Report of the

INTERIM STUDY COMMITTEE ON OCEANOGRAPHY

Rep. Ray Lemmon, *Chairman*

Rep. Menton Murray, Harlingen – Vice Chairman
Rep. Bill Presnal, Bryan
Rep. Lauro Cruz, Houston
Rep. Forrest Harding, San Angelo
Dr. Richard Geyer, Bryan
Dr. George Kozmetsky, Austin
Dr. Cecil Green, Dallas
Mr. Robert Bybee, Houston
Mr. William McIlhenny, Freeport
Mr. Jot Hodges, Jr., Houston

Submitted To

The Honorable Gus F. Mutscher, Speaker
The Texas House of Representatives
and the Members of
The 62nd Legislature of the State of Texas

Front: Reps. Menton Murray of Harlingen, Ray Lemmon of Houston, and Forrest Harding of San Angelo. Standing: Rep. Lauro Cruz of Houston, Dr. George Kozmetsky, Dr. Richard Geyer, Mr. William McIlhenny, Mr. Robert Bybee, and Rep. Bill Presnal of Bryan. Dr. Cecil Green and Mr. Jot Hodges, Jr. were not present when this photo was taken.

In conclusion, we commend the Governor and his staff for recognizing the importance of marine-related activities to all Texas citizens and for envisioning the potential of such programs. The Texas Council on Marine-Related Affairs, as contemplated by this Committee, would not and should not replace or displace any present function of State government but rather should provide an augmentive function. It can be the catalyst whereby Texas assumes its rightful role of leadership in coastal and ocean development. Without doubt Texas has the potential; it remains for us to exercise our talents to make the dreams of Texas citizens come true.

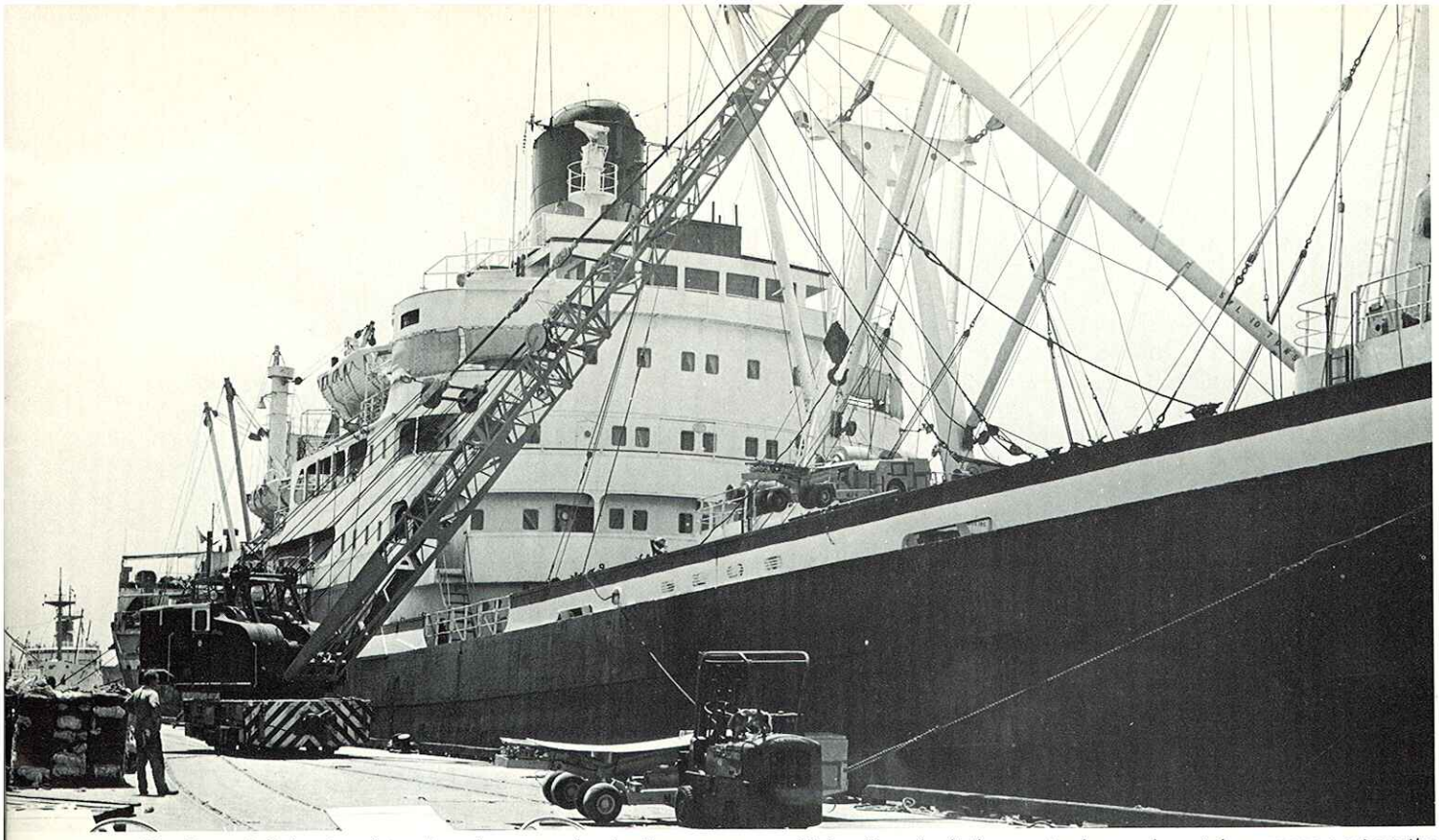
As Chairman, I wish to recognize the diligent efforts of the members of this Committee during the preceding 13 months. Our schedule placed heavy demands on their time, yet each responded enthusiastically. On behalf of all the members, I also wish to extend thanks to the many citizens who provided testimony and helped this Committee function properly.

We are honored, Mr. Speaker, that you provided us with this opportunity to contribute to Texas progress.

Respectfully submitted
on behalf of the Committee,

Ray Lemmon
Chairman

PS: The statements of individual members on marine-related affairs in Texas are contained within this report.



The Port of Galveston is undergoing a modernization program which will make it the most advanced container cargo port on the Gulf of Mexico. Already, Galveston wharves account for much of the State's dry cargos. PHOTO: CARL SCHUH

THE ECONOMIC IMPACT OF MARINE ACTIVITIES ON TEXAS

Because the State of Texas is so large, and because its economy has been historically based on agriculture and other non-marine activities, it is difficult for even the best informed individual to recognize the true importance of marine-related activities in Texas. The current and future potential economic impact of these activities underscores the importance of the coasts and the oceans for all Texans. At the request of the Chairman, Committee Member W. F. McIlhenny prepared the following summary of marine-related economics in Texas.

A surprisingly large number of Texans are directly affected by the adjacent Gulf of Mexico. An even larger number make their homes in the coastal area and manufacture goods and provide services which are dependent upon a close association with the sea. The Gulf of Mexico and the more than 1,000 miles of shoreline are used by industry as a source of raw materials, are enjoyed for recreation, are incomparable havens for wildlife and marine animals, and contain our largest oil and gas reserves and our principal international arteries of commerce.

