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An Analysis of the Academic Fleet Insurance Program

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AN ANALYSIS OF THE ACADEMIC FLEET INSURANCE PROGRAM

MAJOR PAPER
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DISCLAIMER

Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of The National Science Foundation.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

AN ANALYSIS OF THE ACADEMIC FLEET INSURANCE PROGRAM

EMMA ROSE DIETER

[ABSTRACT] The academic research fleet is experiencing an increase in the cost of operations. Some members of the fleet are feeling a dramatic rise in operational costs in the area of marine insurance and a decrease in the availability of insurance. The academic fleet is referred to as the University-National Oceanographic Laboratory System (UNOLS) fleet. It is composed of 25 ships which are operated by 18 institutions. The vessels are owned outright or operated under a charter party agreement from the National Science Foundation (NSF) and the Office of Naval Research (ONR). The National Science Foundation and ONR are also the major funding agencies for the academic fleet. In the current era of declining funds, the operator must utilize the available funds in the most efficient manner. Therefore, the major funding agencies and the vessel operators have become increasingly interested in insurance programs which could provide the desired coverage at greater savings. There are several group insurance programs that could result in a net savings for the fleet. The range of programs include volume purchasing, mutual or P & I clubs, and self-insurance.

In 1987 NSF funded this study to examine the academic fleets current insurance program and to determine available insurance alternatives. A similar study was carried out in 1975 and will be used as a basis of comparison. At the request of NSF, the current study included 19 operating institutions and 31 vessels. The operators were requested to update the information pertaining to their respective institutions in Tables I through V from the 1975 report. These tables included ship characteristics, insurance brokers and underwriters, hull coverage, protection and indemnity coverage, losses, and premiums. Through the use of a questionnaire, additional information on operational and insurance procedures was obtained for each institution. They also provided a copy of their marine insurance policy which was the primary source document for the study.

From the analysis of the data obtained during the study, three courses of action are suggested: 1) continue under the current insurance program; 2) establish a pool or self-insurance program; or 3) participate in an established group insurance program. Varying degrees of cost savings could be obtained from any of these suggestions. The national trend in liability insurance is toward group insurance. Due to the difficulty the funding agencies would have in establishing a reserve fund for self-insurance, the recommendation is that the fleet participate in an existing group insurance program. To fully take advantage of group insurance rates, the fleet should be examined annually to prevent over- or under-insuring. To obtain the best possible rates through a group insurance program, the fleet would be required to maintain rigid safety standards and training.

To John McMillan

I have been involved with the operation of the academic fleet and oceanographic vessels for nearly 20 years. During this time my knowledge and understanding of admiralty and marine insurance law has been limited to learning by necessity. In the early months of 1987, the opportunity arose to obtain formal training in both admiralty law and marine insurance. Through the encouragement of John McMillan of the National Science Foundation, I was able to participate in a marine liability study at the University of Rhode Island under Professor Dennis Nixon. Marine liability has become an increasing concern in the operations of the academic fleet and was a major concern of John's. It has been a rewarding opportunity for me to participate in the marine insurance and risk management study of the academic fleet. Unfortunately John did not live to see the completion of the project. In appreciation for his continued encouragement and for presenting the opportunity to participate in this study, I would like to dedicate this paper in his memory.

John was a respected friend and colleague of the research vessel operators and the marine scientists. He was equally at home with both

groups and could relate to their respective problems. John's in-depth grasp of the requirements of the fleet and the scientific community enabled him to forsee the potential problems and initiate solutions before the community fully realized the scope of the problem. This uncanny insight permitted John to see the needs of the fleet. He continually encouraged all of us to improve our individual ship operations and the fleet as a whole. Although John could be very determined as to the course of the fleet, he always remained cheerfully optimistic about the outcome. When we, as the operators, perceived problems as potential disasters, John saw them as challenges by which to improve the fleet. John's professional attitude and good seamanship was an inspiration to all of us. He will be greatly missed by those who knew him.

INTRODUCTION

Over the past decade the academic research fleet has experienced a steady increase in the cost of operations. This increase has basically been due to inflation and the drastic rise in fuel costs. In addition, some members of the fleet have witnessed a drastic rise in the cost of operations in the areas of marine insurance over the past three or four years. The rise in insurance premiums has made it increasingly difficult for some institutions to obtain desirable coverage. Ship operators can independently act upon only a few items that directly decrease insurance costs and these are basically long-term improvements with small short-term gains. Among these are improving: safety records, equipment, personnel training, medical standards, and pre-employment screening. Although these items help to improve insurance ratings, none drastically reduce the premium. Given the present situation of declining or, at best, level-funded budgets, the operator must utilize funds in the most efficient manner in order to provide a quality research platform for the scientific community. Thus, the operators and the National Science Foundation (the primary funder) have become increasingly interested in participating in a cooperative insurance program which would provide the desired coverage at a more economical cost.

There are several cooperative insurance programs available to the research fleet for keeping premium costs under control. The fleet could

participate in a group insurance program underwritten by one company as a single policy, or they could take advantage of self-insurance by forming their own insurance company. The Liability Risk Retention Act of 1986[1] allows companies in similar businesses to group together to form a risk retention group. This type of self-insurance may also be an option for the research fleet.

The need to upgrade the academic fleet's insurance program and prevent further escalation of premiums was dramatically driven home during the 1986 Research Vessel Operators Council (RVOC) Marine Liability Workshop. To address this issue, the National Science Foundation (NSF) in 1987 funded Professor Dennis Nixon, a marine insurance specialist, and E. R. Dieter to examine the academic fleet's existing insurance program and determine the alternatives available to the operators. Specifically, the task was to focus on the following questions:[2]

* Are the factors to be considered in risk management for research vessels unique because of the nature of their operation;
* Do all operators understand the full range of liabilities and liability risk exposure for research vessels;
* What is the perception of insurers regarding the status of academic research vessels;
* What are the alternatives to keep insurance costs from escalating to unreasonable levels;
* Is the Liability Risk Retention Act of 1986 a viable alternative for federally or state owned vessels; and
* Would it be feasible to negotiate a collective policy for some or all of the vessels in the University-National Oceanographic Laboratory System fleet?

Although the study of the academic research fleet insurance program was not confined solely to these questions, this report will be directed mainly to these issues.

