It did get into a rather unique situation, and being again probably more candid than I should, there was a problem about who was running for the Senate and who was not. It became rather evident to the members back there that we had best stay out of that fracas until at least our senatorial primaries were over lest we end up taking sides with one party or another. For that reason we remained silent in that dispute. The committee members did not wish to take a position that we should earmark the Outer Continental Shelf funds to fund the redwoods although there was perhaps one member who was not in favor of making the redwoods a national park. There was a great commitment to that project in California and we don't feel it is competitive at all. I think that the solution arrived at in the conference committee is indeed an equitable one which saves the basic structure of the Outer Continental Shelf revenues.

Mr. POFF. Mr. Chairman, if I may, in addition to the explanation the counsel has given, the resolution reached by the House-Senate conference committee applies to all activities under the Land and Water Conservation Act of 1965, including its efforts with respect to the redwoods park project.

Now, as counsel explained, the law now reads that to the extent Congress fails to appropriate from general revenues enough money to bring that fund up to the \$200 million level, the revenues of the Outer Continental Shelf will be earmarked. The legislation which we have before us provides that all grants, royalties, or other sums paid shall be used for the purposes specified in the bill. This is a contradiction of the previous congressional act and unless the Congress intends to repeal what the conference committee wrote in the law we will have to make some adjustment in the language of the bill before us.

Mr. WILLIS. Any more questions?

Mr. CAHILL. No questions.

Mr. WILLIS. Thank you very much. Your testimony has been very helpful and we appreciate your taking the trip way down to Washington to assist us. We appreciate it very much.

Mr. CORY. We appreciate the opportunity to be here and if we can help in the future we will be glad to.

Mr. WILLIS. Thank you.

Mr. CORY. Thank you very much.

Mr. WILLIS. Is Professor Bisque with us?

(Subsequently, Professor Bisque submitted a statement, which appears at p. 86.)

Mr. WILLIS. If not, our next witness is Mr. M. J. Richardson, who is president of the Offshore Exploration Conference and World Dredging Association.

TESTIMONY OF M. J. RICHARDSON, PRESIDENT, OFFSHORE EXPLORATION CONFERENCE AND WORLD DREDGING ASSOCIATION

Mr. RICHARDSON. I believe, sir, that you have my testimony also submitted in advance.

Gentlemen, honorable members of the committee, my name is Mortimer Jules Richardson, president of M. J. Richardson Inc., as well as the nonprofit corporation called Oecon (Offshore Exploration Conference), serving the offshore oil industry and Woda (World Dredging Association), a technical association of professional engineers and management personnel in the dredging industry from over 12 different countries. These corporations are all headquartered at 2516 Via Tejon, Palos Verdes Estates, Los Angeles County, Calif. The company of M. J. Richardson Inc. is a marketing and management consulting firm, specializing in the ocean industries and, through its Symcon division, manages the activities of Oecon and Woda.

My testimony before this subcommittee is on behalf of my corporation and stems from our professional interest in the international activities of ocean-oriented industries. We serve such companies worldwide, through consultation and industrial conferences.

An abundance of data from private and Government sources indicates the wealth of minerals that lay on the bottoms of the seven seas * * * from shorelines to the abyssal plains. However, the present inadequacy of man to cope with the many facets of the ocean environment, and to produce more than petroleum, sulfur, tin, phosphates, and gravel from the offshore areas—in water depths greater than 350 feet—is not totally analogous to the ballistic missile gap in 1953.

What I mean by that is that the seeming lack of technology in the oceans today is more a matter of concentration of effort and financial resources; the need to apply the wealth of technological understanding gained from the billions of dollars and man-hours expended in the past 14 years on developing ballistic missiles and spacecraft. It was with that one purpose in mind that we originated, with the help of many people in industry, the first Offshore Exploration Conference, concerned with the exploration for and production of petroleum and other minerals from the sea; providing the first forum of national proportions to bring together the aerospace-electronic industry with the offshore oil industry. The first and second were held in February 1966 and 1967, in Long Beach, Calif.; the third in February 1968, in New Orleans. There will be a supplemental conference, called "Oecon—Middle East" in Athens, Greece, December 1968, to concentrate on the offshore problems in the Persian Gulf, Africa, and other remote areas of the world. The fourth annual will be held in San Diego, Calif., in March 1969.

Oecon has served to emphasize deficiencies in our knowledge and industrial capabilities to move rapidly into new areas of marine resource development. Some of these deficiencies may be summarized as follows:

1. Knowledge of mineral deposits in economic quantities;
2. Private investment capital for the development of mineral resources;
3. Basic research data necessary to be able to predict, simulate, or quantify the ocean environment, such as:

- (a) Land reclamation effects on beaches and harbors;
- (b) Effects of operations on the ecology;
- (c) Pollution—its cause, effect, control, and evaluation.

A fundamental requirement of the marine resources conservation and development fund, referred to hereafter as the "fund," should be to aid and contribute to the progress that has been made the past 20 years by private industry in developing the offshore oil and mineral resources. There are a multitude of activities that might be undertaken by government which would have a positive effect on the continuing progress of the offshore oil and dredging industries. The concern of many of us in what I choose to refer to as the "Ocean Industries," is that the "steamroller" effect of the new Federal and State commissions on marine resources will stifle private investment and incentive to develop the resources on our own continent.

On the other hand, it is encouraging to see the intensity of community and State interest that has been shown in the U.S. coastal areas for marine resource development, which appears unique to our American scene. Such groups as the Marine Technology Society and American Society for Oceanography of both of which I am a member, furthermore, have done a great deal to stimulate this local interest in the potential of ocean industry development. However, all of this activity has of late served to emphasize the need for more research, experimentation, and development of hardware that can effectively cope with the ocean environment—plus, a lot of prospecting offshore to establish the zones of economic potential.

While this industry activity continues, it is important that our Federal Government pursue the solution to the legal question of Continental Shelf jurisdiction as far as the United States is concerned. Certainly, with our many examples of tariff legislation designed to protect certain industries, we can find justification necessary to establish a minimum 200-mile coastal boundary, for instance.

Speaking just of petroleum for a moment, the economic and strategic importance to our national defense should be sufficient justification for the issuance of an Executive order, to serve notice to the world that the United States has clear-cut intentions in regard to its national boundaries. A boundary based upon the depths of water is too uncertain, and is in fact no "boundary" at all.

Now, I would like to categorize those areas of activity that seem to offer the best potential aid to industrial development of our marine resources. While not intended to be definitive specifications for related programs, I would like to stress the importance of looking to private industry for major portions of this work, instead of making the invalid assumption that only nonprofit institutions are suited or capable of undertaking developmental work. Private industry has made the major inroads to offshore development, but is starving for research and development funding.

First of all in the area of research, and I am just categorizing: Pollution—its cause, effects, and controls. We should perform more basic research on the nature and effects of pollution to prevent the establishment or perpetration of restrictive rules and regulations that may have no basis in fact or science.

I draw reference here. There was a recent action a few months ago in San Francisco Bay by the area water resources board to institute a

control on dredging and, whereas well-intentioned, it was going to require every dredging contractor prior to entering into his dredging contract that may have been awarded that he determine the effects of his dredging project on the ecology of the area.

Now, something like this is way beyond reason because no dredging firm is staffed in such a way as to determine this effect and in fact no scientists have really determined other than specific examples of covering clams or shrimp or something of this sort, so fortunately this was postponed for more definitive deliberations.

Certainly we need more research in oceanography—on the ocean phenomena, in its broadest sense—on food in the sea; desalination systems; dredging—land reclamation and harbor development.

On education, we feel that there is an importance for seminars and conference support; curriculum development in ocean engineering and oceanography, and dredging, and ocean mining; institutional support of a general nature.

A problem that is seemingly confounding every institution of higher learning that has decided to add oceanography to its curriculum, has been the lack of what could be called a definition of what industry needs to prepare the student for a career in the ocean industries.

In other words, what is ocean engineering, or oceanology?

Many believe, as do I, that what industry needs in training its young men for careers in the offshore or ocean industries can best be fulfilled through industry symposia and conferences.

This is not to say that the colleges and universities should not engage in these subjects, but the emphasis we feel should be placed upon the college graduate that he be well schooled in the basic sciences, engineering, liberal arts, and industry will carry it on from there.

What we need are graduates who can read and write and articulate and express themselves.

Our conferences, OECON and WODCON were established, in part, for that purpose, and will continue to grow because of the basic need that does exist. Such conference activity should receive support from the fund, since it contributes in a strong measure to the needs and progress of the industry it serves.

I point out as another area of fund support: Harbor development—channel dredging; land reclamation—industrial and recreational use; and terminal development.

Now, as a discussion on these points: While not directly involved with offshore mineral recovery, modern port conditions are considered a major contributor to the economic vitality of a marine-oriented community.

Leaders in worldwide dredging circles have stated that nearly every port in the world carries a serious dredging deficit. In other words, the major ports of the United States require a continuing dredging program and are behind schedule now to keep up with current requirements, and are obsolete for the jumbo-sized ships under construction or planned for the future. The port of Rotterdam serves as a shining example of port development planning, and has captured the European shipping market as a result.

Planning and model experimentation of harbors, development of new harbors and an aggressive dredging program is needed urgently and is a proper candidate for an allocation from the fund.

As to oceanographic data surveys:

Improved charts on oceanographic conditions of various areas are needed. A broad system of data collection to provide a continuing reporting system to the offshore explorer and operator would aid industrial development greatly. Some restraint may be needed on the part of Government from engaging in too much detailed geological surveys which could remove the competitive advantage, or centralize the control of resource development, into a Government agency. This could tend to discourage all but the major corporations from the field.

Furthermore, and I think possibly paramount, are the incentives to industry which can be provided directly and indirectly with fund allocations.

We must preserve the present petroleum allowables—I firmly believe in this—establish new allowables for offshore minerals corresponding to the investment and risk involved. This could be an evolutionary thing if they are better identified. And place a ceiling on royalties and bonuses for offshore petroleum and minerals applicable to Federal and State waters.

Now, a discussion on this is: This will open the door to independent operators to compete with the major and conglomerate companies. It will also prevent such unreasonable and unrealistic levies as were established in the Long Beach, Calif., East Wilmington Field, to take place; in other words, where they awarded contracts and 96.7 percent and 101 percent of the royalties paid to the State and city for the "rights" to drill and produce oil and gas.

Such actions can only discourage future cooperation between industry and Government, where industry is left to the mercy of local politicians who may sense an opportunity to take an advantage available to them.