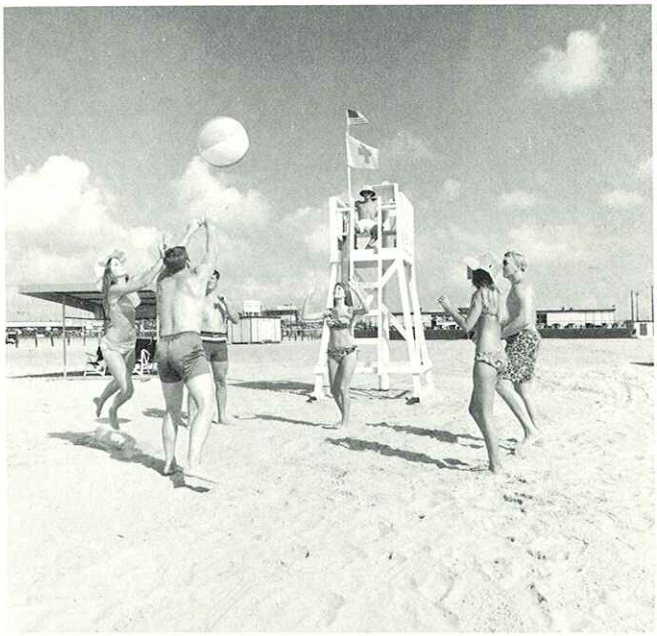
More than half of the residents of Texas live within 100 miles of the coast. By the year 2000, it is expected that well over twelve million Texans will live in the coastal zone, a population equivalent to that of the entire state in 1970.

Two-thirds of the $7-billion in value added* in manufacturing by all Texas industries is added in the coastal zone. The total employment in the coastal zone is expected to increase by more than 60 percent in the next thirty years.

*Value of manufactured products above the cost of raw materials.

One of every ten employed Texans works in a marine-related industry. More than 63,000 people are directly employed in marine activities in industries with a total direct sales of more than $1.6-billion annually.**

**Economic Impact Analysis of Texas Marine Resources and Industries, Miloy & Copp, TAMU Sea Grant Publ. SG-70-217. Total economic impact of marine resources in 1969 was $4.2-billion and direct and indirect employment was 187,000.



Tourism is a rapidly growing and highly valuable industry in Texas. Miles of sandy beaches and an attractive climate beckon tourists from all across the nation. PHOTO: CARL SCHUH

Industries along the Houston Ship Channel, for example, employ more than 100,000 persons and generate more than one half billion dollars in income. Fifty-five thousand Houstonians are employed in activities directly connected with the port.

Through the ports of Texas moves a large part of the trade connecting the South and Southwest with the rest of the world. The deep water ports of Texas generated $1.4-billion in revenue in 1970. An additional $145-million was generated in the same year by the shallow water coastal ports.

The Texas Gulf Coast is the most important source of natural gas in the United States. The offshore oil and gas industry employs more than 23,600 Texans. One of every five persons working in the petroleum industries in Texas is directly concerned with offshore petroleum activities.

The most valuable fishery in the United States, the Gulf of Mexico, is largely dependent upon Texas bays and is fished from Texas ports. Landings of shrimp account for one quarter of the total value of all United States fisheries. The bays and estuaries of Texas are the major spawning and nursery ground for more than 70 percent of the fish population of the adjacent Gulf.

Four thousand commercial fishermen in Texas produce 138-million pounds of fish and shellfish each year. This catch is processed by 157 Texas firms with an annual valuation of $81-million and an employment of more than 5,000 persons.

The Texas coastal zone is one of the great wildlife refuge areas of the world. Sixty-one percent of the ducks and 80 percent of the geese in the United States winter in the coastal marshes of the State.

The State itself is one of the largest land holders in the coastal area. More than 1.5-million acres of coastal lands, islands, tidelands, and beaches are owned by the people of Texas. In addition, the State owns submerged lands in bays, estuaries and offshore extending 10.35 statute miles into the Gulf of Mexico. With three-quarters of all Texans living within 250 miles of the coast, and with about 300 miles of beach shoreline, the beaches of Texas represent one of the most available and least utilized recreational resources of the State.

Out-of-state visitors spent about $190-million in Texas coastal areas in 1969. Direct tourism sales amounted to more than $55-million in the same year.

The United States Government spent almost $100-million in the coastal zone of Texas in 1969 for research, for harbor development, and for hurricane protection. Of this total, about one-third was spent by the U.S. Army Corps of Engineers in marine activities.

It is apparent that both the investment in, and the return from, the coastal zone and its marine activities represent major, if not controlling, segments of the Texas economy. Our vitality as a state and a large part of our economic well-being depend upon intelligent and efficient management of our coastal resources.

DATA: 1970-1971 Texas Almanac

ECONOMIC DATA ON THE TEXAS COASTAL AREA

	Area Sq. Mi.	1969 Pop. People-1000	1960 Pop. People-1000	Tax Value $-Million	Income Total $-Million
Jefferson	945	252	246	455	716
Chambers	1,048	34	33	43	73
Galveston	429	172	140	384	408
Brazoria	1,422	108	76	327	267
Matagorda	1,140	33	26	99	71
Calhoun	536	21	17	86	68
Aransas	276	10	7	31	22
San Patricio	680	48	45	108	81
Nueces	838	239	222	451	560
Kleberg	850	30	30	115	69
Kenedy	1,407	1	1	14	1
Willacy	595	15	20	41	24
Cameron	190	8	8	8	19
1st Tier Total	10,356	971	871	2,162	2,379
Orange	356	74	60	117	164
Harris	1,711	1,636	1,243	2,602	5,002
Jackson	854	14	14	73	30
Victoria	893	59	46	92	135
Refugio	771	10	11	90	23
2nd Tier Total*	4,585	1,793	1,374	2,974	5,354
18 County Total	14,941	2,764	2,245	5,136	7,733
Texas Total	262,970	11,000	9,580	15,196	
(254 Counties) 7.0%	5.7%	25.1%	23.4%	33.8%	

*Inland counties having salt water shores

PHOTO: DRESSER INDUSTRIES

The Committee took every opportunity for field trips on hearing days. Here, a TV announcer interviews Reps. Lemmon (right) and Murray (center) on a Padre Island beach.

PHOTO: ROBT. ALDERDICE

THE CHRONOLOGY OF THE COMMITTEE

The Interim Study Committee of the Texas House of Representatives was formed in response to House Simple Resolution No. 381 of the 61st Legislature of the State of Texas. The stated purpose of the Committee was to study the feasibility of an Institute of Oceanography for the State of Texas and report to the 62nd Legislature in 1971.

According to H.S.R. 381, as amended, the Committee was to be comprised of five Legislative members and six lay members "knowledgeable in the subject of oceanography or with great interest in it."

In late October, 1969, Speaker of the Texas House Gus Mutscher implemented the Committee by making the following appointments:

Rep. Ray Lemmon, Houston—Chairman
Rep. Menton Murray, Harlingen—Vice Chairman
Rep. Bill Presnal, Bryan
Rep. Lauro Cruz, Houston
Rep. Forrest Harding, San Angelo
Dr. Richard Geyer, Department of Oceanography, TAMU
Dr. George Kozmetsky, Dean, College of Business Administration, UT at Austin
Dr. Cecil Green, Director of Texas Instruments
Mr. Robert Bybee, Humble Oil & Refining Co.
Mr. William McIlhenny, Dow Chemical Co.
Mr. Jot Hodges, Jr., Attorney-At-Law, Houston

Rep. Lemmon called the Committee to order for its organizational meeting in the Old Supreme Court Chambers of the Capitol of Texas at Austin on December 11, 1969. At that meeting, the Committee unanimously agreed that a major survey of marine-related economic, academic and governmental affairs in Texas would be necessary prior to determining the feasibility of an Institute for Oceanography in Texas. It then agreed to undertake a series of monthly hearings for the purpose of conducting such a survey.

Activities of the Committee

An informal industry advisory group was formed to aid the Committee in establishing communications with the ocean oriented sectors of Texas economy. The monthly hearings were then arranged to acquire information in an orderly and useful manner. Each day of hearing was scheduled to hear from a specific area of marine-related interests.