CHAPTER 1. BACKGROUND OF THE FLEET AND EXISTING INSURANCE COVERAGE

A. Description of the Academic Fleet

"Oceanography is primarily a field science, dependent for its progress on the ability of its practitioners to observe, to measure, and to obtain samples from the ocean. Much of the work is conducted from vessels of various kinds."[3] The vessels used to obtain oceanographic data and provide scientists a platform from which to perform their research is referred to collectively as the oceanographic fleet. Within this collective fleet there are several smaller oceanographic fleets including the Navy, National Oceanic and Atmospheric Administration (NOAA), academic institutions, private industry, and various governmental and state agencies. This study is concerned with a portion of the research vessels operated by academic institutions.

The academic research fleet consists of university-based ships which support the basic research portion of the national oceanographic program. The chemistry, biology, physics, geology, and geophysics of the oceans are explored from university ships. The duration and scope of oceanographic cruises require the vessel to provide food and lodging, workshops, libraries, and laboratories to enable the scientist to study the oceans. The diversity of the research takes these ships into all areas of the marine world from the Arctic to the Antarctic, including specialized areas such as the Amazon River and the Great Lakes.[4]

The vessels of the academic fleet are divided into three size cate-

gories: large vessels, greater than 200 feet; intermediate vessels, 150 to 200 feet; and small vessels, less than 150 feet but usually greater than 80 feet. The large vessels range world-wide on major expeditions. These vessels spend 250 to 280 days per year at sea and accommodate approximately 50 crew members and scientists. The intermediate vessels are used for cruises of shorter duration, sail approximately 250 days per year and carry a combined compliment of approximately 25 crew and scientists. The intermediates are limited in operation by laboratory space, endurance and sea state. The small vessels are considered coastal vessels, with cruises of short duration and approximately 20 crew and scientists. The small vessels sail about 220 days per year.[5]

The academic fleet also include special purpose oceanographic vessels such as Alvin, Orb, and Flip. These facilities provide the oceanographic community the capability to do specialized research which cannot be done from conventional research vessels. Alvin is a manned submersible which provides scientific information by direct observation or manipulation to depths of 4,000 meters. Orb is a research barge of limited mobility. It provides a large stable platform for sensitive instruments at a specific research site to which it is towed. Flip (floating instrument platform) is a unique vessel which provides a stable platform in a rolling sea. The equipment on Flip is hinged such that it allows the vessel to be used in either the horizontal or vertical position. Flip is towed in the horizontal position to the research site where ballast tanks are flooded to rotate the vessel to the vertical position. In the flipped position the vessel extends 300 feet into the water column thus providing a very stable platform and a unique research opportunity.[6]

A research vessel requires cranes, winches, and cables to launch and retrieve oceanographic sampling and measuring equipment used in the collection of data. To obtain the data, equipment is usually hung over-the-side or towed aft on an oceanographic cable. Due to the limited market and high specificity of oceanographic equipment, it is not uncommon for this equipment to cost from $100K to $200K and includes such items as remote operated vehicles; conductivity, temperature and salinity units; deep coring rigs; towed acoustical arrays; water sampling devices; and a variety of nets. In some projects it is necessary for the scientist to actually view or collect samples by use of submersibles or diving. The specificity of the equipment and the adverse conditions under which the data must at times be collected add to the liability of doing oceanographic research. To obtain comprehensive data, the scientific community works in ice in polar regions, heat in the tropics, summer and winter, and in fair and foul weather. By the nature of the work, expensive equipment is hung over-the-side on cables in all types of weather and conditions.

B. Ownership and Funding of the Academic Fleet

Based on management and financial support, the academic fleet is divided into two categories. The smaller vessels are usually owned, operated, and funded by a state or private institution. The larger vessels (usually greater than 65 feet) are commonly referred to as the University-National Oceanographic Laboratory System (UNOLS) fleet. This is an association of academic institutions whose goal is to assist in the coordination and utilization of oceanographic facilities. These vessels are those research vessels operated by UNOLS member institutions

and are significantly funded by the federal government. They are operated in accordance with UNOLS safety standards and are scheduled by established UNOLS procedures.[7] There are presently 18 UNOLS members operating a total of 25 vessels. The vessels are owned by the National Science Foundation, Department of the Navy, or the institution itself. If owned by the institution, ownership can be either state or private. The current marine insurance study includes all UNOLS institutions and vessels. However, at the request of NSF, the study was not limited to UNOLS members and vessels. A total of 19 institutions and 31 vessels were included. In this report, we will use the term UNOLS and academic fleet interchangeably. Distribution by ownership of vessels considered in this study is illustrated in Figure 1.