Furthermore, to possibly establish an "AID" fund as such for U.S. industry, particularly smaller industry, aimed at offshore mineral mining that affords an opportunity to small business and independent operators.

In conclusion, evaluating the economic potential of marine resource development needs first a definition of "marine resources."

To the Netherlands, for instance, its greatest marine resource is its dredging industry. Dredging as an independent private industry, without Government competition, in the Netherlands, has made possible the most advanced dredging technology in the world—increasing the industrial, recreational, and residential land available; the busiest shipping ports in the world; and a strong contributor to its positive balance of payments condition.

Therefore, the economic potential of our marine resources should be categorized thus:

1. Offshore petroleum—gas and oil, the biggest single source of revenue at this time.
2. Shipping terminals and channels to accommodate commerce.
3. Other mineral mining offshore.
4. Fisheries and other food from the sea, including kelp and seaweeds.
5. Marine industries, such as shipbuilding and repair; dredging; tugs, barges, supply and personnel boats.

Evaluation of the foregoing as it may pertain to a given location would justify a serious analysis of each port and potential port. Each

category has a large multiplier, if feasible to develop, and therefore is a possible candidate for the fund.

Thank you.

(Attachment to the prepared statement follows:)

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Mr. WILLIS. May I ask you this question?

Mr. RICHARDSON. Yes, sir.

Mr. WILLIS. We have had for the last 20 years intensive and extensive exploitation of minerals along the coast of the Gulf of Mexico. To an almost equal degree you people on the west coast have developed the mineral resources on the Pacific coast. Do you see the time approaching when there will be mineral exploitation along the east coast?

Mr. RICHARDSON. Yes, sir; not only in oil, which I think is not widely publicized, but I think it is commonly known in the oil circles that there are great resources off the east coast, but there are a number of very large phosphorite, phosphate deposits offshore on the east coast, Georgia and the Carolinas.

Mr. WILLIS. That is right, Georgia and the Carolinas.

Mr. RICHARDSON. And unfortunately the phosphate market is right now rather depressed, but it is not expected to continue as such, and I think we will see probably in the near future, in the next few years, probably one of the biggest, if not the biggest, offshore phosphate mining projects in the country offshore of the east coast, and there is no question that in fact there are such rudimentary sources of things like gravel that are in great profusion offshore which could be brought in, given certain cooperation with the port authorities and so forth of adjacent ports, at a much better rate than what can be obtained on shore and there are a number of minerals which have not been exploited such as the manganese nodules which offer some fantastic resource development—

Mr. WILLIS. That is right.

Mr. RICHARDSON (continuing). To our country. And I think that a rather startling thing which isn't in minerals but was discovered this last summer off the east coast is a very large deposit of scallops in about 4,000 feet of water which I think is the most fantastic find in the fishery industry in centuries, and this is estimated to be a resource mounting in the billions of prime scallop source, and there are other things like this which can be discovered through proper inspiration, but this is our problem.

It is just a fundamental problem of prospecting that has to be done and, as prospecting in the olden days, it can't be a Government-controlled or performed function or otherwise you remove the incentive

for the private entrepreneur to go in and exploit it. It is a high-risk type of activity and it needs close cooperation and the sensitivity on the part of the Government.

Mr. CAHILL. Mr. Chairman, may I ask a question?

Mr. WILLIS. Go ahead.

Mr. CAHILL. You spoke of the finding of scallops. Were they located by a private firm?

Mr. RICHARDSON. Yes.

Mr. CAHILL. And were they located on the Continental Shelf?

Mr. RICHARDSON. Yes.

Mr. CAHILL. And whom do they belong to?

Mr. RICHARDSON. That is a good question. They are in 4,000 feet of water. By geologists it is considered part of the Continental Shelf, but by the present definition, the 1964 international agreement, this is not the Continental Shelf unless it can be shown that our technology will allow us to exploit it.

Mr. CAHILL. Is this information now within the public domain?

Mr. RICHARDSON. Yes.

Mr. CAHILL. And what, can you tell us, is the impasse that is preventing the utilization of this find? Is it a legal matter?

Mr. RICHARDSON. No. There are some out there madly scrambling around trying to exploit it. One fellow with a simple clamshell dredge has been doing extremely well for himself, and very economic, but it is difficult.

Mr. CAHILL. Is this within the jurisdiction of the Federal Government?

Mr. RICHARDSON. Yes.

Mr. CAHILL. And therefore under the law, as I understand it, it is the property of the Federal Government.

Mr. RICHARDSON. That is right. The Department of Interior could go out and slap some sort of restraining order and require all fishermen to lease it from them.

Mr. CAHILL. More important than that, it would seem to me that there should be a utilization of it.

Mr. RICHARDSON. You bet, and attempts are being made.

Mr. CAHILL. Thank you, Mr. Chairman. I will have some more questions, but that is what I wanted to ask at this time.

Mr. POFF. Mr. Chairman. Mr. Richardson, you have indicated need for a definition of the words "marine resources."

Mr. RICHARDSON. Well, oceanography, oceanology, yes, sir.

Mr. POFF. When previously you added the phrase "and so forth," you illustrated the purpose of my question.

Mr. RICHARDSON. That is right.

Mr. POFF. I assume you agree that there should be some precision to the definition.

Mr. RICHARDSON. Yes, and recognition of the fact that, let's say, the technologies involved in exploiting in one case the marine resources and identifying them in another are broadly separated.

In one case it is a matter of biology, limnology, and so forth. The other is it crosses all disciplines of structural mechanics, let's say civil engineering, electrical and mechanical, and basic physics, and so forth, so it isn't something which we can put together in a nice neat package

and say here is a new science or a new technology on oceanography or oceanology because that is a misnomer.

That is, I guess, the point I am trying to get across.

Mr. POFF. Well, the bill says that the "funds shall be used under the Secretary of the Interior for marine resources, conservation and development programs, including programs for" and then follows a rather particularized list. And yet the way the language is phrased the term "marine resources, conservation and development programs" could include other things not named. From the burden of your testimony I infer, for instance, that harbor development in all of its aspects should be considered a "marine resource."

Mr. RICHARDSON. Yes, sir.

Mr. POFF. Channel dredging?

Mr. RICHARDSON. That is correct.

Mr. POFF. Land reclamation for industrial uses?

Mr. RICHARDSON. That is correct.

Mr. POFF. The development of terminals?

Mr. RICHARDSON. Yes.

Mr. POFF. In what way should the funds be used for those purposes? For capital investment?

Mr. RICHARDSON. You mean capital investment by the Government?

Mr. POFF. Yes, sir.

Mr. RICHARDSON. This would be difficult to try and determine right here and now. I would much prefer it being done and, for instance, let's take dredging, and where Government jurisdiction falls on responsibility for ports and harbors these funds should be made available for this specific function of dredging those harbors.

Mr. POFF. Of course the beneficial effects of dredging are manifold. They reach into the interior of the country, at least to some degree. But would it be fair to say that the bulk of the benefit flows to the harbor and the harbor area and the State in which it is located?

Mr. RICHARDSON. That is correct. In other words, it will bring more commerce into the port which benefits the surrounding community.

Mr. POFF. The reason I ask that question is my continuing concern how we might respond to our colleagues who represent districts in interior States when they ask about how the moneys are going to be used.

We have separated the receipts from the Outer Continental Shelf into two components: 37.5 percent for the adjacent States, 62.5 percent for the marine resources. Yet, as you have just said, the money that would be used for dredging would come out of the marine resources fund and would thus also inure principally to the benefit of the adjacent States.

Mr. RICHARDSON. I think a good argument can be made for this. Certainly the Plains States, interior States, develop materials, wheat, et cetera, which are shipped from ports and then there is an interesting new program, and I think the Maritime Administration is just about to fund a significant study on it, called the land-bridge transportation concept. I think you are probably familiar with it.

This has a great deal of significance to the overall country because this will provide, I believe, new ports and terminals. We must have new terminals to accommodate a high volume container transportation from ship to shore to rail and back on ship and so forth.

This is going to have a great deal of significance to the inland States, no question about it.

Mr. POFF. Further, in your testimony you referred under the general title of "Marine Resources" to shipbuilding and repair. Do you consider that a proper definition?

Mr. RICHARDSON. Yes, sir; I do.

Mr. POFF. And you said something further about tugs and barges.

Mr. RICHARDSON. Yes.

Mr. POFF. In what way would the money be used with reference to such things? To purchase a boat, to pay for the repair bills, to construct a ship?

Mr. RICHARDSON. No, sir. No. We don't want a lot of Government ships competing with private enterprise. I wanted to make note of the fact that these are, I believe, under the general purview of marine resources of an area, of a country, of a port, community, and so forth.

The legislation and the use of this money I should feel would go to benefits to further stimulate and provide the continuing freedom for private enterprise to develop in these areas. I merely identify it so that it will not be excluded.

Mr. POFF. Then you do think some of the money in the fund should be used for shipbuilding and repair?

Mr. RICHARDSON. Well, no. There are a lot of benefits that I think derive from Government support, subsidies, and this sort of thing through indirect support of our shipyards. I think it is commonly recognized that our shipbuilding industry in the United States is at the lowest ebb that it has been in practically the history.

There are a great deal of requests being made to other departments from other groups, certainly in the shipbuilding industry, for support and recognition of this depression, both in the maritime industry and even in our Navy, that relates to our shipbuilding program, I don't attempt to identify.

Mr. POFF. Our dialog illustrates that the term "marine resources" is a fuzzy and amorphous concept, and that is important because this legislation commits to the Secretary of the Interior the sole and unfettered discretion to write that definition and make those decisions by simply drafting and issuing regulations. This is a source of some concern to me; and I have concluded my line of questioning, Mr. Chairman.

Mr. WILLIS. Mr. Cahill.

Mr. CAHILL. I gather from the witness' testimony that your deep concern is that from the funds that the Federal Government realizes private enterprise should be sharing in the research grants and developmental grants which would, in your opinion, generate even more money which would accrue to the Federal Government.

Mr. RICHARDSON. That is correct.

Mr. CAHILL. What would be the participation that you would recommend? Would this be on a sharing basis, for example? Would you feel that the Federal Government should finance wholly a research effort on the part of private enterprise in this new field?

Mr. RICHARDSON. Let me say, first, that I didn't expect in my testimony to define all of the expenditures and specificities of the expenditures.

Mr. CAHILL. I am not seeking specific definitions. I just want the benefit of your opinion.