The following is the schedule of hearings conducted by the Committee during the year 1970:

Jan. 12-14 (Houston)—General Marine Interests
Feb. 16 (Beaumont)—Offshore Oil and Gas Interests
Feb. 17 (Beaumont)—Ocean Construction Interests
Mar. 16 (Galveston)—Fishery & Mariculture Interests
Mar. 17 (Galveston)—Marine Transportation Interests
Apr. 6 (Harlingen)—Tourism & Recreation Interests
Apr. 7 (Harlingen)—Coastal Development Interests
May 4 (Dallas)—Financial & Insurance Interests
May 5 (Dallas)—Marine Mining and Legal Interests
Jul. 13 (Corpus Christi)—State Agencies
Jul. 14 (Corpus Christi)—High Technology Industry
Sep. 14 (College Station)—Universities and Colleges of Texas
Sep. 15 (College Station)—Jr. Colleges and other Academic Interests

In addition to these hearings, the Committee undertook two field trips to other coastal states in order to gain first-hand information on academic and governmental institutions involved in coastal development and marine affairs.

In June, 1970, the Committee visited the Woods Hole Oceanographic Institute in Massachusetts, the U.S. Coast Guard Academy at New London, Connecticut,and the University of Miami in Florida. Then, in August, the Committee visited Scripps Institute of Oceanography at La Jolla, California, and the University of Washington in Seattle.

Subsequently, Rep. Lemmon has convened the Committee for three deliberative sessions in Austin and Houston.

THE FINDINGS OF THE LEMMON COMMITTEE

I. COASTAL DEVELOPMENT

Texas long coastline and attractive climate represent major resources of high intrinsic and economic value to all Texas citizens. The Committee finds that the State should move rapidly to define and pursue wise goals to guide all forms of coastal development.

As a result of its hearings, the Committee is impressed with the huge potential of the Texas coastline. While it has many and diverse activities along it, there are large portions which are as yet undeveloped. Even in the areas where heavy development has already occurred, the density has not yet reached levels which cause growing unrest in other parts of America. Thus, the Committee finds that the Texas coast represents the State's major resource for the future if development is carried out in a cautious, wise and innovative manner.

The Committee recognizes that Texas marine industries already account for two-thirds of the State's total value added in manufacturing, have an economic impact of over $1.9-billion and employ more than 150,000 Texans. Texas commercial fisheries are the nation's richest in terms of values landed. A large part of the nation's barge tonnage plies Texas waterways, and Texas yards build many of the new vessels and barges completed each year.

The world offshore oil and gas industry springs largely from Texas and the Gulf of Mexico while a major portion of America's petroleum and petrochemical process industry is located in the Texas coastal zone.

In short, the Committee wishes to recognize the leaders of Texas marine and ocean-oriented industry for having carried the State to prominence without the need for government attention.

As the Committee surveyed the future potential of the Texas coast, however, it discovered that the relatively new industry of coastal tourism and recreation offers one of the largest and most attractive economic bases for future development of the entire Texas coast. Great stretches of coastline in its natural state with miles of sandy beaches and an attractive climate throughout most of the year offer the opportunity for coastal development of the highest possible quality.

Thus, the Committee finds that the State of Texas should seek ways to specifically nurture coastal tourism and recreation as soon as possible. In the opinion of the Committee, the State can accomplish these important ends while enjoying growth of conventional coastal industry if multiple-use plans are well conceived and universally adopted by involved local governments.

Texas long, undeveloped beaches offer the opportunity for an enlightened coastal economy in the future. The Council on Marine-Related Affairs can be the first step.

PHOTO: TEXAS PARKS AND WILDLIFE

Ocean-going vessels unload bauxite at ALCOA's Point Comfort plant. PHOTO: CENTRAL POWER AND LIGHT COMPANY

In order to create a recreational atmosphere along the Texas coast, the Committee finds that development of high quality park areas by Federal, State, and local governments, as well as private interest, should be supported and encouraged.

Experts testifying before the Committee indicated that improved transportation systems were a necessary prerequisite to development of tourism and recreation on the Texas coast. All forms, including water, rail, air and highway transportation, need improvement to provide better access to the Texas coast from other parts of the country and to provide better lateral service along the coast. The Texas Highway Dept. is encouraged to expedite the construction of a scenic route along the Texas coast.

Currently, all Texas ports are administered by independent authorities. The Committee believes that the State of Texas should move to strengthen and coordinate the activities of these independent port authorities to assure suitable marine facilities in the future.

According to testimony, high-quality development along the Texas coast is severely hampered by lack of suitable insurance programs and the resultant shortage

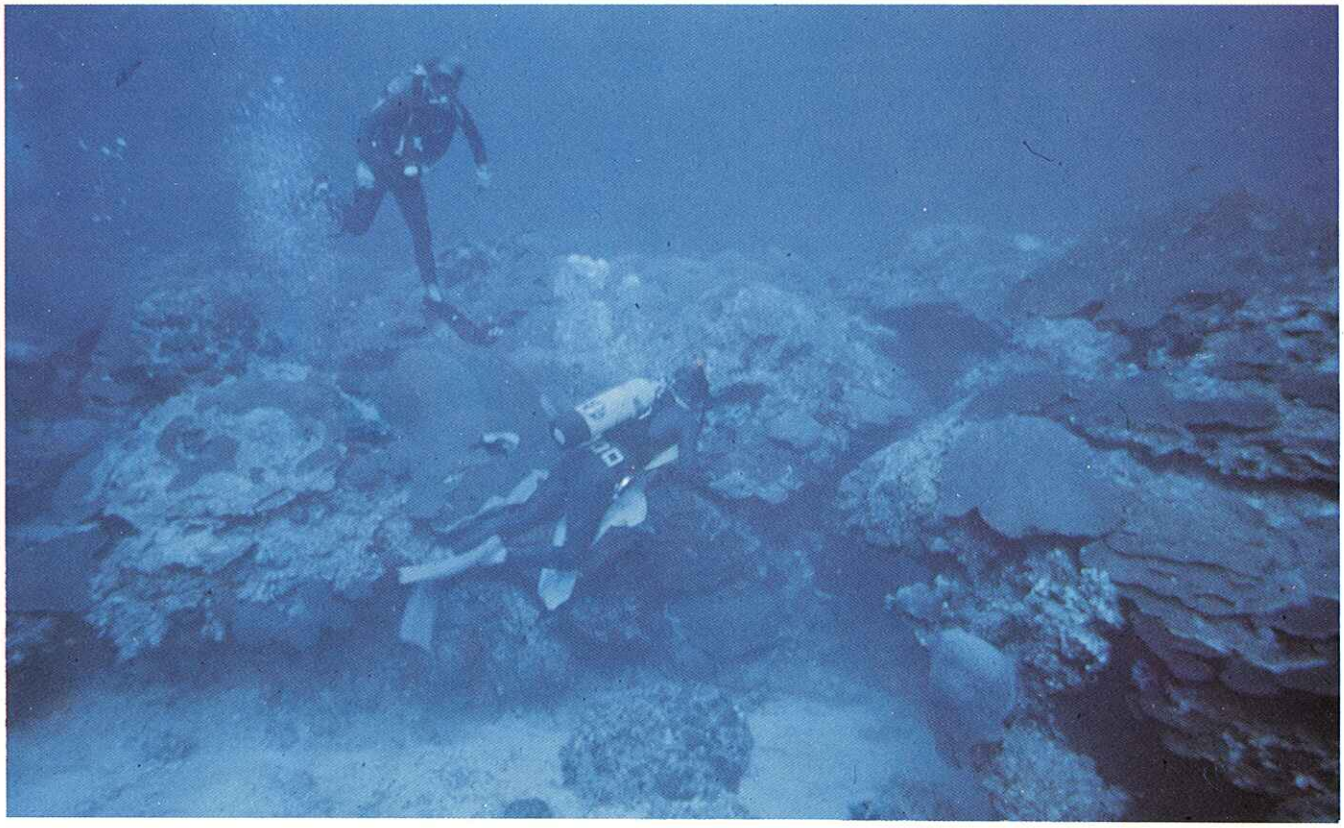
On out-of-state field trips, the Committee visited the nation's leading oceanographic centers. Rep. Bill Presnal looks out on the Pacific from Scripps Institute in California where $23.7-million in federal ocean research was done in 1969.