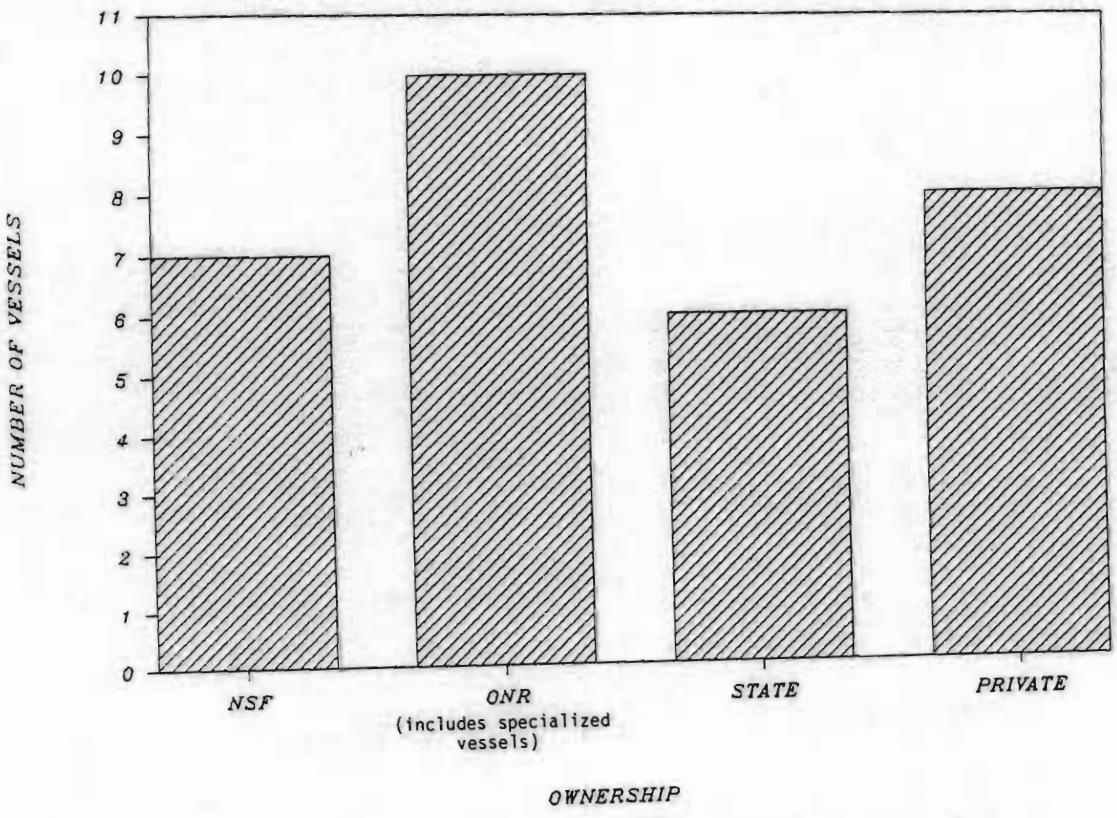

Figure 1. 1987 Fleet Distribution

A requirement for a UNOLS vessel is that a significant portion of the operational funds must come from the federal government. The major source of this funding is the Oceanographic Centers and Facilities Section (OCFS) of NSF. The National Science Foundation provides approximately 70 percent of the funding for the academic fleet.[8] The Office of Naval Research (ONR), Department of the Navy, is the second major funder. The remaining funds are provided by other federal agencies, states, and private sources. Vessel funding is provided on a cost per day for operations and maintenance, including marine liability.

C. Federally Owned Vessels--Charter Party Agreement

Vessels owned or operated by private or state institutions do not operate under the same restraints as federally owned vessels. The non-federally owned vessel operations are determined by state or institutional procedures in conjunction with the funding agencies' policies; while institutions operating federally owned vessels (NSF or ONR) operate under a charter party agreement and are restrained by the terms of the contract. The charter party agreement is for a period of five years and is subject to renewal. Both the Navy and NSF charters have specific requirements relating to marine liability and insurance. In both cases (the wording is identical) the charter is required to " . . . procure and maintain on the vessel (i) collision liability and protection and indemnity liabilities insurance . . . and (ii) workmen's compensation, employer's liability insurance respecting the use and maintenance of the vessel as the Foundation [or Department] may require or approve from time to time. Each such policy of insurance shall be in such form, for such amounts, for such periods of time, and with such

insurers as the Foundation [or Department] may require or approve, ... "[9] The amount of coverage is clearly specified in each contract. In addition, the Navy and NSF have clearly retained the right to require and approve the policy of insurance.

Under the charter party agreement, an operator of a federally owned vessel is prohibited from obtaining hull insurance. The contract specifies " . . . the Charterer shall not carry or incur the expenses of any insurance against any form of loss or damage to the Vessel, . . . "[10] From these two sections of the charter it is quite clear that the operating institution has a precise obligation to carry collision and protection and indemnity coverage but is not allowed to carry hull insurance. Therefore, only private and state owned research vessels have the option to insure for hull risk. Although the charter agreement specifies an amount of protection and indemnity (P & I) coverage which must be carried, it does not set an amount for an upper limit. The amount specified usually reflects the original cost of the vessel and not the current trends in coverage. For example, the University of Alaska charter agreement specifies $1.2 million in P & I. This amount reflects what is currently per incident and not protection for a catastrophic loss. Since the insurance portion of the charter agreements is not regularly updated to reflect current insurance trends, determination of the amount of needed liability coverage is left to the discretion of the operating institution.

The prohibiting of the operator of a federally owned vessel from obtaining hull insurance is predicated on the concept that the federal government is self-insured. In theory it is more economical for the

the assured in which he has an insurable interest if damaged or destroyed by a peril insured against. Insured perils relate to the navigation of the sea and include: perils of the sea, fire, war perils, thieves, jettison, barratry, and other perils designated by the policy.[12] Perils of the sea are the most important perils of the policy and are typically: flooding, grounding, collision, and sinking. Other perils are included in the additional perils clause. The most important items covered by the additional perils clause are latent defects, negligence of the crew, and the requirement of the owner to use "due diligence" in providing a seaworthy vessel.[13] As stated earlier, within the academic fleet only vessels owned by the state or private institutions may avail themselves of protection under hull insurance.

Protection and Indemnity

Protection and indemnity insurance indemnifies the owner or charterer against liabilities incurred in operating the vessel. A protection and indemnity policy covers a diversity of risks and includes: loss of life, personal injury, and illness (unless covered by the workmen's compensation act); repatriation expenses; excess collision; damage to docks, buoys and structures; wreck removal; mutiny; quarantine expenses; fines and penalties; investigation and defense expenses; and cargo losses. Protection risks are mainly concerned with liability for loss of life and personal injury, collision damage to piers, wash damage, and removal of wrecks. Indemnity risks are mainly concerned with losses to cargo and fines and penalties.[14]

The most important area of risk within the P & I policy is that of compensation for crew and passengers for personal injury or death while

in the service of the vessel. (Scientific personnel are neither crew nor passengers and will be considered infra.) The growing problems within this category and the necessity of the owner or charterer to understand the extent of one's liability is well stated by the noted authority, Alex Parks.[15]

> The United States, of all the major maritime nations in the world, stands alone in its refusal to adopt a "workmen's compensation" approach to seamen's claims for injuries and death. Instead, . . . by the passage of the so-called "Jones Act," and expanded astronomically by the courts on a case-by-case basis, the system in the United States has been to relegate the problem to the courts. As a consequence, there has been a steady expansion of liabilities imposed upon ship-owners and charterers, with concomitant restrictions on their defenses.
>
> The evolution of personal injury law in maritime law has been steady and dramatic. The tendency of the courts, in adopting a most liberal approach to interpreting the statutes and case law involving maritime workers, has produced a host of new "plaintiffs," and the ingenious application of old and new theories by the very competent maritime plaintiffs' bar has produced new areas of recovery which were never dreamed of fifty years ago.