Mr. RICHARDSON. My opinion is that, just for an example, there is quite a lack right now of sufficient definition of the economic potential of the mineral resources on the U.S. Continental Shelf. Someone is going to have to do an extensive prospecting job. Many people or groups are going to have to do this. I believe that private industry is equipped to assume that function under contract on an objective, unbiased basis rather than assuming that universities and nonprofit institutions and so forth are the only ones that can perform it.

I think many of your offshore drilling companies and many of the diversifying marine industries and dredging industries have the innate talent, the residual capability, to conduct these kinds of things. They are not seeking these kinds of projects, but I believe it could be made available to them and should be contracted with them.

Mr. CAHILL. In other words, they should be included as being qualified recipients?

Mr. RICHARDSON. That is correct. I think it would benefit the industry.

Mr. POFF. Have you concluded?

Mr. CAHILL. Yes, I have.

Mr. POFF. Mr. Chairman, in order that the record may not mislead and in complete fairness, I should point out that, while the definition of "marine resources" is left primarily to the Secretary, the Congress would retain some measure of control over this legislation because the legislation provides that the money will be spent in accordance with the appropriation acts of the Congress.

Mr. RICHARDSON. Yes, sir.

Mr. WILLIS. Any further questions?

I think counsel wants to ask you some questions.

Mr. ZEIFMAN. Mr. Richardson, in your testimony I think you used the expression "understandable reluctance to publicize the facts" about the mineral potential of the Outer Continental Shelf. Could you elaborate on that? What is the basis for the reluctance and what adverse effects do you think that reluctance has?

Mr. RICHARDSON. I think it is rather obvious and judicial that a private company which has on its own account gone out and expended funds to prospect in a given area with the idea of winning certain results for itself if it can find minerals and mine them, is not going to want to share this proprietary information with other companies prior to some sort of settlement for those marine resources being made.

Whether he makes those with the Federal Government or what, he should have this opportunity, but let's say there were a gross prospecting and detailed prospecting job done and carried out by the Government or a Government agency and all this information then is public knowledge. There could be a rather wild array of bidding and so forth to get these rights, and I think politics and everything else would enter into it, and possibly the best capability would not be exerted there. Maybe private funds wouldn't be available.

Mr. ZEIFMAN. As a result of that reluctance to publicize these facts, doesn't that put the governments of the coastal States in a position of not having access to the facts regarding the true potential of the resources off their own shores?

Mr. RICHARDSON. Certainly it does, and something has to be done in between there to an extent of determining in general what the resources are, which is still maybe quite a bit short of detailed economic potential.

In other words, I think that there is a point to which the Government can obtain and the State governments can contain a general assessment of their offshore mineral resources necessary to attract industry to come in and perform detailed surveys and possibly have leases, concessions, and so on for them to stimulate their interest and financial interest in exploiting them.

Mr. ZEIFMAN. Are you aware of any data or any estimates of a specific nature with regard to the potential resources off the east coast of the United States? Do you have any information in that regard that you could supply to this committee?

Mr. RICHARDSON. Not that I could supply to the committee, no. It is all available from private industry. I have gone to the extent recently of trying to determine how much the Government has obtained such as the geological survey group, and so on, and that doesn't seem to be a great deal. Primary emphasis, I believe, has been placed off Alaska in heavy minerals and then of course a certain amount of surveys with regard to petroleum resources, all off the east coast.

Mr. CAHILL. May I ask a question of practical interest? Perhaps you know the answer to it.

Does a private concern interested in exploration negotiate leases with the Interior Department prior to discovery, or does it make a general investigation and then, when something looks hopeful, negotiate a lease?

In other words, is it before or after the fact that they negotiate these leases?

Mr. RICHARDSON. Well, I think in other than oil, which I think you are referring to, the whole subject is so new that all of the prospecting has been done in very extreme secrecy and there have been no prior negotiations for the fear that it is going to open it up to all sorts of competitors.

Mr. CAHILL. The thought occurs to me that, if you are going to start giving grants for exploration and research to private enterprise, then realistically, the Government is going to expect some return which could lead, it seems to me, to some disadvantage for the private concern.

Mr. RICHARDSON. I think that is something that certainly has to be considered carefully in that vein.

Mr. CAHILL. It was always my understanding that the one reason for giving the research grants to the nonprofit organizations was that their discoveries and their data would be disseminated freely to all interested parties who could then pick up from there and carry on with their own private funds.

Mr. RICHARDSON. There is no difference at all between that and a contract between the Government and a profitmaking company which also must provide all data under the Government data clause to the Government, and this information then may be disseminated and is disseminated by the Government through the same channels so there is absolutely nothing unique about the nonprofit.

Mr. CAHILL. What is the reason for a private company wanting to do that?

Mr. RICHARDSON. Well, No. 1, because it provides a source of stimulus to its own, you might say, research and development type activities which may be very minimal.

Mr. CAHILL. But which they would have to share with the whole world.

Mr. RICHARDSON. Yes; but let's say it is going to be done anyway.

Mr. CAHILL. If private concerns acted on their own, they wouldn't have to share with the whole world. They could be the primary beneficiaries of their own discovery.

Mr. RICHARDSON. There are not many companies in the United States that are going to conduct detailed mineral surveys on all of the Atlantic coast, for instance, because it is just very, very extensive and expensive.

Mr. CAHILL. There are not many individual companies that are going to be able to get research grants to do that either. It is going to have to be fragmented and separated.

Mr. RICHARDSON. That is right.

Mr. CAHILL. It just seems to me that some of the larger corporations which have already invested, as I understand it, a great deal of money in this work would be reluctant to get involved in a research grant where they would have to share all of their knowledge with the world, whereas a nonprofit organization would not be concerned.

Mr. RICHARDSON. Oh, not be concerned, because it supposedly shares it, anyway.

Mr. CAHILL. Yes. That, as I understand it, is the sole purpose or one of the underlying reasons for limiting it to the nonprofit corporation, so that there is no real motivating force to prevent them from disclosure, whereas in a private firm I think you recognize there would be a great temptation, upon discovery of some rich field through research, to retain some knowledge.

Mr. RICHARDSON. I think the important distinction is that the only thing that has to be shared under such a contract, No. 1, is the data accumulated from that contract. Not all of the supposedly inner files of the corporation have to be shared, only that that pertains to the contract, and my contention is that the private industry that is busily engaged in and has been engaged in for the last 20 years in the Gulf of Mexico, for instance, in exploration, drilling, and so forth, is better equipped through its basic capability that it has developed to undertake these kinds of projects, and I have polled a few of the larger ones and they are interested.

Mr. CAHILL. Wouldn't this grant program be a deterrent to private concerns who were not getting the grants for doing this type of work?

In other words, if there were 10 corporations involved in this type of work today and they were spending their own money and then grants were made but only two of them got the grants, wouldn't this be a great deterrent to the other eight?

Mr. RICHARDSON. It depends on the scope of the activity of the grant, of the contract.

Mr. CAHILL. I am afraid that your suggestion would open up a Pandora's box, for you would then be placing such a premium on these

grants so that there would be a scramble by the independent entrepreneurs for these grants which once they got them, would have a deterrent effect upon the individual companies which did not get them, as we do today in aeronautics, where you have two or three companies that are really controlling the field of aviation. The real reason in my judgment is that these companies originally got the research grants so that they were so far ahead of the field that nobody else could legitimately and economically compete.

It seems to me that, if we could develop a system where all the knowledge that was obtained through Federal research grants was made available to everybody, this would then encourage all independents to invest their own money on what they hoped might be worthy of some further effort. This is my concern.

Thank you, Mr. Chairman.

Thank you very much Mr. Richardson, for what I consider to be a very informative and interesting statement.

Mr. RICHARDSON. Thank you.

Mr. WILLIS. Thank you.

Mr. RICHARDSON. Thank you, sir.

Mr. WILLIS. This committee will stand in recess until 10 o'clock tomorrow morning.

(The statement referred to at p. 74 follows:)

STATEMENT BY RAMON E. BISQUE, PROFESSOR OF GEOCHEMISTRY, COLORADO SCHOOL OF MINES, GOLDEN, COLO., ON MARINE RESOURCES CONSERVATION AND DEVELOPMENT FUND

Legislation dealing with any aspect of the continental shelf environment should be written with full appreciation of the following:

(a) Activities related to the exploitation of any resource in this environment will have far reaching effects that ignore geographical boundaries. *It is not possible for one state or one country to engage in any form of mass exploitation without affecting the environment of a neighbor.* Sizeable operations in mining, aquaculture or any other activity that adds, removes, or redistributes materials in the shelf environment will disturb natural equilibria and produce changes along vast stretches of the coastline. These changes, advantageous or detrimental may well be felt on a continental scale. Ecological, geological and meteorological factors are in a balance that can be disturbed by mans activities to an extent that has implications far beyond a given geographic boundary.

(b) States not actually on the coast but bordering on major drainage systems such as the Mississippi River are as much an influence on the environment of vast zones of the Continental shelf as are the coastal states, particularly with relationship to changes in the biological balance brought about by inorganic, organic and thermal pollution.

(c) Legislation established regarding the continental shelf will no doubt influence the trend and tenor of future legislation involving other oceanic environments.

As man turns to this new frontier it is essential that a concern for the delicate balance of this environment be inherent in the regulations that he imposes on himself. Experts in biology, ecology, geology, environmental oceanography, meteorology and pollution abatement should be heard and their recommendations considered.

(Whereupon, at 11:40 a.m., the subcommittee recessed, to reconvene at 10 a.m., Wednesday, July 31, 1968.)

H.R. 17369—MARINE RESOURCES CONSERVATION AND DEVELOPMENT ACT, AND IDENTICAL BILLS

WEDNESDAY, JULY 31, 1968

HOUSE OF REPRESENTATIVES,
SPECIAL SUBCOMMITTEE ON SUBMERGED LANDS
OF THE COMMITTEE ON THE JUDICIARY,

Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2141, Rayburn House Office Building, Hon. Edwin E. Willis (chairman of the subcommittee) presiding.

Present: Representatives Willis, Poff, Roth, and Railsback.

Staff members present: Jerome M. Zeifman, counsel; and Franklin G. Polk, associate counsel.

Mr. WILLIS. The subcommittee will come to order.

I am pleased and happy to welcome the members of the Louisiana delegation.

Our first witness this morning is our good friend and colleague, the Honorable Hale Boggs, from the Second Congressional District of Louisiana. Representative Boggs has not only served his State with great distinction, but has been Democratic whip since the second session of the 87th Congress. Please proceed in your own way.

TESTIMONY OF HON. HALE BOGGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. Boggs. Mr. Chairman. I am grateful for this opportunity to appear before your committee in support of the legislation which I and other members of the Louisiana delegation have introduced. Our bill would amend those sections of the Outer Continental Shelf Lands Act which Congress passed in 1953 relating to the division and dedication of the revenues from offshore tidelands.