PHOTO: ROBT. ALDERDICE

of financial support. The Committee finds that the Texas Board of Insurance should guide insurance companies in creating programs providing reasonable protection for coastal entrepreneurs. To aid in accomplishing this, a building code should be designed for use in coastal areas which would set forth appropriate minimum construction standards guaranteed to qualify for reasonable insurance protection and, thereby, for conventional financing.

Two additional factors which the Committee believes to be hampering coastal development in Texas are inadequate planning for land use and lack of public-beach maintenance and policing programs.

The Committee believes that future industrial development along the Texas coast should be encouraged, provided its existence meets pollution standards, multiple-use and overall land planning criteria, and complements local and state development goals.



Research divers explore the Flower Gardens Coral Reef in the Western Gulf of Mexico. Research extending man's underwater capabilities will pay off for ocean industry.

PHOTO: GENERAL ELECTRIC COMPANY

The Marine Biomedical Institute of Galveston provided medical and research support for the U.S. Department of Interior's Tektite II *undersea-habitat program in the Virgin Islands. The surface decompression chamber and transfer bell are shown in Great Lameshur Bay, St. John's Island. MBI is jointly sponsored by A&M and the UT Medical Branch at Galveston.*

PHOTO: ROBT. ALDERDICE

Texas bays and offshore waters offer year-around sailing to one of the nation's largest pleasure-boat fleets.

PHOTO: TEXAS PARKS AND WILDLIFE

II. SCIENTIFIC RESEARCH

As one of the nation's largest coastal states from which springs much of the world's industry, the State of Texas is obligated to play a leading role in the nation's coastal and ocean science programs.

The Committee recognizes that Texas is one of America's largest and most unusual coastal states. Historically, Texas has not been dominated by maritime economy as have other coastal states. The Committee also observes that, as coastal populations grow and the industry of the Continental Shelves becomes a reality, Texas is destined to have a burgeoning involvement with the Gulf of Mexico and the world oceans. It is necessary, therefore, for Texas to assume a rightful role of leadership in these endeavors. The Committee was impressed, however, with the pervasive manner in which marine-related affairs influence activities in every part of the State today.

As a first step, the Committee finds that the State of Texas should construct a suitable mechanism for communication and liaison with those Federal agencies involved in marine-related research and development. Such a mechanism can bring the resources of all Texas colleges and universities to bear on marine-related activities in a manner similar to the Sea Grant Program.

In order to compete successfully with ocean-research leaders in other states such as California (Scripps Institute of Oceanography), Massachusetts (Woods Hole Oceanographic Institute), the State of Washington (University of Washington), and Florida (University of Miami), Texas should develop the ocean-research capabilities of its colleges and universities. The resulting flow of Federal research funds through the State's economy promises substantial return on State investment.

In addition, testimony before the Committee revealed numerous areas where application of knowledge resulting from marine-related research could enhance the coastal economy of Texas. For instance, the Committee understands that the many bays and estuaries of the State make it ideal for the commercial raising of shrimp, oysters and fish through mariculture. Thus, local research on mariculture promises new opportunities for economic betterment of Texas citizens in the near future.

Similarly, the Committee finds that research programs to establish valid environmental parameters and pollution control techniques in the coastal zone are necessary for at least two reasons: first, such programs will strengthen the State's important commercial fisheries such as shrimp, oysters and bay fish; and, secondly, such knowledge is vital if State and local government are to enact wise laws governing pollution and coastal development.

Other areas where testimony indicated that research offers important rewards include improved meteorological and storm-control methods, improved construction techniques to minimize damage to ecology and damage from severe storms such as hurricanes, and improved methods for waste disposal.

The Committee understands that improved methods are needed for communication of information relating to marine sciences and technology, both among research institutions as well as between the scientific community and the interested public.

In pointing out these areas where applied research offers tangible rewards, the Committee also recognizes the important contributions which result from basic scientific investigation of the ocean and its resources. If Texas is to earn a role of national leadership, it must nurture the ability of its institutions to attract the highest level of scientific investigators and perform the most exacting studies.

▲ *Shrimp is king along the Texas coast! In terms of values landed, shrimp fleets of Texas constitute the nation's most valuable commercial fishery.*

PHOTO: TEXAS PARKS AND WILDLIFE

Crabs are one of the most popular seafood products caught along the Texas coast. Most Texas ports are equipped with modern seafood packing houses. ▼

PHOTO: TEXAS PARKS AND WILDLIFE

The offshore workboat industry, serving the petroleum activities of the world oceans, is largely based in the Gulf. The fleet gets no federal subsidies and its vessels are valued at almost $2- billion.

III. EDUCATION

The State's educational systems should be strengthened at all levels to reflect the growing importance of marine activities in the lives of all Texas citizens.

In the course of testimony, the Committee heard many references to the role of Texas educational systems in marine related affairs. In general, it was recognized that the rapid growth of marine activities has outpaced Texas educational capabilities. At the same time, the Committee was made aware of many efforts to accelerate educational functions in marine subjects.

Several specific attempts to inaugurate marine curricula in secondary schools have met with great success in attracting students. Because of other factors, including the lack of undergraduate coursework leading to appropriate degrees, these experimental curricula have been mostly terminated.

Texas A&M University and other institutions continue to conduct summer workshops for Texas school teachers designed to encourage a marine content to primary and secondary curricula in the State. Nonetheless, the Committee observes the need for increased subject matter in primary and secondary schools so that all Texas citizens will understand the important relationships between the marine environment and their daily lives.

In testimony before the Committee, Texas ocean-related industry of all types called for increased educational attention to technicians and undergraduate ocean-oriented engineers. The demand for such individuals appears to be quite strong at this time and promises to become larger in the future.

Nonetheless, efforts to establish vocational/technical programs at the Galveston Community College, Del Mar College, and other junior colleges and vocational/technical schools have met with only limited success. Two major factors were pinpointed in testimony: the inability to attract and retain students in vocational/technical programs; and the inability to find jobs for students who did complete the coursework. Thus, the Committee observes the need to review past efforts in marine-related vocational/technical education with an eye toward making the curricula more suitable for both the students and the industry which must hire them.

The Committee was encouraged by the aggressive efforts in marine affairs on the part of Texas A&M University, the University of Texas, and other Texas institutions of higher learning. Marine-related programs are being enlarged and new curricula instituted in recognition of coastal and oceanic affairs. In view of the rapid growth taking place on many fronts, the Committee encourages the Coordinating Board of State Colleges and Universities to insure that marine-science programs are developed in Texas colleges and universities in a unified manner reflecting the actual needs of the public.

And because so many universities are in the process of implementing new plans at this time, the Committee finds that the feasibility of establishing the Texas Institute of Oceanography, proposed in House Simple Resolution 381 of the 61st Legislature of the State of Texas, requires continuing study over the forthcoming biennium to determine the ability of existing State institutions to fill this need.

PHOTO: DRESSER INDUSTRIES

IV. GOVERNMENT

The growing problems of environmental pollution and population pressure in coastal areas demand innovative action by State and local government in development of concepts for land-use planning as well as in the conduct of the more conventional functions of government.