Protection and indemnity insurance covers a large spectrum of liabilities; however, for the marine P & I underwriter, it is the area of personal injury that claims have reached incredible proportions. Prior to the enactment of the Jones Act,[16] the traditional maritime remedies for personal injury were maintenance and cure, and unseaworthiness. These remedies were tried before a judge in federal court. Under the Jones Act a seaman can file suit in state court for an injury, include maintenance and cure, allege unseaworthiness, and have the entire claim adjudicated in state or federal court before a jury.[17]

Of the three courses of action available to an injured seaman, the oldest remedy is maintenance and cure. The obligation of main-

tenance and cure applies equally to owners of cargo vessels, fishing vessels, yachts, or oceanographic vessels. It arises out of the employer's obligation to provide medical care to seamen who become injured or ill while in the service of the vessel. Maintenance is per diem, subsistence and cure is medical care. The intent of maintenance and cure is to cover only those expenses actually incurred. In the early 1950s the accepted per diem was $8.00 per day. Today, the dollar value is subject to proof and ranges from $30.00 per day in Texas[18] to $45.00 per day in Alaska.

The obligation of maintenance and cure continues until the seaman reaches the maximum extent of recovery and exists irrespective of the owner's fault or vessel unseaworthiness. The seaman may also have the right to unearned wages for the contract period. Eligibility for maintenance, cure, and wages requires that the employee be a seaman in the service of the vessel at the time of the incident. The term "in the service of the vessel" means that the seaman is subject to the call of duty and earning wages for such duties. As such, the courts have found that "in the service of the vessel" extends to activities ashore, such as errands and duties performed ashore for the vessel or even for shore leave. In Aguilar v. Standard Oil Co., a seaman who fell from a second story balcony while intoxicated was awarded maintenance and cure. Justice Rutledge stated the reason for extending maintenance and cure to shore leave was, "Men can not live for long cooped up aboard ship . . . relaxation beyond the confines of the ship is necessary if the work is to go on, ... " If leeway is to be given in liability cases, it will be in the sailor's behalf.[19]

The test of an employee qualifying as a seaman was set forth in Steur v. Nederl-Amerik:[20] 1) The vessel must be in navigation; 2) There must be a permanent connection with the vessel; and 3) The person must be aboard primarily to aid in navigation or one's duties must contribute to the mission of the vessel. As such, scientific personnel aboard research vessels are entitled to maintenance and cure under general maritime law.

Due to the shortcomings of maintenance and cure, Congress passed the Jones Act in 1920. The Jones Act provides the seaman a course of action against his employer for personal injury and death with the right of trial by jury. The statute is based upon the negligence concept. However, the vessel owner/employer cannot eliminate his liability based on contributory negligence of the employee or negligence of fellow employees. An employee is allowed to recover for injuries even if the employee was negligent. Under the comparative fault principle, recovery is reduced by a percentage corresponding to the degree of employee fault. Negligence may be alleged where the owner has failed to provide a safe working place or through the negligence of a fellow employee.[21]

The right to trial by jury in Jones Act cases makes this remedy very popular. Maintenance and cure and unseaworthiness actions are within admiralty jurisdiction and will, therefore, be tried in federal court before a judge. Since a judge is not usually as generous as a jury, the plaintiff in personal injury suits will nearly always allege negligence under the Jones Act.

In a Jones Act case the plaintiff must establish status as a

seaman, as in the procedure described under maintenance and cure. Establishing status as a seaman for a crew member of an oceanographic research vessel (ORV) is not normally a problem; however, scientific personnel are by statute excluded from Jones Act protection and recovery by the Oceanographic Research Vessels Act (ORVA).[22] Congress, in 1965, passed the ORVA, for the purpose of encouraging oceanographic research by removing the impediments (the requirement to classify scientists as either crew or passengers) that had been hampering oceanographic research vessel operations. The statute defines an oceanographic research vessel as a vessel "being employed exclusively in instruction in oceanography or limnology, or both, or exclusively in oceanographic research, ... "[23] Once designated an ORV, the vessel is not considered a passenger vessel by reason of carrying scientific personnel, and scientific personnel aboard are not to be considered seamen by provision of title 53 of the Revised Statutes Act. This title excludes scientists from remedies under the Jones Act but does not mention the general maritime remedies of maintenance and cure or unseaworthiness.[24]

The denial of Jones Act recovery to scientific personnel of an ORV was first challenged in Sennett v. Shell Oil in 1971.[25] Albert Sennett, a Shell Oil Employee, was killed when an air gun misfired aboard the R/V Niobe. The Jones Act claim was denied in district court but the unseaworthy claim was allowed. This decision was reaffirmed by the fifth circuit court in the case of Presley v. M/V Caribbean Seal where the plaintiff, a member of the seismic crew, was injured while repairing the air compressor for the air guns on the

oceanographic research vessel Caribbean Seal.[26] In both cases the Jones Act claim was denied while allowing claims under general maritime law. Therefore, scientific personnel aboard an ORV have seaman status for the purposes of unseaworthiness and maintenance and cure claims under general maritime law but are denied seaman status for purposes of Jones Act claims. Since they are barred from bringing suit under the Jones Act, the remedy available to scientists from negligent torts committed by their employer is through workmen's compensation.[27]

"The most important remedy for an injured seaman today is based on the warranty of seaworthiness, which enables an injured seaman to recover full indemnity if his injury was caused by an unseaworthy condition of the vessel, its equipment, or crew, whether or not the unseaworthy condition was caused by the negligence of the vessel owner."[28] The lack of the necessity of negligence on the part of the owner greatly increases the owner's liability.

A landmark case in the use of the unseaworthiness doctrine in personal injury was Mitchell v. Trawler Racer.[29] The case established the principle of transitory unseaworthiness; whereby, on an otherwise seaworthy vessel, unseaworthiness may exist for a particular occasion. Liability for unseaworthiness does not require that the owner have prior knowledge of the defect. The court held that the duty of the owner to provide a seaworthy ship is absolute. However, the court has stated that the owner is not obligated to furnish an accident-free ship. The owner must furnish a vessel reasonably fit for the intended use. The standard is not perfection but reasonable fitness.

In addition to the basic P & I coverage, additional risks can be covered by special endorsements. An endorsement must be specifically added to the policy by the broker. Risks that are specific to the operation of a research vessel may be added to the P & I policy. Risks, such as, diving, war risk, terrorism, and use of explosives or remote operated vehicles may also be added for the benefit of the research vessel operators.