Under our proposal, the bulk of the revenues—62½ percent—would be paid by the Secretary of the Treasury into a special fund in the Treasury which would be known as the marine resources conservation and development fund, and would be used in water pollution control, underwater agriculture, conservation of beaches, hurricane protection, aid to sea-grant colleges, fisheries development. Construction and maintenance of waterfront recreation facilities, oceanographic research, and in other sea-related activities.

The remaining 37½ percent of the revenues would be paid by the Secretary of the Treasury to the State adjacent to the tidelands. The funds would be used for the benefit of the public schools or public roads of the State, as its legislature may direct. The States, after all,

must provide the transportation for—and educate the children of—the men who produce the revenues.

Moreover, there is good precedent—both historical and legal—for this percentage division of revenues between the Federal Government and the States. What is more, it seems to me to be eminently fair. Those who have testified before me have, I'm sure, made this point, and there is no reason for me to belabor it further.

I would, however, like to speak on one particular point—that is, the dedication of the 62½ percent of the revenues to the marine resources conservation and development fund. I consider this by far the most important aspect of the bill. It is so important in a way that it transcends all the other aspects of the bill.

Mr. Chairman, as you know, there is a great deal of money at stake here. It is as though the American people had come into a rather large inheritance, and as though we have been assigned the task of deciding what to do with it. We have heard many proposals, and I think all of them have been well thought out and have merited our most careful attention.

We have made some small efforts to explore the seas, but we have barely scratched the surface. There is vast potential in the oceans, and we can only unlock it through the kind of program we are now proposing—a reinvestment of these funds in the oceans which will pay large dividends to future generations.

To me, however, the wisest proposal for the dedication of these funds is the one proposed by this legislation—the proposal that 62½ percent of the revenues from offshore tidelands be paid into a marine resources conservation and development fund. In effect, the legislation proposes that we reinvest the funds into a venture which will pay us greater dividends than any we have realized so far, greater than any we can now imagine.

The funds would be used to establish a permanent Federal program for the acquisition of knowledge and the conservation and development of our vast and varied marine resources: water pollution control and abatement on the Continental Shelves and adjacent areas and in the Great Lakes; agriculture; prevention of beach erosion; hurricane protection; aid to sea-grant colleges; fisheries development; the creation and maintenance of waterfront recreation facilities oceanographic research; and increased support for desalination research.

The effect would be to establish and to fund an intensive, permanent, long-range program for research and maximum development of the almost limitless potential of the sea.

Mr. Chairman, the food and mineral resources of the oceans are our greatest hope for coping with the overpopulated world of the not-too-distant future. Let it not ever be said that we lacked the foresight, the vision, or the will to provide for the well-being and even the survival of future generations.

I will not occupy your time by enumerating further the evidence which indicates the potential of the oceans. I will say, however, that this country and all mankind has much to gain from the exploration of the oceans, and this legislation lays the groundwork for a long-range program of scientific investigation.

I therefore urge you to give it your careful consideration. The oceans of the world hold great promise to provide future generations with

minerals, food, energy, and fresh water. But, we must begin the search now for more appropriate ways and better means of transforming this promise into achievement.

Mr. WILLIS. Let me thank you on behalf of myself and the subcommittee for your interesting testimony.

Our next witness is the Honorable Speedy O. Long, from the Eighth Congressional District of Louisiana. Please proceed in your own way Mr. Long.

TESTIMONY OF HON. SPEEDY O. LONG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. LONG. Mr. Chairman and members of the subcommittee, I am pleased to be here today to make these remarks in support of H.R. 17372 which I have introduced. This bill is identical to H.R. 17369, introduced by my colleague and the distinguished chairman of this subcommittee. Several of my other colleagues have also individually introduced bills identical to those of the chairman and myself.

Briefly, these bills will create the marine resources conservation and development fund within the U.S. Treasury into which fund the Secretary of the Treasury will henceforth deposit proceeds arising from the rentals, royalties, and other revenues of leases on the Outer Continental Shelf of the United States. The bills further provide the specific areas in which the moneys deposited into this fund will be spent by the Secretary, pursuant to appropriations by Congress, in the broad sphere of marine conservation and development.

The merits of this proposed legislation are great. Coming from a State abundantly endowed with natural resources, I have seen firsthand the need and the importance of conservation. Natural resources, by their very nature, are almost always depleting assets and unless proper measures are taken to preserve such assets, the results can often be disastrous to the persons economically dependent on them in addition to the loss suffered by the Nation and the economic community.

The sea and in particular, the waters surrounding our shores, offer resources affecting all of us in the United States, many of which are considered depleting or wasting assets and resources. In addition, there are many other resources which remain to be discovered or developed. The time is now for us to take the necessary steps to conserve, develop, and discover the phenomenons of the sea.

The proposed legislation before you, in my opinion represents wise and appropriate foresight by Congress in this field, the field of marine conservation and development. Adequate legislative precedent exists for the legislation, as has been previously brought out.

I want to express and reiterate my interest in and request your favorable consideration of the several bills before you in this field.

Mr. WILLIS. Thank you Congressman Long.

The subcommittee is delighted to have with us this morning a speaker on behalf of Governor McKeithen, of Louisiana. I refer to the Honorable Gillis Long, of Alexandria, La., who represented the Eighth Congressional District of Louisiana in the 88th Congress.

Mr. Long has had a distinguished career in his profession and in Louisiana political life. He is a former candidate for Governor of our State and, of course, bears a distinguished political name. In addition,

he has compiled a distinguished career as an attorney specializing in corporate finance, and serves as a special counsel to the Governor on submerged lands.

We are glad to have you here with us, Gillis, and while we are sorry that Governor McKeithen's other commitments prevented him from being here this morning, I want to welcome you to this hearing.

You may proceed, sir, in your own way. Do I understand that you have a prepared statement that you would like to present?

TESTIMONY OF GILLIS W. LONG, ACCOMPANIED BY GEORGE ARCENEUX, JR., SPECIAL COUNSEL TO THE GOVERNOR OF LOUISIANA ON SUBMERGED LANDS, FOR HON. JOHN McKEITHEN, GOVERNOR OF THE STATE OF LOUISIANA

Mr. LONG. Yes, Mr. Chairman, and members of the subcommittee, I do have a prepared statement.

I would like, if the committee would indulge me, to go through the prepared statement.

Also, I am accompanied by Mr. George Arceneaux, attorney of Houma, La., who is also serving as a special counsel to the State of Louisiana on the submerged lands question.

Mr. Arceneaux is also no stranger to Washington, having served in Washington for a number of years as administrative assistant to Senator Ellender, and he is now a distinguished member of the Louisiana bar.

Thank you for your courtesy.

As the chairman has indicated, I also regret that the Governor is not here, but it is an honor and privilege for me to acquaint you with the views of Louisiana on H.R. 17369 and similar bills. While of vital interest to Louisiana, these measures are of great national importance, as well.

Louisiana wishes to commend Congressman Willis and the other farsighted sponsors of the pending legislation. The bills this subcommittee has under study represent a vitally needed step forward in the expansion of national emphasis upon the general field of oceanography. This is a field which, we are convinced, has too long been either overlooked entirely, or neglected to a point of national shame.

The pending bills, as I understand them, would commit the major portion of revenues derived from minerals and related development of the Federal submerged lands of the Outer Continental Shelf to a coordinated program designed to advance and further our knowledge of the oceans which surround us. We will then be able to develop perhaps the last of our planet's "new frontiers", the sea.

This approach is in the highest and of course best traditions of total conservation; further, it adopts, and adapts, to the Federal lands of the Outer Continental Shelf, a principle which has proven its worth over a period of some 50 years—the concept contained in the 1920 Federal Mineral Leasing Act. This concept sets forth very plainly that the major portion of revenues derived from mineral development of the lands of the interior should be reinvested in the betterment and improvement of the lands which originally produced those revenues.

As the bulk of mineral leasing revenues derived from Federal lands of the interior are dedicated to the Reclamation Fund, so the major

portion of the mineral leasing revenues derived from the federal lands of the Outer Continental Shelf would be dedicated to a marine resources conservation and development fund. The objective of this fund would be the enhancement of America's marine resources, just as the objective of the Reclamation Fund is, and for some 50 years has been, the enhancement of America's inland, or interior, resources.

Thus, H.R. 17369 proceeds from a valid and well-established precedent, and tailors that precedent to similar areas of Federal concern and interest. In this process, the Nation, and our coastal States, are offered a program which would prove of immense benefit to all concerned.

—to the Nation, by providing increased knowledge and, ultimately, increased development of one of America's greatest assets, the sea;

—to the coastal States, by tendering them the prospect of, at long last, removing the plague of pollution which already has "killed" many of their lakes, streams, and estuaries, increasing their fishery resources, training their young men and women in ocean-oriented professions (through the sea-grant colleges) and, protecting them against the specter of ultimate depletion of a valuable, but nevertheless wasting, asset, that is the mineral resources which adjoin their shores.

It is not necessary to dwell upon the national benefits which would be derived from programs such as those so carefully presented in the pending bills. These measures are obviously the products of considerable thought and reflection, as well as a growing concern over the undeniable neglect we have displayed towards the resources of our adjacent seas, our rivers, and our lakes.

Suffice it to say that only recently has mankind realized the immense resources which our oceans offer to all of us—as a source of food, as a virtually untapped source of oil, gas, minerals, and precious metals, as the major source of rainfall throughout our globe, as the moulder of our climates, as a major arena for rest and recreation, as a vital element, of course, in our national security.

All of these resources relate directly to the national welfare and the national security; obviously, then, they are not only worth developing, they must be developed.

The measures now before this subcommittee for consideration offer the Nation a sound and feasible means of achieving that development.

But H.R. 17369 does not achieve that purpose at the expense of any existing program nor does it purport to siphon away fiscal resources which are already committed to other purposes. Instead these bills extend to the resources of the sea the philosophy contained in existing programs relating to the development of our interior States.

This is reasonable and realistic legislation—general in its application broad and visionary in its purpose. It would benefit and affect directly, the vast majority of the American people. As has already been observed by the President of the United States, in his report to Congress in March 1968 on the status of marine resources and engineering development, 75 percent of America's population lives along our coasts and Great Lakes. Nine of our 15 largest metropolitan areas are on the oceans and Great Lakes, and three are on ocean tribu-

taries. Twenty million children live in these metropolitan areas, within sight of potential water recreation areas.