One central thread ran through all the testimony presented before the Committee: State government must act quickly and decisively in order to forestall highly undesirable alternatives in the coastal area. These alternatives are a massive, unplanned build-up of population and industry within fifteen years with attendant increase in pollution and urban decay; or empirical controls involving zoning, condemnation of private property, and other methods incompatible with the concepts of American government.

Clearly, the solution must lie in innovative methods by which State government can routinely acquire, understand and utilize highly specialized knowledge regarding the marine environment and the coastal interface. Only then can State government be expected to make wise laws for proper coastal development, land-use management and pollution control.

The Committee investigated actions of other coastal states, of Federal agencies and of the Congress of the United States. Each source provided new insight and creative ideas from dedicated men. In the opinion of the Committee, however, none of the solutions investigated fully harnessed the true strengths of American government without serious compromise.

Thus, the Committee recommends that Texas establish a uniquely structured Council on Marine-Related Affairs designed to augment the existing functions of State government with expert opinion and experienced judgement drawn from the involved citizens, the economic leaders, the academic leaders and the officials of government itself.

The Committee intends that this Council on Marine-Related Affairs provide a forum in which experts and lawmakers can work together to establish balanced priorities for the balanced development of the Texas coast in the best interests of the citizens.

"With our citizens' help, we'll breach the wall of waiting that has stymied the oceanographic community...."
Rep. Ray Lemmon, Chairman

The Committee recognized very early in its investigations that the State of Texas had to develop and maintain a planning and coordinating capability for promoting the wise development of its coastal counties. This included the cultivation of an economic, social and political climate which would enhance progress and development by competitive private enterprise. It also had to encourage the optimum multiple use of all resources by a variety of interests while in compliance of reasonable performance standards. Further, this had to be done in a manner flexible enough to adapt to social changes and technological innovations with a minimum of waste and inefficiency.

The practicable mechanism envisioned by the Committee to accomplish these goals appears to be uniquely qualified to meet the particular needs of Texas. This mechanism, to be called the Texas Council on Marine-Related Affairs, will be composed of 12 members. One fourth of the membership will be selected from each of four fields: state government, coastal oriented industry, the scientific or academic community, and the public at large. The individuals chosen will have either special competence or interest in oceanographic or marine-related affairs or science.

One member from each of the interest groups will be named by the Governor, the Lieutenant Governor, and the Speaker of the House. The state government representative will be selected from the Governor's Office, the Senate, and the House of Representatives, respectively, and will serve for a term of two years. The other members will serve staggered terms of six years.

The Council on Marine-Related Affairs will have no line authority but rather shall function as a source of wise judgement and expertise. It will be funded jointly from contingency funds of both the Senate and the House rather than through the normal appropriations process. The Council members will select their own Chairman,

The coast of Texas, as seen here from the Apollo 7 spacecraft, is a complex system of social, political and environmental interrelationships. Wise development can make it Texas most valuable natural resource.
PHOTO: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

THE TEXAS COUNCIL ON MARINE-RELATED AFFAIRS

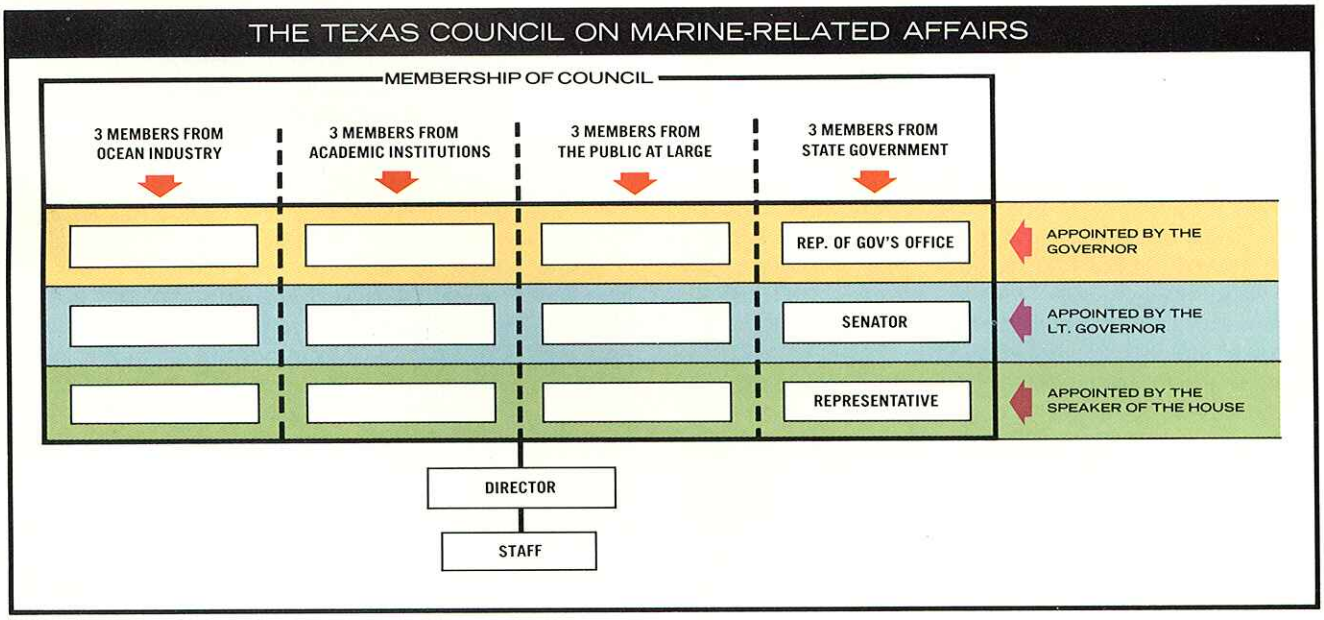
Vice Chairman, and Secretary. In addition, there will be a paid staff headed by an Executive Director, who may also serve as Secretary to the Council if the members so desire.

While the Council on Marine-Related Affairs is involved in the planning and implementing of coastal development in the State of Texas, it must be cognizant of the legitimate interests of many and varied activities in the coastal area.

The Committee recognized that it would be impossible for the Council and its staff to review and evaluate all developmental programs and projects affecting the use of the seas, bays, and estuaries which fall within State jurisdiction and the land areas under and abutting such waters. The Committee therefore concluded that the Council itself must determine on a day by day basis what specifically constituted a marine-related affair and which of these items were necessary for consideration.

Within this latitude, the Council and its staff must attempt to fulfill certain purposes. It must develop or aid in the development of comprehensive and coordinated plans and performance standards for the development of coastal areas in concert with the State and local agencies having functional jurisdiction within such areas. In doing so, it should hold public hearings at any time on matters where it is clear that the interests of the public must be known in order to obtain an objective assessment of the problems and opportunities afforded by the area. The Council would provide the executive and legislative arms of the government with objective information and recommendations for management and development of the coastal area including proposed legislation and programs which would be in the best interests of all Texas citizens. It should evaluate the present and future effects upon the environment by the present and proposed activities of State agencies and other instrumentalities of the State, including counties, special districts, cities and towns. The Council should ascertain the public interests in specific marine-related affairs programs and projects involving the State of Texas and shall communicate its opinions simultaneously to the Governor, the Legislature and involved agencies of State, Federal and local government. For this purpose, the Council shall establish and maintain communication with appropriate agencies of the Federal government.

The Committee also recognized the need to create within the Governor's Office the position of "Coastal Zone and Marine Affairs Administrator." This position is needed in order to provide an appropriate operational link between the State of Texas, other states, and to the Federal government. The Committee is of the opinion that the Governor's Office is the proper administrative body to conduct this function and that no independent authority should be instituted.