E. Academic Fleet Insurance Issues

Currently the academic fleet is not taking advantage of group buying power--each institution is managing its insurance program independently. The majority of the institutions have a single ship operation and use a broker to place their marine coverage. Often the broker is unfamiliar with research vessels resulting in problems with rating. Many of the state institutions are in statewide group insurance programs and the vessel operator has little or no input into the risk management of the vessel.

These risk management problems within the academic fleet are not new. In the early 1970s, the need to improve the fleet insurance program led UNOLS to undertake a study of the fleet insurance program. A comprehensive study was done by Risk Engineering Services (RES) of North Truro, Massachusetts.[30] The purpose of the study was to determine the economy of cost, the adequacy of coverage, areas needing improvement, and ultimately a means of improving coverage at economical rates. The study was begun in 1974 and the report submitted in July 1975. It examined the loss history, values at risk, insurance coverage and costs, and operational items pertinent to the task. The

study concentrated on the more serious risk of the larger research vessels, eliminating the smaller vessels. A detailed analysis of the fleet was made and clearly demonstrated areas needing improvement. Recommendations were made by which these improvements could be made. Many of the recommendations made by RES in 1975 for improving the risk management of the fleet, such as, group insurance, are still pertinent today. The 1975 report provides valuable background information and will be used as a reference by which to compare the current insurance program of the fleet. The 1975 and 1987 results and recommendations will be discussed in Chapters 5 and 7.

CHAPTER 2. OBJECTIVES OF 1987 INSURANCE STUDY OF THE ACADEMIC FLEET

A. Maximize Insurance Coverage and Minimize Cost

Following the October 1986 RVOC's Marine Liability Workshop, it was decided that a study would be undertaken to investigate the marine liability problems of the academic fleet. A meeting was held at NSF and a set of objectives were determined to address the needs of the operators and the concerns of the funding agencies. These objectives are as follows but not in order of priority:

* Determine if it would be economically feasible to place the fleet in a collective group policy;
* Determine if the fleet has adequate coverage and, if not, make recommendations;
* Determine alternatives to prevent the insurance cost of the fleet from rising;
* Compare the 1975 and 1987 risk management studies;
* Determine if over-the-side coverage for scientific equipment could be obtained for the fleet; and
* Determine if fleet-wide diving coverage could be obtained.

Since the funding agencies are concerned with obtaining sufficient liability coverage at the most economical cost, the emphasis of the project would be to ascertain the ability of the research vessel operators and the NSF to work together in a fleet insurance program. Currently each operating institution places individual coverage with separate companies. As a result, the cost of premiums for similar risks vary widely within the fleet. Increasing rates and decreasing availability of

liability insurance has set a trend in commercial property and casualty insurance toward group and self-insurance programs. This trend is also becoming increasingly prevalent within the marine industry.

Specific areas within the marine industry, such as, independent stevedores associations and the fishing fleet, have historically been considered high risk and have had difficulty in obtaining adequate coverage at affordable prices. According to the Journal of Commerce the number one problem faced by independent stevedores is insurance.[31] Not having the buying power of the International Longshoremens Association or the claims history to obtain insurance at economical rates, they are initiating a self-insurance program for their group. Successful models of group insurance can be found within the fishing fleet. It was felt that groups such as the West Coast Marine Fund, a pool started in Seattle in the 1930s, or the Point Club, a self-insurance club started in Rhode Island in 1986, might serve as a model for the academic research fleet. Both of these insurance clubs have been highly successful.[32]

On determing the current fleet coverage and cost for hull, protection and indemnity, and special endorsements, recommendations on insurance options available to the fleet could be made. The 1975 recommendations will be utilized as a comparison in determining the optimum insurance program. In 1975, the fleet chose to remain with the existing independent insurance program. With the rising cost of marine insurance in the mid-1980s, the funding agencies decided to again look at the feasibility of a group insurance program for preventing continued escalation of premiums. A fleet insurance program coupled with an

enhanced safety program may provide the cost savings sought by the funding agencies.

B. Determine Feasibility of Coverage for Specialized Oceanographic Related Activities

The operations of an oceanographic research vessel is poorly understood by the marine insurance industry. The need to hang over-the-side or tow aft valuable equipment on a thin wire cable is not fully appreciated by the marine underwriter. While other areas of marine transportation typically try to avoid bad weather or working in ice, the oceanographer may for scientific reasons need to work in these conditions. The problem is further complicated by the scientist who wants to collect samples by diving in frigid waters or remote areas. Since oceanographic activities are not typical marine risks and are not readily appreciated by the underwriter, they are hesitant to place such liabilities in the marine insurance market.

However, scientific operations are requiring the use of increasingly sophisticated equipment to obtain data. Oceanographic equipment is becoming electronically more complicated and sampling packages are growing in size and cost. As a result, the loss of such equipment is increasingly detrimental to projects and budgets. Often monies are not available for replacement of lost equipment. Few institutions have been able to obtain over-the-side insurance for losses. If an institution is able to obtain this specialized insurance, the first catastrophic loss normally results in cancellation of the policy. Due to declining budgets and rising cost of equipment, the funding agencies and many operators are interested in obtaining protection through

insurance against such losses. Although the individual operator has very little opportunity to insure for these specialized oceanographic risks, these risks could be included in an all-risk group insurance policy.

Presently all research vessels do not support diving activities, however the majority of the oceanographic institutions do have a diving program. As the research vessels become more regionalized, the possibility of a vessel being requested to provide support for a diving project from a different institution is increasing. This results in increased liability for the operating institution. If the institutions's insurance policy excludes diving, a special one-time diving endorsement may be required. To insure full liabiltiy protection for diving activities from any vessel by any institution the funding agencies would prefer fleet-wide coverage for all diving activities. This could either be done as a group policy specific for diving or included as an additional risk in a fleet group policy.

CHAPTER 3. METHODOLOGY AND PROCEDURES

A. Survey of Academic Institutions

The initial contact of the insurance study was made with the vessel operators at the annual RVOC meeting in October 1987. At this meeting, Dennis Nixon made a presentation on the advantages of a group marine insurance program and the success the fishing industry is having with such programs. The 1975 report was discussed and E. R. Dieter asked that each institution review the report, update the information needed for Tables I through V, and forward the updated information to her by 1 December 1987. This information includes the following data:

1. Ship characteristics;
2. Insurance brokers;
3. Insurance underwriters;
4. Hull coverage;
5. Protection and indemnity coverage;
6. Losses--insurance claims; and
7. Premiums.