Thirty million American swim in the oceans; 11 million are salt water sport fishermen.

These Americans, Mr. Chairman, hold a vital stake in the bills now under study.

But there are others, involved too. As I have already indicated, our oceans are virtually untouched as a source of food, of vitally, desperately need protein. Economists have estimated that there are 1½ million hungry people in the world. The full food potential of the seas, seriously neglected in the past, must be developed to help combat famine and despair, where it now exists, and to prevent the development of such conditions here in the United States.

In this connection, it would appear that perhaps the Nation is now beginning to realize what we in Louisiana have long known—that America's fishery resources are among the richest in the world, but we are permitting them to "go by default" to other nations. Since 1954, the United States fish catch has fallen by a half billion pounds—from 6.1 billion pounds in 1954 to 5.5 billion pounds in 1966. On the other hand, the catch by the Soviet Union has climbed during that same period from 5 billion pounds in 1954 to nearly 12 billion pounds in 1966.

Much of this increase has been achieved by Soviet vessels operating off our own coasts in the Gulf of Mexico. Off the coast of Louisiana, our fishermen are encountering more and more Soviet trawlers, operating from huge "mother ships."

This abject neglect of America's fishery and other ocean resources must be stopped. This bill offers a sure, quick and sound way to halt that neglect.

Of equal importance with the purposes of these bills, however, is the philosophy which supports them, that is, the need for America to prudently reinvest the proceeds derived from the depletion of a wasting asset—in this instance primarily oil and gas—in the development of sources of "replacement" revenues.

It is indisputable that the minerals which we are producing in merchantable quantities today are, indeed, depletable. The day will come when the last barrel of oil, the last cubic foot of gas, is recovered from the Outer Continental Shelf. Sound conservation principles, good business practice, require that the Nation take steps now to develop new opportunities to be available once existing opportunities terminate.

As one of America's oldest sources of large-scale mineral production, Louisiana has a special interest in such legislation.

We commend it as a matter of national policy. It has been a matter of State policy for some two decades, and we are committed to it as a matter of self-preservation.

Louisiana derives considerable revenue from mineral production within its borders both as lessor, and by virtue of severance taxes imposed upon those who produce minerals throughout our State. For the most part, revenues derived from Louisiana's vast mineral production are dedicated to the support of schools, highways, and hospitals.

But Louisiana is denied the right to tax mineral production on the Outer Continental Shelf; indeed, Louisiana derives no direct benefit

or advantage from such production. Still Louisiana must bear, in large measure, many of the burdens which accompany the growing mineral activities which are taking place in the Federal area seaward of our State's boundaries.

The position of Louisiana vis-a-vis such activities is not unlike the position of the counties and municipalities adjoining our Nation's Capital, where such counties must furnish police, fire and similar protection to families of employees who work in the District of Columbia, as well as schools for their children, roads for their automobiles, and municipal services for their health and comfort—water, sewerage, et cetera.

Men employed in the development of the Outer Continental Shelf do not live, with their families, in this Federal "enclave." They work offshore, but live in the adjacent coasts. Thus, the situs of their families must provide the usual and necessary services for those families—but is denied the right to tax the source of the breadwinner's employment.

For this reason, Louisiana believes that the allocation to the adjacent States of 37½ percent of the proceeds of mineral production derived from the Federal area adjacent to those States, for the construction of roads and schools, is fair, just and necessary. Again, the percentage is not one which was arbitrarily arrived at; instead, it finds its origin in the 1920 Federal Mineral Leasing Act, which has, for some years, allocated that same percentage of revenues derived from Federal lands within those States, to the respective States for the support of public roads and schools. We understand that several efforts have been made to increase that percentage, based upon the experience of the interior States that the existing contribution is insufficient. In this connection, we note that the pending bills would, generally, increase that participation to 60 percent.

Based upon Louisiana's experience to date, we endorse this proposal.

Indeed, the dedication of a just share of mineral production to the States, as a contribution in lieu of taxes, is urgently necessary, for Louisiana and other coastal States in similar circumstances are finding it increasingly difficult to meet the demands imposed by increased offshore development from strictly "onshore" sources of revenue. In Louisiana we are beginning to encounter some evidence of concern among the underwriters of our local bond issues, particularly in the coastal parishes, as to the ability of such parishes to carry or support long-term bond issues, should mineral development and production dwindle in the interim.

This results not only from the knowledge on the part of all of us that, ultimately, there is a limit to the amount of oil, gas, and sulfur commercially recoverable from the Outer Continental Shelf, but, also, from the fact that increased technology may impair a mineral-based economy, even while minerals continue to be produced in commercial quantities.

Let me be more specific.

At the present time, the principal benefit realized by the Louisiana coastal area from mineral production adjacent to our shores results from the presence there of men and companies involved in the exploration for and development of mineral resources. By and large, once a well is put on production, the part it plays as an "employment

generator" is negligible. Indeed, in the offshore area, it is not unusual for a number of producing wells to be linked, for production purposes, to one set of controls, perhaps operated by one or two men. Production is highly automated, while drilling still requires considerable onshore investment, as well as the employment of much manpower.

When the time comes, as come it must, that drilling and development begin to wane, production may well continue at high levels. Yet a local economy will not benefit from production, as such. Instead, local economies will be highly depressed, populations will fall drastically, and tax bases will be reduced tremendously. We have seen this happen in our own State in the northern areas, where there is still considerable production, but little drilling. I am sure that other areas, principally Oklahoma and east Texas, have had a similar experience.

This can be disastrous to communities, parishes, and even the State, particularly in areas which have issued long-term debt in order to meet the demands for schools and roads and the like while development of those properties was underway. When the development ceases the revenue ceases.

In cases involving mineral production within the State, Louisiana has recognized this possibility. We have attempted to guard against it by imposing taxes upon the right of the mineral lessee and owner to produce the minerals involved—principally severance taxes. But the scope of these taxes is limited to the geographic areas of the State; Louisiana cannot tax the severance of minerals from the Federal lands of the Outer Continental Shelf.

To the extent Louisiana attempts to meet the bona fide human needs of the families of workers engaged in mineral development of Federal submerged lands from fiscal resources of the State only, then to that extent Louisiana's ability to care for its own people is drastically affected. Our ability to meet the needs of all of our citizens is drastically impaired, and, further, the property rights of Louisiana citizens are being diluted, since valuable elements of those rights are being diverted to meet needs which are not of Louisiana's doing.

Simply put, unless the valid needs of the coastal States are recognized, unless the Federal Government undertakes to help the coastal States meet the needs which a purely Federal enterprise is generating, the States are, in effect, subsidizing the development of Federal resources, at the ultimate cost of the States, themselves, and their people.

Frankly, Mr. Chairman, Louisiana views with increasing concern the history of such once-prosperous areas as Kentucky and West Virginia—at one time great and wealthy coal producing areas which now find themselves highly depressed and in need of such Federal assistance as the Appalachia program. Louisiana does not wish to find herself in similar straits, a generation or so from now. Yet, we may not be able to avoid such a contingency unless the Federal Government displays a willingness to help defray the costs its activities now produce. Certainly, Louisiana cannot, and will not, tell the children of a worker employed on a drilling rig on the Outer Continental Shelf, but living in Louisiana, that they cannot go to school in Louisiana because their daddy works offshore. We cannot, and will not, deny that man's adequate police and fire protection, sewerage, water, or similar services. We

cannot prevent any of these people from using our roads—roads which, every day, we are building and enlarging in order to meet the rising demands attendant to offshore development. Louisiana will attempt to meet these needs, but we are not going to be able to fully meet them and pay for them unless the Nation recognizes that Louisiana is great measure, is meeting a national obligation, and unless the national Government extends reasonable assistance to us in that regard.

Thus, Mr. Chairman, the percentage of revenues indicated in the pending bills, to assist the coastal States in meeting the school and highway needs produced by development of the Federal offshore areas, is a vital element of this legislation. It is a fair proposal, and one we heartily and completely endorse and support.

Louisiana appreciates the spirit in which these bills have been drafted, and we support the principles they represent. We are a coastal State, but we are also a member of the American Union. This legislation "plays favorites" with no one. It is directed toward the furtherance of areas of grave national interest, and it seeks to meet the valid needs of those of its States, and their citizens, who bear the primary burden of furthering those areas of interest.

I hope, Mr. Chairman, that H.R. 17369 will become law of the land.

It is good legislation, and we in Louisiana consider it a privilege to be able to appear here today in support of it.

Mr. WILLIS. Thank you very much, Mr. Long, for your very enlightening statement.

Mr. WILLIS. Are there any questions, gentlemen?

Mr. ROTH. Yes, I would like to ask the distinguished gentleman; could you give us some estimate or range of what kind of impact this employment does have on Louisiana? As I understand your testimony, when you get into production there are not too many employees involved. It is during the early drilling and preliminary stages that they are involved. What do you see as the number of employees and families that will be involved?

Mr. LONG. We, Mr. Roth, right now don't know the answer to that question. We have requested the State university, department of business administration and economics, to begin a study in this regard. We would hope that within about 6 months that we could be able to give some fairly definite and concrete statistics in that regard.

Mr. WILLIS. Will you make that statement available to the committee.

Mr. LONG. We would be happy to.

Mr. WILLIS. All right.

Mr. LONG. When we have that study available we will present it. Mr. Arceneaux, for example, lives in Houma which is right on the coast in one of the parishes of Louisiana that would be most affected and perhaps would like to comment.

Mr. ARCENEAUX. I think, Mr. Roth, the best answer I could give you is the experience of my own parish and my hometown of Houma. In 1950 which marks generally the period of time when offshore development really commenced, the population of Houma was about 11,000 and the population of Terrebonne Parish was on the order of 40,000 to 43,000. At this time the population of Houma is approximately 38,000 and the population of Terrebonne Parish is on the order of 70,000. The bulk of these people are directly involved in offshore min-

eral activity working for the drilling companies, for the various specialty companies which service the offshore area, for the barge companies, the towing companies, and things of this sort. I think that perhaps gives you a general idea of the impact which this development offshore has produced in these coastal areas.

Mr. LONG. Also, in this regard, Mr. Roth, the concern that I mentioned here that some of the underwriters of bond issues have in a number of the parishes recently evidenced itself by either the rating given to the bonds or the very fact that they are concerned about underwriting long-range bond issues because as soon as this development is completed we do not know what will happen to the area.

Mr. ROTH. Do these companies that are engaged in the offshore drilling have facilities on shore?