STATEMENTS OF THE MEMBERS

The Chairman has invited all members of the H.S.R. 381 Committee to provide a statement of their overview on marine-related affairs in Texas as a result of their professional experience and the testimony presented before the Committee this year. These statements are included verbatim in this section of the report.

A Statement by
The Honorable
Menton J. Murray

December 22, 1970

Many months of Committee hearings, principally along the Gulf Coast of Texas, have revealed to us the vast field of marine-related activities which need encouragement, direction and coordination. This can best be accomplished through a Council or Board of dedicated men from the fields of Education, Industry and Government, with vision, resourcefulness and determination.

The job is a big one, but so is the reward. Texas has a coastline and a Gulf beyond, inviting to the researcher, tempting to the sportsman and fisherman, challenging to industry and baffling to Government.

We need further studies under the guidance of a coordinating agency to make certain that Texas acquires and maintains its rightful position as one of the leaders in the coming field of marine-related activities.

A Statement by
The Honorable
Lauro Cruz

December 31, 1970

America has always accepted the challenge of new frontiers. As Americans, we have dared to dream the impossible and accomplish the unbelievable in the pursuit of a higher quality of life for mankind. Today, we have a new challenge; the oceans...therein, lie vast unbelievable resources waiting to be mined for the benefit of man.

Texas, one of America's leading coastal states, can become the focal point of great activity through the proper development of its coastal zones, offshore and deep-sea operations. The State of Texas is blessed with over 600 miles of yet undeveloped beaches and vast stores of ocean resources, but we must move speedily to assume the proper development of these resources.

If Texas is to become the world leader in oceanography that it should be, we must create a commission to coordinate the state's entire activity in marine affairs. In addition, we must begin to lay the groundwork for an institution of Oceanography that will serve as the academic, cohesive focal point for all present oceanographic activities in our great state university system. The delay of an institution of this type in Texas will only serve to create an image of a second-rate interest and could result in reducing Texas to a less than high place among our nation's coastal states in the relatively new field of oceanography, both academically and industrially... Texas cannot allow this to happen.

Oceanography for Texas could result in the greatest instrument for prosperity by the State of Texas, for the people of this state, since "Spindle Top". We now owe it to the future generations of Texans to invest state money, that they may reap billions of dollars, both for the enrichment of a great majority of Texans and for the much needed taxes that will provide services for the people. We must move with a high degree of measured boldness, creativity and imagination.

The hard work of our committee, particularly that of our dedicated Chairman, Ray Lemmon, can be the opening page of a new book that will give Texas an opportunity to lead this great nation forward toward one of its two great challenges of the 60's and 70's; outer space and the oceans. However, we must have the foresight and the courage to come to grips with the promising unknown and move our State to the forefront in all fields of oceanography.

To the members of the Senate and the House of Representatives of Texas, I commend this report.

A Statement by
The Honorable
Forrest A. Harding

December 16, 1970

I am sure that many people throughout the state of Texas would at first glance wonder why coastal marine matters and oceanography would be important to the West Texas area. Their first reaction would be a thought of water and there is no one in West Texas whose thoughts turn to water that doesn't immediately realize it as a very precious commodity. I am afraid that most West Texans consider the Gulf Coast and the Gulf itself as just a body of precious water which would do more good with the salt content removed in West Texas than it would in the Gulf. Laying water itself aside, the coastal area of Texas and oceanography is very closely related to the lives of the people of West Texas, social, physical and economic.

It is a place of great recreational value to the West Texan, even though he may have to drive many miles to get there. It is one of his favorite recreational outlets. The well being of all citizens of the state is interrelated with other people and by far the greater percentage of the population of Texas lives within a 50 mile limit of the coastal area. The social welfare of every citizen is tied together today with our urbanization and our moving closer together for our general overall protection and benefits. The economy of West Texas as well as some of the states that border West Texas is very dependent upon the coastal area.

The flow of commodities to world markets for our products of West Texas is definitely related to the port cities along the Gulf and by the same token a lot of the foods and other commodities that we need in West Texas come from the coastal area and through the ports of the cities along the Gulf Coast. The wool, oil, petrochemicals and other products of West Texas flow to our coastal cities to be placed in worldwide commerce. Our lamb, beef, grains and cotton must find a market so we are very dependent upon the coastal area for assistance. Even our weather is greatly affected by the proximity of the coastal area. Every citizen in the state of Texas, no matter where he may be located geographically, should be vitally interested in the coastal area and what can be done to improve every phase of marine activity along the coast. When we improve these activities we, at the same time, improve all of these economic relationships with each individual.

By the same token, many of the activities that we engage in in West Texas vitally affect the coastal area. Every time a dam is built across a river outside of the coastal area, a change of the flow of fresh water into the bays creates a changed condition. This has considerable impact on the marine environment. We also provide considerable recreation for the bulk of the population that lives along the coastal area and we feel that we add greatly to their economy and general welfare. None of us is an island unto himself. Whenever I improve the conditions of my neighbor I also contribute to my own welfare and standard of life.

The state of Texas is just as beautiful and has just as much to offer as some of the enchanted paradise islands of the world. Excursions and voyages by sea to Texas through our port cities could be the world's longest highway. It is said that every tourist to the state of Texas for one day is worth the same as a bale of cotton and much, much easier to pick. Dry West Texas is beautiful to look upon but during these dry years the cotton picking is sure cotton picking.

A Statement by
Mr. R. W. Bybee

December 31, 1970

Among the state's greatest assets are those associated with its long and varied coastline. These assets include the resources of the waters and the underlying and surrounding lands. If all of the people of Texas are to be afforded the benefits which should stem from their proper utilization and orderly development, careful attention must be paid to the economic, political, and social dynamics focused in the coastal areas of the state. Thoughtful planning to balance equities for all users of these resources is necessary to maintain an orderly, safe, healthy, and pleasing environment.

Testimony before the House Interim Study Committee on Oceanography has amply illustrated these needs. Conservation and development are not the names of two horns of a dilemma, but are mutually compatible concepts which together must guide the planning and management of the coastal zone. The work of this committee has with dedication carried forward that cause.

A Statement by
The Honorable
Bill Presnal

December 20, 1970

Participation as a member of the Lemmon Committee during 1969 and 1970 has been both an interesting and enlightening experience. The Committee came face to face with a whole new spectrum of questions concerning the future of Texas and the Gulf of Mexico as it heard testimony and questioned witnesses on marine affairs involving science education, recreation, resource development, conservation, marine law, the economics of marine business and related subjects.

Texas has a valuable resource, as represented by its 480 mile coastline and the natural and man-made assets found there. The economy and the population of the state are shifting toward the coast. The problems of people and government become magnified and the questions and conflicts become more complex daily. Significantly, the magnitude and importance of these resources is neither understood nor appreciated by the people of the state.

The state has taken steps to examine this resource and to establish an effective rationale for its management and development. But I was impressed with how very little we know or understand about both the natural and man-made aspects of the coastal region and how this often impedes our efforts to develop sound programs.

On the other hand, I was gratified to learn of the base which exists in our universities for developing a better understanding of our resources and of ways to cope with the problems of development and conservation. The oceanography program at Texas A&M University has a 20 year history of excellence in research and teaching. More recently, Texas A&M University has undertaken a multi-institutional, multi-faceted program specifically directed toward the coastal region. This effort, conducted under the auspices of the National Sea Grant Program, sets a national example of the contribution which our institutions are capable of making in research,

in teaching and in assisting industry and commerce. I am particularly proud that these accomplishments come from an institution in my district.

I was chagrined to learn that much of what has been accomplished by our institutions is due to the foresight and support provided through federal programs. State support in the ocean and coastal zone activities of our institutions has been minimal. This is a situation which must be reversed. This can be done by making a state investment in the capabilities which our universities have wisely and patiently developed.