In mid-November a questionnaire (see Appendix 1) was sent to 19 academic institutions requesting information on operational and insurance procedures for their research vessel operations. In addition each operator was requested to furnish by the end of December 1987 one copy of each of the following:

1. Current marine insurance policy;
2. Workmen's compensation policy;
3. User's manual for each vessel;
4. Institution's policy on required insurance or procedures;
5. Sections 12 and 13 of 1987 ship operations proposal; and
6. Copy of charter agreement for vessels owned by NSF or ONR.

The purpose of the questionnaire was to determine any special requirements of constraints under which the institution's vessel(s) operated or how the marine liability was managed. A copy of the current marine insurance policy was essential in determining premiums, coverage, and operational restrictions. The data from the policy, questionnaire, and updated tables were to provide the basic information for assessing the existing marine insurance of the fleet. From this information recommendations for managing the marine liability of the fleet could be proposed.

In January 1988, it became obvious that an in-depth follow-up telephone survey would be required to fill in missing data. This data was essential if hull and P & I rates were to accurately represent the insurance costs of the fleet. Obtaining the information, especially the insurance policy, proved to be extremely difficult and time-consuming for the operator and data collector.

B. Discussions with Members of the International Insurance Market

Following the preliminary computation of data, meetings were held with London P & I clubs to determine the feasibility and interest level in providing the academic fleet with a group-type insurance program. Data was presented to the P & I clubs in an anonymous format to protect the identity of the institutions and vessels. At least two of the P & I clubs expressed an interest in providing the academic fleet with membership in a P & I club. Additional information was requested and was provided in the same anonymous format. One member of the academic fleet is already taking advantage of insuring through a P & I club. The

proposal for insuring the fleet was received from Godfrey-Merritt (London) and can be found in Appendix 2.

C. Progress Meetings with National Science Foundation Representatives and UNOLS Advisory Committee

In mid-February 1988, a meeting was held at the University of Rhode Island in Kingston, R.I. with the National Science Foundation's program manager for ship operations and legal counsel. The purpose of the meeting was to discuss the progress of the study and to determine the scope of the preferred marine liability program. To provide guidelines as to the extent and type of insurance preferred, the following issues were discussed: the legality of hull coverage for federally owned vessels, recent legal developments, self-insurance programs within the structure of the funding agencies, vessels to be included, level of P & I coverage, over-the-side equipment insurance, diving coverage, and geographic restrictions. In early March, E. R. Dieter attended the UNOLS advisory council meeting. A progress report was made and the above issues were discussed.

A presentation of the final report was made by Dennis Nixon and E. R. Dieter at the National Science Foundation on 27 July 1988 in Washington, DC. The National Science Foundation representatives from Budget and Contracts, Division of Ocean Sciences, Oceanographic Centers and Facilities Section, legal counsel, and the drilling program were in attendance. The current data was presented and compared to the 1975 study. The legal implications of the study and marine liability as previously discussed were presented. A discussion of the recommendations for improving the marine liability of the fleet ensued. These recommen-

dations will be presented in Chapter 7. A detailed report of the study will also be presented at the annual RVOC and the UNOLS meetings in October.

CHAPTER 4. PROBLEMS ENCOUNTERED

A. Difficulty in Obtaining Necessary Data

The prime source of data for this study was the individual institution's marine insurance policy. The majority of the institutions readily supplied copies. However, in a few cases it proved extremely difficult to acquire a current copy of the policy--the marine superintendent did not have and was unable to obtain a copy. There appeared to be a general reluctance on the part of the risk managers to provide the needed information. Often the reluctance by the risk manager resulted from a desire to maintain the institution's anonymity. Over half of the policies provided were incomplete, lacking needed cover sheets, schedules, and/or endorsements. Where possible, the institution was contacted for the additional information. Acquisition of data was terminated on 21 July 1988. Missing information appears as blanks on the data sheets.

Where an institution also operates several smaller vessels, they are often included on the policy with no breakdown of costs for each vessel. For these institutions it is difficult or impossible to determine premium costs for the vessel of interest.

Another problem encountered was that data provided on the updated tables did not always agree with the policy. In these cases, the institution was usually a state university where part of the risk was covered by state pools or self-insurance. Again, for these institutions, it was

not always possible to determine what the premiums were, usually this was an assessed cost and not an actuarial premium cost.

B. Inadequate Records of Losses

Loss records were difficult to obtain. At many institutions, marine losses are interspersed among other university losses and are difficult to isolate. Obtaining loss records for the specified length of time was also a problem. Although loss records were requested for a minimum of five years and preferably ten, they were received for varying periods, from one to eleven years. In most cases the operator was familiar with the losses and could provide needed details. However, the operator is not always aware of the amount of the loss or how the loss was settled, i.e., as a P & I claim or workmen's compensation. Losses are often settled by the university risk manager and the settlement information may not feed back to the marine superintendent. This lack of communication was especially true where the ship operations is some distance from the main campus or the central risk management office.

C. Diversity of Ownership and Management

The UNOLS fleet, on the whole, is viewed as the U.S. academic research fleet. The fleet consists of 25 vessels operated by 18 different institutions. The ownership of the vessels may either be: federal, NSF or Navy; or institutional, private or state. A private institution, such as Woods Hole Oceanographic Institution (WHOI), may operate institute owned vessels (private - Atlantis II) or federally owned vessels, (Navy - Knorr, NSF - Oceanus). Similarly, a state institution, such as Scripps Institute of Oceanography (SIO) may operate

state, NSF, or Navy owned vessels. Although the fleet is viewed as a group, this diversity of ownership and management presents unique problems when considering a group insurance program.

Operators of NSF and ONR owned vessels are by contract prohibited from carrying hull insurance. However, one operator of an NSF owned vessel presently carries hull insurance and one operator of a Navy owned vessel is currently renegotiating their marine policy which will include hull insurance. By including hull coverage, the University of Hawaii can obtain increased coverage for less premium than by insuring for P & I only. In the case of the NSF hull, the University of Alaska is included in the State of Alaska's marine insurance policy. It is not economical to delete hull insurance for one out of the 45 vessels the state insures. In a fleet group policy, better premiums could be obtained by insuring the entire fleet for hull insurance.