Mr. LONG. They have limited facilities, Mr. Roth, very limited, but they don't do most of the development work themselves. For example, they are serviced by contract boat companies which would service them and by contract drilling operators who operate in the offshore area. This points up the transient nature of the activity in which they are engaged. They do not build a large installation there because it is to them a temporary facility. In most instances the men employed on the offshore rig live there 10 days and then are off 5 days. The companies employing them come into Houma, let's say, and buy the food that is necessary to feed these people offshore. We cannot subject that food to the sales and use tax of the State of Louisiana under appropriate constitutional law since it is going to be used offshore.

Mr. ROTH. Let me ask you this question.

What would you anticipate in the way of revenue if this legislation became law: What would this mean? What would be the general range of revenue to Louisiana?

Mr. LONG. The Department of the Interior has come up with some statistics on that that we had talked to them about.

George, do you want to comment on that?

Mr. ARCENEUX. As I recall, Mr. Roth, the total Federal income from all offshore mineral production, which would include Louisiana, California, and Texas and limited production as I understand off the coast of Oregon and Washington, is on the order of a half billion dollars a year at this time. Based on an arbitrary apportionment, let's say—and I am speaking merely for purposes of illustration more than anything else because I do not have the figures at my fingertips as to the Louisiana share of this—but let us say that Louisiana production represents one-third of it, say \$170 million a year, and roughly one-third of this would be \$50 million to \$60 million a year as against a total State budget of something on the order of one and a quarter billion dollars a year. Of the total Louisiana State budget something like a third of it is provided by taxes on or other revenues from minerals produced within the State of Louisiana and practically all of that goes to the support of schools, highways, and hospitals.

So that the proportion would seem to be almost in line.

Mr. ROTH. If I understand the thrust of your testimony, you base one of the reasons for the need for the legislation on the increased costs to Louisiana and not the total budget of Louisiana.

Mr. LONG. That is correct.

Mr. ROTH. Do you have any estimates of what the actual increased costs are at this date?

Mr. ARCENEUX. This is one thing which this economic survey to which Mr. Long referred will develop particularly for us. Perhaps again I can go back to my local experience.

Some 2 years ago Terrebonne Parish voted an \$8 million bond issue for new school construction and I would say that probably 90 percent of this was made necessary by this additional population resulting from offshore development. I think Mr. Long referred in his testimony to a parish where at the request of bond counsel the local school board there reduced the term of its issue feeling that this would preserve the very good bond rating which the parish has maintained.

Mr. ROTH. One further question:

You do have the authority to tax the employees who live in Louisiana and work offshore, is that correct?

Mr. LONG. We have those that reside in Louisiana. We have the right to tax them for income tax which we have a very limited personal income tax in Louisiana because that area of taxation has basically been taken over by the Federal Government.

Mr. ROTH. What about school and property taxes?

Mr. LONG. They are subject to that to the extent that they own their homes and own property in the State of Louisiana. The transient nature of the situation again can be seen by the presence of very substantial mobile homes or trailer parks all along the gulf coast, Mr. Roth, which as you can understand from a property tax situation it is awfully hard to impose a tax upon.

Mr. ROTH. Will you have any figures in the study that is being made showing what additional taxes you do get from these employees?

Mr. LONG. Well, sir. That will be a part of the survey.

Mr. ROTH. I have one last question and I appreciate the gentleman's testimony. Is it possible to tax a company or corporation through allocation of income tax under present law?

Mr. LONG. We participate in the national formula with respect to how much their property and their income bears in relationship to their total income and property valuation. This again does not give any consideration to anything that they own that is offshore except to that degree.

George, do you want to explain any further on that?

Mr. ARCENEUX. I think that is it.

As Mr. Long indicated, the bulk of the companies which own the working interests in these offshore leases have very limited physical facilities in the State. Their sales, and so forth, are not included in the total picture because to the extent that the purchases occur for use on the Outer Continental Shelf they are not taxed by the State, so that really, the apportioned tax base is a very, very small proportion, Mr. Roth, of the whole.

Mr. LONG. One example of that and perhaps the reason that it is an example is that it is a little extreme but not too extreme, is that one of the major national oil companies which has a very substantial offshore production has such limited facilities in Louisiana that they do not even have a refinery in Louisiana. The oil is refined outside of the State of Louisiana so that we don't even benefit to that degree with respect to this particular instance.

Mr. ROTH. I thank you, gentlemen.

Mr. WILLIS. Mr. Railsback.

Mr. RAILSBACK. I don't have any questions. I just want to commend the witnesses. They did a nice job.

Mr. WILLIS. Thank you.

The ranking minority members of the committee, Mr. Poff of Virginia. Do you have any questions?

Mr. POFF. Thank you, Mr. Chairman. I apologize for my absence. I live a lot closer to my district than my chairman and for that reason I can enjoy the fellowship of my constituents more often. I welcome the gentlemen to the committee. I apologize for my absence. I wish I might have heard you, but I will read what you said.

Mr. LONG. Thank you very much, Mr. Poff.

Mr. WILLIS. Do you have questions?

Mr. ZEIFMAN. Mr. Long, you indicated in your statement that the precedent for this legislation is to be found in the Mineral Leasing Act of 1920. Yet the Mineral Leasing Act of 1920 applies to Federal lands which are located within the borders of the respective States.

Now, one of the distinctions between the Outer Continental Shelf and a Federal enclave in the interior is obviously the fact that the Outer Continental Shelf is beyond the territorial limits of any State whereas a Federal enclave in the interior is obviously located within a State's borders. Given that distinction, how do you justify basing this legislation on the precedent?

Mr. LONG. I think your question puts the finger on it, Mr. Zeifman, that is that if you analyze it closely you will find that the impact created, the impact upon the State of Louisiana using it as an example because of the fact that these areas are offshore of Louisiana and contiguous to rather than surrounded by State properties would be more substantial than if the other were the case. For example, let's take the cost of building roads in a State of where you have a Federal enclave. You at least could justify building a road with State money up to the Federal enclave and on past it because you would go from one part of the State to another part of the State and it might very well be the most direct route between two points in the State.

Here we don't even have that type of a situation in Louisiana. We would build it right down to the coast, which is solely and entirely for the specific use of the development of the property subject to exclusive Federal jurisdiction. I think this in itself would point up the general principle to which I referred. I think the second thing is that if you find a Federal enclave such, for example, at Fort Polk, La., and you go to Fort Polk today, and you will find on Fort Polk Federal schools operated for the benefit of the people there, and to that extent the area is self-sufficient to a very limited extent. Yet Congress has, by enacting so-called impacted areas legislation, taken into consideration the effect upon those areas. We have this offshore area and other than employees going out there and staying, say, 10 days and having their food brought to them nobody can live in the area. There are no schools there.

I do think that there is a distinction, but I think that if there is a difference here, the difference is more to the prejudice of the areas that are contiguous thereto than those of where a Federal enclave is completely surrounded by State land.

Mr. ZEIFMAN. If there is an accident on the Outer Continental Shelf involving an oil rig, or if there is a crime committed on the Outer Continental Shelf against an oil rigger, does the State of Louisiana become involved in providing services?

Mr. LONG. They do but I would ask George to comment on that.

Mr. ARCENEAUX. Yes, they do, Mr. Zeifman. That is within as I understand it, the 1953 Submerged Lands Act which, in effect, gives the States criminal jurisdiction over offenses committed out there without vesting in the States any property rights.

Let me say also that in the area of civil jurisprudence the Jones Act has been extended to the Outer Continental Shelf and is applicable to many of these drilling rigs. The workers on these rigs are for purposes of the Jones Act in many instances considered to be seamen. In some instances they do have the right as seamen to proceed in the State courts and quite frequently they have elected to proceed in the State courts because of delays which they have found in the dockets of the Federal courts.

Our sheriff's office in Terrebonne Parish, in case of an accident on an offshore rig, will provide helicopter service, boat service, and this kind of thing as well as investigative service out there. So that it does result in extension, to that extent, of the police power of the State.

Mr. ZEIFMAN. One more question, Mr. Long.

Would not there be some tendency for this kind of legislation to be parochially oriented, so to speak, and to favor only a selected number of States?

Mr. LONG. I think there has been the tendency for this to happen over the years that, because of either bad public relations or the fact of the way it was presented originally, this has been by many people projected as a grab by some of the coastal States areas, but I think that slowly that that is dying and I think that it is because of the fact that other areas of the Nation are coming to realize what the problems are that are inherent in this. I think the testimony of the other witnesses that you have had before this committee pretty clearly indicates the recognition of the problem is spreading. We in Louisiana who have had it for a number of years.

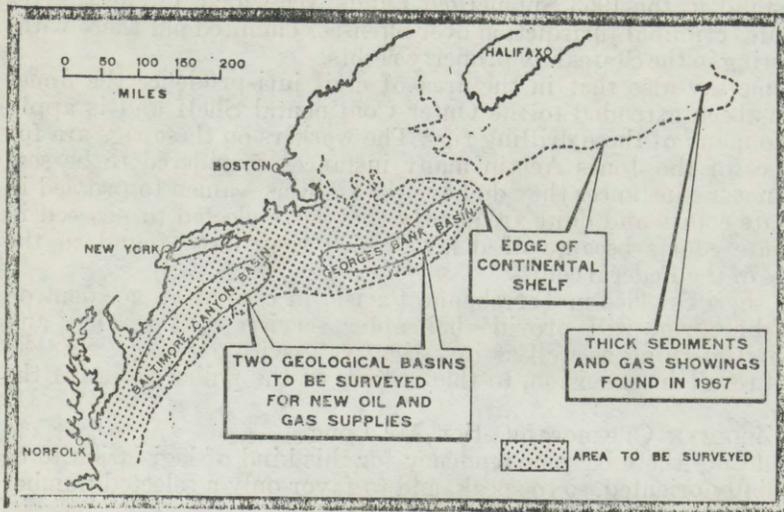
I heard one of the Congressmen from Long Island testifying here the other day for example. I think also you can see that the realities of the problems confronting our coastal States have been now recognized by both Republicans as well as Democrats. I think that it is surely losing its appearance as an attempt by one particular State or one particular area to profit itself at the cost of the rest of the Nation. I think that another thing which has happened is that they always say that where the money is, there's the source of power, and if you look at some of the activities that have been taking place in other areas you will find that in Texas and California just recently, on the Outer Continental Shelf there, the largest leases ever granted by the Federal Government in sums of dollars were granted, and I would like, Mr. Chairman, to present for the record if I may a copy of a newspaper clipping from the Sunday morning, June 30, 1968, New Orleans Times-Picayune which says: "Offshore Problems Face East."