A Statement by
Mr. W. F. McIlhenny

"This much is certain; that he that commands the sea is at great liberty and may take as much and as little as he will."

These words by Sir Francis Bacon, written for the people of England, are just as fitting, four hundred years later, for the people of the State of Texas.

Over the last twelve months, the hearings and deliberations of the well-conducted Texas House Interim Study Committee on Oceanography has brought into sharp focus a matter that was previously only dimly perceptible: that one of the most important cornerstones of Texas—its coastal zone and adjacent marine waters—has not received the attention of the state in proportion to its economic, industrial, recreational and educational importance.

The Council on Marine-Related Affairs, as proposed, would fill the existing void by giving the State of Texas an advisory body that would enable complete and comprehensive planning of marine-related affairs to better channel the resources of the marine realm to the best uses of the people of Texas.

A Statement by
Dr. Cecil H. Green

December 21, 1970

I feel the principal objective of our Committee was two-fold—first, to assay the need for education and related research in those sciences relating to the understanding, development and control of our so-called marine areas, and then, second, to suggest the most practical means for implementing any resultant recommendations.

At the outset—there is certainly a real need for providing first class oceanographic training in Texas because of its unique geographic location—that is, midway between our Atlantic and Pacific coasts, where excellent oceanographic institutions are already well established.

I would emphasize two inherent aspects of our problem—(1) that so-called oceanography is very much multi-disciplinary in make-up, since it draws upon the talents of physicists, chemists, geologists, biologists, mathematicians, and engineers, etc.,—all of whom come together naturally because of a common interest in a widest variety of problems pertaining to our offshore areas—(2) that the education process and research must be considered as interrelated—that is, in close physical relationship as a single package.

It is true also that research entails skilled effort, mainly at the graduate level. On the other hand, undergraduate studies provide orientation, also necessary forerunner education in the necessary basic sciences as well as in technology and the humanities—all of which are equally important in the overall education pattern.

The State of Texas possesses already some noteworthy individuals who have excellent strengths as scientists, engineers, or technicians, but such total strength happens to be divided among several of our educational institutions—particularly at Texas A&M, the University of Texas, Lamar Tech, etc.

Obviously, we can progress further, faster and with least expense by simply coordinating these established but geographically separated abilities and with each institution providing real pinnacles of strength within the broad realm of oceanography.

A related aspect, marine equipment and instrumentation, is extremely costly in terms of initial outlay and subsequent cost of operation, and so again, it is practical to think in terms of collaboration—specifically, a single research and development installation which would serve the integrated scientific and technical staffs under the authority of a central coordinating administrative and operating group.

In summary, let's pull together our existing, though divided, strengths and provide a single set of expensive tools under a single operating head.

A Statement by
Dr. George Kozmetsky

December 19, 1970

Marine resources are one of Texas' and the nation's most important emerging frontiers. It is necessary from the outset to define marine resources as activities relating to sciences, technology, education and business.

The Texas coastal zone in conjunction with other related resources is an asset which can add immeasurably to each citizen's and our state's progress. Yet we cannot

take advantage of these great resources without a cooperative regional and national set of objectives and programs.

The common objectives are (1) scientific, technical and economic exploration and intelligent exploitation of our marine resources; (2) provision for socially and economically acceptable means of effectively utilizing our human resources; and (3) the increased meaningful use of leisure time by our state and national populace in conjunction with Texas marine and related resources.

Texas marine resources involve all the water in the state and the water interaction with the atmosphere, the land, and the sea. We cannot permit its waste, contamination, pollution or mismanagement. Marine resources are critical to the continued required progress of agriculture and industries as well as tourist, leisure and recreation activities for our Texas citizens.

The whole State of Texas, the South and Southwest regions and, in fact, the nation will be affected by our marine resources plans and their implementation. Most significantly such a program offers the needed opportunities for adding jobs to reduce unemployment. The needs of Texas are to (1) truly manage our total marine resources; (2) expand educational and research activities; (3) train the professional and supporting personnel for the new emerging marine resources industries; (4) stimulate new commercial-business ventures and enterprises, including food technology to provide the needed protein in the world, environmental and pollution control, extraction of minerals and chemicals, salt and waste water conversion; (5) develop an integrated air-land-and-sea logistic system which will include the needed expansion of our gulf port facilities, to accommodate the largest logistic ships for international trade; and (6) formulate meaningful legislation regarding offshore land, oil, gas and other resources in zoning, regulation, leasing, licensing, etc.

A Statement by
Dr. Richard A. Geyer

December 18, 1970

OCEANOGRAPHY—ITS ROLE IN THE SOCIO-ECONOMIC DEVELOPMENT OF TEXAS*

Expeditions to explore and colonize countries contiguous to the Gulf of Mexico began in the 15th century. However, between then and 1949, only three scientific expeditions were conducted. Only during the last twenty years did an era of comprehensive and systematic oceanographic studies start with the founding in 1949 of the Department of Oceanography at Texas A&M University. During this time the activities of this Department resulted in the granting of 200 advanced degrees specifically in oceanography conducting more than $20,000,000 of research funded by federal agencies. The Department is officially recognized as one of the ten leading oceanographic institutions of the nation and is the only one in the entire Gulf Coast region.

Man makes extensive use of the Gulf as a major source of food, energy, raw materials, recreation and, to an ever-increasing extent, waste disposal. It is a major resource for fish as a direct and indirect source of food. The latter stems from fish used in fish protein concentrate fed to cattle and poultry, which in turn are eaten by man.

The Gulf is used extensively for recreation by about one-half the people of Texas living along the coast, as well as many citizens living in the interior who travel to the coast each year. Oil, cattle and a wide variety of agricultural and manufactured products originating throughout Texas are shipped from Texas ports. Shipbuilding in Texas is also a major factor in the economy of the State providing employment for many.

A major source of hurricanes causing tremendous life and property damage to houses and industrial facilities exists in the Gulf. Thus, improved prediction of their occurrence and paths can be of great economic importance to the people and industry of the State.

The Gulf is used with increasing frequency for waste disposal. Rivers draining thirty-one states totaling about 1¼ million square miles flow into it. Its true capacity for this purpose remains to be determined since its capacity is not infinite; hence, this problem must be solved before realistic regulations can be promulgated.

For these reasons an accelerated development of marine resources of Texas will be of tremendous importance to the total economic and social well-being of the State and all its citizens, but this can be accomplished only by a significant increase in basic and applied research in oceanography and related marine sciences. Moreover, this activity is expensive, comparable to a medical school, and requires large ocean-going ships and other major facilities. Therefore, in the interests of time and economy, the necessary expansion of fiscal support of current activities should be achieved by building on existing proven capabilities, not by a proliferation of new and fragmented endeavors.

*A recent comprehensive report sponsored by the Sea Grant Program of Texas A&M University estimates that for 1969 the total economic impact of marine resources and industries to Texas was $4.2-billion and provided employment to more than 187,000 of its citizens.

A Statement by
Mr. Jot Hodges, Jr.

January 4, 1971

The marine influences on our lives are so vast and complex that they defy generalization here.

There exists today in Texas a basic need for the creation of a "Marine Affairs Commission", properly funded and staffed, to provide guidance and coordination for the academic, industrial, recreational and governmental activities in ocean-related matters.

It is hoped that the efforts of this committee will aid in the creation of such a commission.