Protection and indemnity premiums are also affected by vessel ownership and management. Since seamen of a vessel owned or operated by a state institution are barred by the 11th amendment[33] (sovereign immunity) from common law and Jones Act suits in federal court, the P & I premiums for these institutions should be at a lower rate than those of private institutions. (The bar to common law and Jones Act claims by a state employee will be discussed further in Chapter 6.) The affects of diversity of ownership and management are more clearly illustrated within classes of vessels, i.e., Oceanus (Oceanus, Endeavor, and Wecoma) or AGOR 3 (Thompson, Washington, and Conrad) class. Within various classes of vessels, premiums and coverage vary widely although liabilities for vessel operation and number of personnel are similar.

D. Determination of Vessels to be Included in the Study

In a group insurance program, the larger the fleet the greater the economies of scale. During the current study the question of which ships should be considered arose several times. UNOLS institutions, such as, the Universities of Delaware, Michigan, and Alaska, operate small vessels that are not owned or funded by the federal government but are included in the institution's marine policy. Also during the study calls were received from non-UNOLS research vessel operators, inquiring about the possibility of being included in the program. Although improved insurance rates could be obtained with a greater number of vessels, due to the administrative difficulties for the funding agencies, it was decided to limit the study mainly to the UNOLS fleet. Three specialized vessels (Alvin, Flip, and ORB) were included since they are owned by one of the major funding agencies (ONR) and included in a package insurance program at the operating institutions. Should a group insurance program be instituted, if advantageous, the current list could readily be expanded.

CHAPTER 5. ANALYSIS AND DISCUSSION OF DATA

A. Academic Fleet Data

The data for the 1987 study has been compiled from information obtained in writing from the research vessel operator and/or the risk manager of the operating institution. The institution's marine insurance policy was the primary source document. Clarification of the data was done, as needed, by telephone. During the 1975 study, personal visits were made to 13 of the 14 institutions surveyed, excluding Alaska. Personal visits have the advantage that the surveyor can view the documents, obtain copies of pertinent materials, and personally clarify discrepancies rather than depending on third-party discretion. Site visits to the 19 institutions in the current study were considered but decided against on the basis of budget and time constraints.

The basic data is presented in Tables I through V in the 1975[34] and 1987 reports. These tables lack some data items but clearly give the general trends in the fleet. The 1987 study was based on 31 vessels and 19 operating institutions. Of the 31 vessels, three are special purpose vessels and one, Asterias, is not normally grouped within the UNOLS fleet. The 1975 study included 13 institutions. The number of vessels in the 1975 study varied from 29 to 32 vessels depending on the status of the vessels used for the data base. The vessels that were included in parts of the study, but not in others, are Cayuse (Oregon State), Kit Jones (Skidaway), and Oceanus, Knorr, Chain, and Gosnold

(WHOI). This variation may also be due to the Wecoma coming into service and Yaguina going out of service at Oregon State and Oceanus coming in and Chain going out at WHOI. For consistency, when 1975 vessels are compared with 1987, the same list of 31 vessels for 1975 are used throughout. The total number of vessels for the 1975 and 1987 study are approximately the same. On examining the list of vessels for the respective years and eliminating the special purpose vessels Alvin, Orb, and Flip, it becomes apparent that the capacity of the fleet has decreased. With these vessels eliminated, the decrease in number of ships and total personnel are both 10%. Simultaneously there has been a 29% increase in the number of operating institutions. In 1975 there were six single ship operators and eight institutions operating two or more vessels. Correspondingly, in 1987 there were fourteen single and five multiple ship operators. A comparison of the fleet for the 1975 and 1987 studies is illustrated in Figure 2. The figure includes the special purpose vessels.

B. Explanation and Comparison of Tables I Through V

From the research done for this report some general patterns have emerged. Although the academic fleet is not accident free, it has a low loss ratio for both hull and P & I insurance. Since the insurance program of the fleet was last studied in 1975, the overall hull rate has decreased. While P & I rates have increased they are still below the average marine P & I rate. Collectively the fleet would be considered a good book of business by the insurance industry.[35] (Marine insurance representatives consider a hull rate of less than 2% and a P & I coverage of less than $2,225 per person as good rates.) The data leading to these

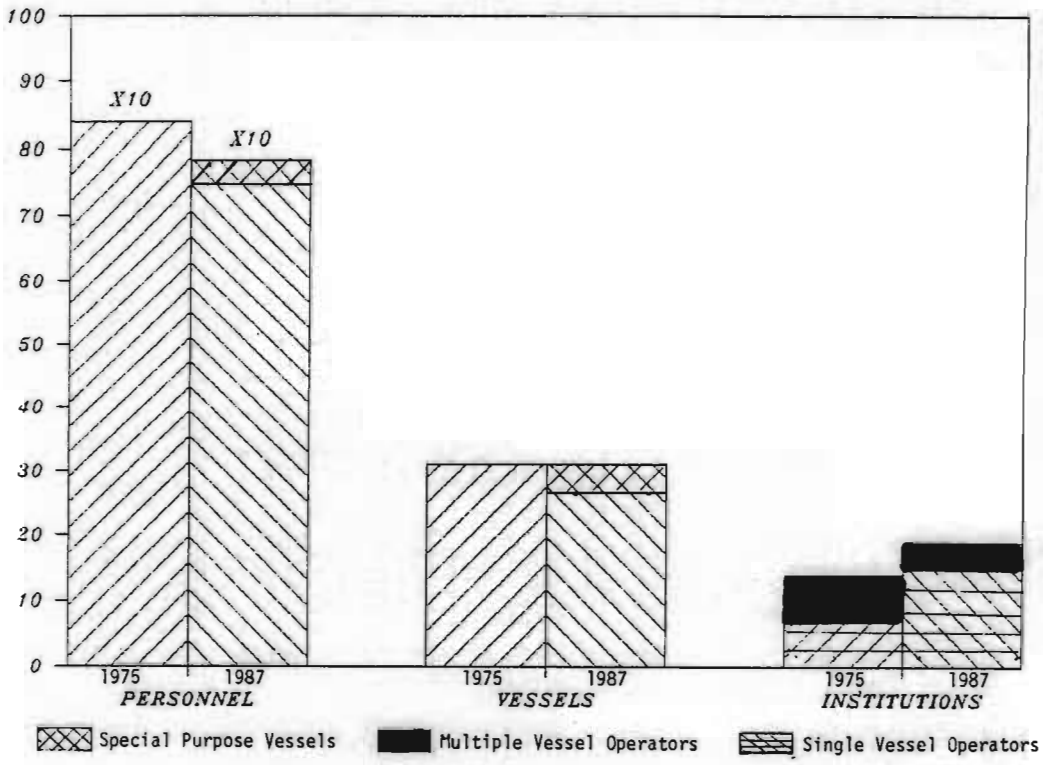

Figure 2. Comparison of Fleet - 1975 vs. 1987

general observations will be examined in detail.