Mr. WILLIS. We will receive that article for the record.

(The article follows:)

THE TIMES-PICAYUNE, NEW ORLEANS, LA., SUNDAY MORNING, JUNE 30, 1968

Offshore Problems Face East



AN INTENSIVE GEOPHYSICAL exploration program is under way in the Atlantic Ocean, stretching from Virginia to Massachusetts and ranging in water depths up to 3,000 feet. The industry is expecting to come up with some new natural gas reserves to take the place of long distance pipelines from Louisiana and Texas fields. The states will then have some interest in ownership of the submerged lands, and can face the same problems which have confronted Louisiana for more than a quarter of a century.

ATLANTIC COAST AREAS ARE UNDERGOING SEISMIC SURVEY

A long-planned electronic search for new sources of oil and gas from the ocean floor is under way in a huge continental shelf area off the Eastern Seaboard. The search will continue throughout the summer and early fall.

The off-shore area under survey runs from Virginia to 200 miles east of Massachusetts, and is larger than the combined Gulf Coast continental shelf area of Texas and Louisiana. It is one of the few remaining areas in the U.S. not thoroughly tested by modern geophysical methods.

The Golden Fleece, a 120-ft. converted yacht, with a crew of 16, began the intensive search June 13 operating initially out of Hyannis, Mass. The ship carries an advanced type of equipment to measure the differences in gravimetric attraction and magnetic intensity of the subsurface geological structures.

The work is being handled by Exploration Surveys, Inc., of Dallas, for a number of utilities and oil and gas companies whose names were not disclosed.

The electronic findings will be processed by Computer Systems Corp., an ESI affiliate in Dallas.

Shipboard manager of the project is David V. Sibila, formerly with the U.S. Coast and Geodetic Survey.

The project encompasses 16,000 nautical miles of trackline, laid out in a grid network of 5x10 miles. Observations are posted at one minute intervals of travel time, about every 1,000 feet.

A special aircraft equipped with radio location receiver makes two or more flights daily to the ship, to maintain location checks.

Permits for the work were issued by the U.S. Department of Interior and Eastern Seaboard states, Shelby Pitts, ESI vice president, said. He added that

if the search leads to success, it can be of enormous benefit in relieving the heavily populated and industrialized Seaboard from dependence on pipelined fuel supplies from other parts of the nation.

The search area includes two geological basins considered to have good potential for new oil and gas discoveries.

One is the Baltimore Canyon, an elongated basement depression parallel to the Delaware-New Jersey coast and about 160 miles long. The other is the Georges Bank, roughly parallel to the Rhode Island-Southern Massachusetts coast, extending about 200 miles to the northeast from a point 70 miles south of Nantucket Island.

Pitts said that until now the Eastern Seaboard has not been explored extensively because it has not yet been blocked off and offered for lease by the states and federal government.

"Oil companies have not pushed for this because of their concentration in other areas with known hydrocarbon deposits, but now they are beginning to feel the need to step up the search for new off-shore territories to explore around the U.S. continental shelf."

A discovery of gas reported in 1967 by a major oil company off the coast of Nova Scotia appears to be geologically related to what oil companies hope to find along the U.S. coast, he said.

Mr. LONG. This pretty well points up the exploration programs, the seismic surveys that have been made all along the Atlantic seaboard. I saw, for example, that the Governor of Florida has called for some time in the next few months a conference of the Governors of all of these States to point up and to explore with them the problems that are now coming to these areas as a result of the offshore activity that is taking place in those areas. But I believe that this points up that it is truly a national problem, it is not a Democratic problem, not a Republican problem, not a Louisiana problem but it is a national problem to which proper Federal recognition in my opinion has to be given.

Mr. POFF. Mr. Chairman.

I would just like to comment in that you are talking about Democratic and Republican problems that the record should reflect that there are three Republicans on this subcommittee present, and there is one Democrat present.

Mr. WILLIS. That has been the way all week.

Mr. POFF. That illustrates more dramatically than anything I can conceive of how strong the interest is in this legislation.

Mr. POLK. I have just one question.

Do you have any monetary estimate of the additional revenues that the State of Louisiana derives from the presence of the offshore oil industry and employees?

Mr. LONG. We do not. That will be covered, we hope, in the study that we are having made. I would not deny that during this period, it is a substantial amount of money. There is no question about it. Our points would be, one, that it is not going to continue which causes us great concern and, secondly, in all areas that we do not have the same opportunity to receive income from either the areas or the people involved that we do an average citizen in the State of Louisiana and we think as a very minimum we are entitled to that.

Mr. POLK. Do you feel that the 37½-percent allocation that is given to the State under the formula in the bill is a fair amount? Do you feel that it should be higher or lower or at 37½ percent?

Mr. LONG. Again we based our view from the fact that it did follow the precedent of the Federal Mineral Leasing Act. As all of us know the States that participate are now asking for an increase in this, bringing that amount up to 60 percent; but they started out with 37½

percent to replace in effect capital assets that were being depleted. All we have to do now is go into the West, as you know perhaps better than I, and we see the capital improvements that have been made, the water reservoirs, the dams, the recreation areas and all of this that has been done with the percentage of money that has gone into the reclamation fund and perhaps the capital assets now have been in that area replaced to a sufficient degree that the States ought to get a higher percentage of the money than they have in the past. That is the reason we have no argument with their attempt to increase this percentage and in effect support it because we have nothing that would lead us to the contrary. But we do believe that because of the substantial amount of money involved here and the need for some programs to be taken directly in this regard such as the antipollution problems that we would have no argument at all with the 52½ percent, or in effect the 62½ percent counting the cost of the administration, going into the fund rather than going directly to the States.

Mr. POLK. Thank you.

Mr. WILLIS. Thank you very much, Mr. Long.

Mr. LONG. Thank you, Mr. Chairman.

Mr. WILLIS. It gives me great pleasure to welcome our next witness, the Honorable Otto E. Passman, from the Fifth District of Louisiana. You may proceed in any way you wish.

TESTIMONY OF HON. OTTO E. PASSMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. PASSMAN. Mr. Chairman, and members of the subcommittee, I am pleased, indeed to appear before you today and to add my voice in support of a measure which will have profound significance not only for my own State of Louisiana but for the entire Nation.

I have cosponsored the Marine Resources Conservation and Development Act out of a deep conviction that this measure is responsive to the needs of our Nation for a comprehensive plan which will provide both for an equitable distribution of the resources derived from the mineral leases on the Outer Continental Shelf and for the conservation and development of marine resources.

My bill, H.R. 17405, which is identical to the bill introduced by the chairman of this subcommittee, my distinguished colleague, Edwin E. Willis, embodies sound conservation principles which have been tested by long experience. Following the precedents established in the Mineral Leasing Act of 1920, the receipts from depleting assets would be used to restore other vitally needed natural resources and would also be used to develop schools and roads in those States off whose coasts mineral resources are exploited. Thus, each of the coastal States will be given some degree of assurance that their economies will remain stable and not be subjected to the depressive effects which would otherwise occur once the exploitation of mineral resources begins to diminish.

In his testimony before this subcommittee, Mr. Gillis Long, speaking for Governor McKeithen, has aptly described the role which Louisiana wishes to play in the formulation of a comprehensive program. I believe that Louisiana's goals with respect to the disposition

of revenues from the Outer Continental Shelf are consistent with our Nation's overall needs.

I wholeheartedly endorse the statement offered on behalf of the State of Louisiana before this subcommittee today and urge that this subcommittee give this measure prompt and favorable consideration.

Thank you again, Mr. Chairman, and members of the subcommittee, for the privilege of appearing before this subcommittee.

Mr. WILLIS. Thank you very much. The subcommittee appreciates your testimony very much.

I see a valuable member of our congressional delegation in the audience, Mr. Edwin Edwards.

Mr. Edwards, would you care to comment on these bills?

I welcome my colleague.

TESTIMONY OF HON. EDWIN EDWARDS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. EDWARDS. Thank you, Mr. Chairman, and my colleagues, on the Republican side. I think your presence here exhibits the perennial wisdom which your party has shown in matters of national interest and I am certain it speaks well for your party.

I suppose if I had the wisdom of Solomon, the eloquence of Demosthenes and the logic of Immanuel Kant I could add very little to what has already been said but, hoping to have some of the prophetic abilities of Jeremiah and Isaiah I would like to comment on something which I think is significant in these hearings and that is that mankind, and more especially America, is just now beginning to realize, the tremendous asset which we have in our oceans. They say that oceanographers and statisticians interested in the problem have learned that the division of the earth's surface into two-thirds water and one-third land was the optimum way of making such a division so that it would support the maximum amount of life, and I think that mankind, as its population explodes, and as we crowd more and more people into smaller and smaller areas in the earth's surface is going to have to look to the frontiers of the ocean for foods, metals, and possibly chemicals and substances which are not even yet known to mankind and probably would defy our imagination. So that this problem, although it deals with resources and revenues realized from oil and gas and sulfur, known chemicals and substances, I think has far-reaching future aspects in the great likelihood that, more and more, American industry and scientific endeavors are going to look to the ocean for such substances as we will need to sustain our Nation and its people and I think it is appropriate and proper and certainly wise for the Congress to face the problem at this time as to how the revenues are going to be divided from this particular area.

I think it is very important that the National Congress give consideration to the burdens placed on the bordering States whose shores are going to be the areas from which this development is going to occur.

I see that the formula which has been offered in the legislation is fair and reasonable. It is based in my opinion on adequate precedents and if there were no precedents I think it would be a good starting point.

Mr. WILLIS. Almost 20 years ago, the full Judiciary Committee approved that formula. It was under the Walter bill.

Mr. EDWARDS. In summary, Mr. Chairman, what I am saying is that in my opinion at the risk of sounding like a prophet the depletable resources that we are now dealing with, oil, gas, and sulfur, will probably be fading from the scene at the time that the impact of this bill is going to be felt by our Nation and by the States bordering the oceans when additional metals and foods and substances will be taken from the ocean which will be needed to sustain our Nation and its people.

Thank you, Mr. Chairman.

Mr. WILLIS. Thank you very much. We enjoyed your very enlightening presentation.

Now I see in the audience a gentleman connected with a college in my district, Mr. Authement of Thibodaux, La., representing the Nicholls State College.

Mr. Authement, you are recognized. I understand you are appearing here in the name of the president of the F. T. Nicholls College.

TESTIMONY OF ELMO C. AUTHEMENT FOR PRESIDENT VERNON F. GALLIANO, F. T. NICHOLLS STATE COLLEGE, THIBODAUX, LA.