TESTIMONY PRESENTED BEFORE THE COMMITTEE

OFFSHORE OIL & GAS PRODUCTION INDUSTRY AND OFFSHORE CONSTRUCTION INDUSTRY

BEAUMONT, TEXAS
FEBRUARY 16-17, 1970

Ed Turner, Getty Oil Company
Jack Aldred, Diamond M. Drilling, Houston
Charles R. Robertson, Olympic Geophysical, Houston
Jan N. Pedersen, The Offshore Company, Houston
Lloyd G. Otteman, Shell Oil Company, Houston
G. F. Rome, Texaco Inc., Houston
George C. Howard, Pan American Pet. Corp., Tulsa, Okla.
W. K. Snouffer, Atlantic Richfield Company, Dallas
David Guinn, Guinn Assoc. Engineers, Houston
John G. Mackin, Fluor Ocean Services, Inc., Houston
R. O. Wilson, Brown & Root, Inc., Houston
F. C. Broun, Southwest Industries, Inc., Galveston
Arthur W. Stout, Jr., Todd Shipyards Corp., Houston Division
E. A. Hanson, Bauer Dredging Company, Port Lavaca
Col. Franklin B. Moon, U. S. Corps of Engineers, Galveston

COMMERCIAL FISHERIES & MARITIME INDUSTRIES

GALVESTON, TEXAS
MARCH 16, 1970

Timothy Leary, Texas Parks & Wild Life Dept., Austin
Francies J. Captiva, Bureau of Commercial Fisheries, Pascagoula, Mississippi
Dick Berry, Bureau of Commercial Fisheries, Galveston
J. H. Blades, Blades Co. of Houston
Dick Neal, Bureau of Commercial Fisheries, Galveston
Jack Parker, Agriculture Extension Service of Texas A&M University
Al Sparks, Bureau of Commercial Fisheries Biological Laboratory, Galveston
Richard J. Hoogland, Bureau of Commercial Fisheries, Galveston
Lee Trent, Estuarine Ecology Program Bureau of Commercial Fisheries, Galveston
Sammy M. Ray, Marine Laboratory Texas A&M University Galveston
Dave Harrington, A&M Sea Grant Marine Advisory Program, A&M Marine Laboratories
Bryant Cobb, Animal Science Program, Texas A&M University
O. M. Longnecker, Jr., Texas Shrimp Association

GALVESTON, TEXAS
MARCH 17, 1970

J. Edward Coffay, Fitzgerald Laboratories, Annapolis, Md.
Ralph Anselmi, Todd Shipyards Corp., Galveston
Tommy Ellis, Ellis Towing & Transportation Co., Galveston
Dow Wynn, Port of Port Arthur
Dr. James Sharp, Gulf University Research Corp.
Richard Berkfeld, West Gulf Division of Lykes Brothers Steamship Company
Harry Sloat, Platzer Shipyards

TOURISM & RECREATION INDUSTRY AND WATER DEVELOPMENT INDUSTRY

HARLINGEN, TEXAS
APRIL 6-7, 1970

Frank Hildebrand, Texas Tourist Devel. Agency
Dan Sanborn, Sanborn's, McAllen
Don Epperson, Texas Tourist Council, Austin
Dr. Clare A. Gunn, Recreation & Parks Dept., Texas A&M
Harvey Weil, Corpus Christi
Ivan Sinclair, Braniff Intern. Airways
Jim Arnott, Padre Island National Seashore, Corpus Christi
Ed Issacs, Amigoland, Brownsville
D. Edward Moore, Sea-Arama Marineworld
Jim Barnette, P.E., Lockwood, Andrews, and Newnam, Inc., Corpus Christi
Jack Modesett, Great Western Investmnt., Corpus Christi
James R. Stanley, South Padre Island Investment Co., Port Isabel
Roy S. Rodman, Texas Highway Dept.
Kenneth C. Krenek, City of Corpus Christi

LEGAL, FINANCIAL & INSURANCE ASPECTS OF MARINE RESOURCE DEVELOPMENT AND THE CHEMICAL & MINERAL INDUSTRY

DALLAS
MAY 4-5, 1970

Ted Chamberlin, Ocean Science & Engineering, Bethesda, Maryland
Carl O. Bue, Jr., Royston, Rayzor & Cook, Houston
Shannon Ratliff, McGinnis, Lochridge, Kilgore Bayfield, Hunter & Wilson, Austin
William Tabb, Mobil Oil Corp., Dallas
John E. Flipse, Deep Sea Ventures, Newport News, Virginia
John A. Potts, Appleton & Cox, Dallas
Leo King, Penrod Drilling Co.

G. J. Jones, State Board of Ins.
Angus McDonald, State Board of Ins.
C. W. Wingo, Lomas & Nettleton Co., Dallas
J. Vance Jones, Republic National Bank, Dallas
J. F. Ringer, Trinity Portland Cement Co., Dallas
V. L. Giannini, Northwest Oceanographers, Inc., Los Angeles, Calif.
Dr. James Harding, Oceanonics, Inc., Houston
W. F. McIlhenny, Dow Chemical Co., Freeport
George K. Bernstein, Department of Housing & Urban Dev.

STATE REGULATORY AGENCIES

CORPUS CHRISTI, TEXAS
JULY 13, 1970

Robert G. Mauermann, Texas Parks & Wildlife Dep., Austin
Jack Giberson, Texas General Land Office, Austin
Roy D. Paine, Texas Railroad Comm.
Loe Seward, Texas Water Develop. Board
Hugh Yantis, Texas Water Develop. Board
Harvey Davis, State Soil & Water Cons. Board
Charles Barden, Texas Air Control Board

HIGH TECHNOLOGY INDUSTRY

CORPUS CHRISTI, TEXAS
JULY 14, 1970

Gerald L. Loyner, Texas Instruments Inc.
Gerald A. Karam, Oceanography Intn. Corp.
Larry F. Megow, Hahn and Clay
Robert E. Schuller, Schuller & Allan, Inc.
Dr. Randolph Blumberg, American Science & Engineering
Edna Wood, Edna Wood Laboratories
Richard A. Arnett, Richard A. Arnett
Robert C. Hamilton, Baylor Company
Larry D. Perry, GRE

ACADEMIC INTERESTS IN TEXAS

BRYAN, TEXAS
SEPTEMBER 14-15, 1970

Gen. A. R. Leudeke, Texas A&M University System, College Station
Dr. Carl E. Woods, Texas A&I University, Kingsville
Dr. Peter T. Flawn, University of Texas at Austin
Ted Boaz, Del Mar College, Corpus Christi
Marlin Cherry, San Jacinto College, Baytown
Dr. Gustavo A. Morales, Baylor University, Waco
Dr. Truman Blocker, University of Texas Medical Branch at Galveston
Col. Robert Martindale, Marine Biomedical Institute, Galveston
Dr. John W. Rogers, Rice University, Houston
Dr. Richard A. Geyer, Texas A&M University, College Station
Dr. John C. Calhoun, Jr., Sea Grant Program Office, College Station
Charles Self, College of Mainland, Texas City
Dr. LeVan Griffis, Southern Methodist University, Dallas
Dr. H. E. Eveland, Lamar State College of Technology, Beaumont
Dr. T. W. Lins, Lamar State College of Technology, Beaumont
Dr. Ronald F. Bunn, University of Houston
Dr. Alan Lohse, University of Houston
Truman Isbell, Brazosport Junior College, Brazosport
Dr. Henry Hildebrand, University of Corpus Christi
Paul Price, Lee College, Baytown
Robert L. Wright, Lee College, Baytown
Dr. Jack Cross, Coordinating Board of Texas Colleges and Universities, Austin

The Committee holds a deliberative session in the Speaker's Lounge at the Texas Capitol. Clockwise from left front are Robt. Alderdice, Rep. Lauro Cruz, Dr. George Kozmetsky, Robt. Bybee, Rep. Forrest Harding, George R. Blitch, Rep. Ray Lemmon, Willis Clark, and Rep. Menton Murray.

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