Mr. AUTHEMENT. Yes, for Dr. Galliano. Unfortunately he had to meet with the State board and could not be here today and I am appearing on his behalf before the committee.

It is an honor and pleasure to have the opportunity to appear before this committee at the hearings of H.R. 17369.

Mr. Chairman, what I will deliver today is a summary of the paper that I furnished to the committee. The original is naturally much more in detail and more national and global in scope. Primarily I am representing an institution of higher learning in the southern portion of the State of Louisiana.

I would like to say that of particular interest to the Nation, my State, and still more pertinent to the institution which I represent, is that part of the bill pertaining to water pollution control, the sea grant program, and fisheries development.

Coming from a college located on the very edge of the Louisiana gulf coast estuary system, I can perhaps give you a little insight into the importance to the Nation and to the world of the vast untapped resources contained in and under the waters surrounding our continents. It is truly fitting and just that revenue obtained from the Outer Continental Shelf be used for research toward augmenting the food supply for the world by proper management of the sea.

We in the United States lag behind other countries in this endeavor, in that we have consistently attempted to trap food in the sea rather than harvest it. At Nicholls State College, we have been made aware of the problem, and we are attempting to do something about it.

Presently, Nicholls is the only college in the State of Louisiana which is granting an undergraduate degree in marine biology. Our marine biology researchers are among the first in raising shrimp in their natural marsh environment in impoundments. Already, we have discovered that, by proper management, we can increase production more than tenfold and can harvest shrimp that are more succulent than their free counterpart. We have discovered that this type of farming can be much more profitable and less risky than the sugar cane farming prevalent in the area.

There is an unlimited amount of research in other areas of food harvesting from the sea which has yet to be initiated. While it is true that the portion of south Louisiana contained between the Mississippi and Atchafalaya Rivers is the most prolific nursery area in the world for many types and species of sea animals, we came close to destroying this area and we still are short of bringing it back to its full former productivity.

Strangely enough, the very industry, which has been responsible for producing the revenues in question here, also has been most responsible for the problem. New canals were dredged all over the marsh to accommodate tugs and barges. Locations for barge rigs were cut into the marsh. Progress in one area seemed to impede it in another. It did not take long to upset the delicate balance that nature had created over the decades and centuries. What appeared originally to be an area with an inexhaustible and replenishing supply of seafood was fast assuming the proportions of a cesspool.

Fortunately, research was initiated enabling the Wildlife and Fisheries Department to take the corrective action needed. Today the marsh is once more approaching its former state of natural cleanliness. Water control structures are in evidence, from one end of the marsh to the other. It is estimated that, within the next 5 years, sea animals in the marsh will not only reach their former abundance but probably will exceed it.

What then is our problem? Why are we interested in the provisions of this bill? If you will reflect, I have been speaking thus far of the estuarine area of the State. Much needs to be done in this area to assure the maximum in production and conservation. Research in this area lacks only one thing at this time, from our point of view, and that is the money to implement it. Now, I have not even touched on the potential of the vast Continental Shelf area which lies beyond the estuaries. Here Louisiana ranks near the top in the world in seafood productivity potential. We are eager and anxious to initiate research in this area. Again, money is the problem.

My institution is the closest to the Gulf of Mexico geographically of any other institution in the State. Our researchers can be at work in the marsh within 45 minutes after leaving the campus. Nicholls has a ship ready to go, except for one thing. It will cost approximately \$200,000 to convert it to an oceanographic vessel. We don't have the money.

Two years ago, I met with representatives of eight other State colleges in the State; and we decided to form an organization of State Colleges for Oceanographic Research, wherein each college would furnish scientists to the project. We soon found out that we could most likely get a modest research proposal funded but that it was not possible to obtain the money to convert the ship. In other words, if we could find someone or some agency to underwrite the cost of conversion, we could then begin operations. To this date we have not been successful in this endeavor.

I propose that the Congress of the United States through H.R. 17369 could permit us to do the things that need be done through joint State and Federal support, thus manifesting tangible interest in a program of the highest national concern.

Let me emphasize that the problems I have touched upon are not local problems. They are national problems, involving such delicate

areas of national concern as our international relations (including complex issues and international law), and the ability of the United States to continue to play its proper role in eliminating hunger throughout the world, as well as the basic issue of our Nation's responsibility to properly conserve and develop the vast and almost untouched resources of the sea. The States, and particularly the institutions of higher learning located in the coastal States, possess the basic elements upon which a successful program of oceanographic research can be built. However, such a program requires Federal support and national coordination if it is to succeed.

The Willis bill offers an effective and realistic means of achieving this purpose.

I thank you, Mr. Chairman.

Mr. Willis. Thank you very much. Convey my respects to Dr. Galliano.

Mr. AUTHEMENT. Thank you, sir. I will.

(Subsequently, Mr. Authement suggested that the following changes be made in H.R. 17369:)

Specifically, I would like to urge that a correction be made on lines 6-7, page 4 of H.R. 17369. That portion of lines 6-7 which reads "aid to sea-grant colleges," in my opinion, is overly restrictive and discriminating. There is less than a handful of designed sea-grant colleges in the United States, but much larger in numbers are coastal State institutions which do receive sea-grant funding. Therefore, I would like to suggest that the phrase "aid to sea-grant colleges" be changed to read "aid to the national sea-grant program." This would enable my institution, and many others like it, to receive aid in the form of grants for marine biology and oceanography research.

I would like also to suggest that subparagraph (2) of paragraph (b) on page 2, lines 16 through 20, be studied by the author of the bill to determine whether the clause "to be used for the benefit of the public schools and public roads of such adjacent State" is explicit enough to provide that the monies be used, for instance, in part to supplement funds from a Federal agency for the purpose of doing research in marine biology or oceanography.

Mr. WILLIS. Now I wonder if any member has questions.

Mr. POFF. No questions. I thank the gentleman for appearing.

Mr. Chairman, I am glad to receive that word. I had intended to convey to you that I had received requests within the last 2 days from some of our colleagues who would like to have the opportunity, since they cannot appear personally, to submit their papers.

Mr. WILLIS. That is right. The record will remain open for 10 days.

I would like to introduce for the record a letter from the Governor of the State of Virginia, the Honorable Mills E. Godwin, Jr., addressed to the Honorable Emanuel Celler, urging support of my bill, H.R. 17369.

(The document referred to follows:)

COMMONWEALTH OF VIRGINIA,
GOVERNOR'S OFFICE,
Richmond, July 22, 1968.

HON. EMANUEL CELLER,
Chairman, Subcommittee on Submerged Lands of the House Judiciary Committee, House of Representatives, Washington, D.C.

DEAR MR. CELLER: I write to urge favorable consideration of House Resolution 17369 by Congressman Edwin Willis of Louisiana.

This measure is of importance to all the coastal states and Virginia believes the principle involved not only would be beneficial to all concerned but would be in accord with the precedent in the Mineral Leasing Act, which is applicable to many interior states.

I hope it will be the pleasure of the Committee to recommend the Willis bill for consideration on the floor of the House.

Sincerely yours,

MILLS E. GODWIN, Jr.

Mr. WILLIS. The subcommittee will stand adjourned subject to the call of the Chair.

(Whereupon, at 11:05 the subcommittee adjourned, to reconvene subject to call.)

(The following documents were received for the record:)

THE UNIVERSITY OF TEXAS,
MARINE SCIENCE INSTITUTE AT PORT ARANSAS,
Port Aransas, Tex., July 22, 1968.

Congressman EDWIN E. WILLIS,
*U.S. House of Representatives,
Rayburn Building, Washington, D.C.*

DEAR CONGRESSMAN WILLIS: As the Director of an organization vitally interested in the development of marine resources and in basic research and training of people with research interests in these resources, I am quite eager to see the "Marine Resources Conservation and Development Act" implemented along the lines of HR 17369 which you have introduced. I should also like to emphasize particularly the need for funds accruing from this or similar acts in the support of basic research as well as for the support of applied research and development.

From the enclosed brochure of The University of Texas Marine Science Institute at Port Aransas (the brochure is in the files of the subcommittee), I think you can understand how our organization fits into the overall program of the development of marine resources in this country. Please note that we are already beginning a four- to six-fold expansion of our scientific staff and facilities. This expansion should be completed within the decade.

I should also note that our students and staff come from all over the world and our scientific interests are more than simply provincial. The Marine Science Institute functions as a part of The University of Texas System, as a part of the consortium known as Gulf Universities Research Corporation, and as members of the scientific community at large.

Some considerations for the reason why all these expanded activities will need much support in basic research are as follows:

1. There is a need to recognize basic problems in advance of extensive exploitations of marine areas which are currently contemplated.
2. The usual pattern in the past has been to emphasize science after environments have been badly managed; this pattern must be reversed.
3. Inasmuch as most of our marine resources that are now exploited are coastal or associated with coastal waters, emphasis should be made for funds for studies of coastal and shelf areas.
4. Emphasis should be made for the support of basic marine research and training at universities in general and not just at coastal universities. In this regard fundamental scientific training should be distinguished from training for operational or technical work, which can usually be handled more than adequately by industries.
5. There is a great merit for this act in that it adds funds to existing governmental agencies.

If there is any other support I may offer for this act, please feel free to call on me. Your foresight in supporting this type of legislation is most commendable and will be greatly appreciated in the future.

Sincerely yours,

DONALD E. WOHLSCHLAG,
Director and Professor of Zoology.

SOUTHWEST RESEARCH INSTITUTE,
San Antonio, Tex., July 22, 1968.

HON. EDWIN E. WILLIS,
House of Representatives, Rayburn Building, Washington, D.C.

DEAR CONGRESSMAN WILLIS: We sincerely appreciate your sending a copy of HR 17369 to us for our information and review. As indicated in previous correspondence you have received from Dr. John C. Calhoun, President of Gulf

Universities Research Corporation, Southwest Research Institute is participating with other GURC institutions in developing plans relating to the development of marine resources and the conduct of oceanographic research in the Gulf of Mexico and Caribbean Sea. We have joined with these other institutions in this endeavor because we share with them the conviction that the development of these resources is of vital importance to the United States, including the regions bordering on the Gulf of Mexico. We also share the belief that research and development pertaining to marine resources is not being pursued at a rate even approximating its importance. Funds that could be made available through passage of HR 17369 would provide a most important stimulant and would make it possible to conduct comprehensive studies relating to the systematic development and management of marine resources at a time when such studies are of critical importance. Therefore, we join with the other members of the Gulf Universities Research Corporation in the enthusiastic support of this legislation.

Very truly yours,

JAMES M. SHARP,
Vice President.