The 1987 data will be compared with the data reported in 1975 in Tables I through V. To be consistent, the tables and comparison from the 1987 report will be formatted and numbered as in the 1975 report. The 1987 tables will be distinguished from 1975 by the use of the year following the table designation, i.e., Table II (1987). The remaining tables in the 1987 study will be designated with arabic numbers. In comparing these tables, no attempt has been made to correct costs for present day value due to the lack of complete data sets in both studies. However, the trends can be clearly shown by comparing the two studies.

TABLE I — INSURERS AND BROKERS — July 7, 1975

Member	Ships	Broker(s)	Hull Insurer(s)	P and I
Duke University	Eastward	Home Ins. Agency & J. Southgate & Son	Glens Falls (MOAC)	Glens Falls (MOAC)
Johns Hopkins Univ.	R. Warfield Maury	Alexander & Alexander " "	London Fireman's Fund	London Fireman's Fund
Lamont-Doherty Geo. Observatory	Conrad Vema	Frank B. Hall	Various in U.S.A.	Various - London & U.S.A.
Oregon State Univ.	Yaquina Wecoma	Marsh & McLennan	State Restoration Fund	State Fund for crew;Blue Cross & United Pacific for employees: Chubb for other P&I; St. Paul for excess P&I
Scripps Instit. of Oceanography	Agassiz Melville Scripps T. Washington Alpha Helix Dolphin		nil " Chubb nil "	Calif. State Fund for crew; Chubb for other P & I and various for excess
Texas A & M	Gyre	Anderson Company	nil	Various
Univ. of Alaska	Acona		nil	
Univ. of Hawaii	Kana Keoki Moana Wave	Dawson & Chambers & Hawaiian Ins. Co.'s.	nil	Continental (MOAC)
Univ. of Miami	Gillis Iselin Calanus Orca III	Stembler, Adams & Sweet	Aetna	Aetna
Univ. of R. I.	Trident	Wm. H. Hartley Inc. & Ted Barton Agency for R.I. Assoc. of Insurance Agents	Royal	American Universal
Univ. of So. Calif.	Velero IV	Marsh and McLennan	Continental (MOAC)	Continental (MOAC)
Univ. of Washington	T.G. Thompson Hoh Onar	Alexander & Alexander for Wash. State Independent Agents Assoc.	none	Aetna
Woods Hole Oceanographic Instit.	Atlantis II Knorr Oceanus	Marsh & McClennan	Atlantic Mutual & others	Atlantic Mutual

Member	Ships	Broker(s)	Hull Insurer(s)	P and I
Duke University	C. HATTERAS	Johnson & Higgins	nil	INA, Lloyd's U.S. Fire Co. & St. Paul F & M Ins. Co.
Johns Hopkins Univ.	R.F WARFIELD	Johnson & Higgins	INA(Insurance Co of N.Americs)	INA
Lamont-Doherty	CONRAD	Marsh & McLennan	nil	Britannia Club
Oregon State Univ.	WECOMA	Fred S. James & Co. of Oregon	Eq.* State Ins. Fund, St. Paul	Continental Ins.(MOAC),St.Paul
Scripps Institute of Oceanography	MELVILLE	Jardine, Emett, & Chandler	Eq.*	Calif. State Fund for personnel;
	T. WASHINGTON		Eq.*	INA for other P&I & excess
	NEW HORIZON		INA	
	R.G. SPROUL		INA	
	FLIP		nil	
	ORB		nil	
Texas A & M	GYRE	ANCO Insurance	nil	St.Paul Mercury Ins.Co.
University of Alaska	ALPHA HELIX	Corroon & Black	Lloyd's 65% NY Marine & Gen. 10% Firemen's Fund 5% Others 20%	Lloyd's 65% N.Y. Marine & Gen. 25%, MOAC 10%
University of Hawaii	MOANA WAVE	Dawson & Chambers	nil	Lloyd's Underwriters 100%
	KILA		nil	Lloyd's Underwriters 100%
University of Miami	ISELIN	Johnson & Higgins	INA	INA
	CALANUS		INA	INA
University of R.I.	ENDEAVOR	Ted Barton Agency	nil	Am. Universal & Lloyd's
Univ. of S. California	OSPREY	Marsh & McLennan	Continental (MOAC)	Continental (MOAC)
Univ. of Washington	T.G. THOMPSON	Johnson & Higgins and	nil	St. Paul F & M Ins. Co.,
	BARNES	Hinton, Hill & Davis	nil	U.S. Fire Insurance, Lloyd's London-Hinton, Hill & Davis Co., Inc.
Woods Hole Oceanographic Institution	ALVIN	Marsh & McLennan	nil	INA,
	ASTERIAS		INA	U.S. Fire Ins. Co.
	ATLANTIS II		INA	
	KNORR		nil	
	OCEANUS		nil	
University of Delaware	CAPE HENLOPEN	Johnson & Higgins	Self-Insured State of Del. Excess-INA	Ins. Co. of North America Excess-State of Delaware
University of Michigan	LAURENTIAN	Mutual Marine	Arkwright-Boston Mfc. Co.	Arkwright-Boston Mfc. Co.
University of Texas	FRED H. MOORE	Corroon & Black	National Surety Corp.through Firemen's Fund Ins.Co.	Am. Home Assurance through 50% Am. Int. Marine, 50% Royal Globe Ins. Co.
Moss Landing	POINT SUR	Fritz International	Collision Only, Firemen's Fund & Arkwright, Boston Mfc.Mutual	London Underwriters through Hutchinson Group, Ltd.
Skidaway Institute	BLUE FIN	State of Georgia	Self Insur. Fund	State Fund
Bermuda Bio. Station	WEATHERBIRD	Inland Underwriters	INA 50% U.S. Fire 50%	INA 50% U.S. Fire 50%

* Equipment

TABLE II

HULL INSURANCE
(including Machinery and Equipment)

July 7, 1975

Member	Ships	Owner	Length	Displ. Tonnage	New Replace.Value	Deductible	Insured Value	Hull Rates	Annual Prem.	Built/Constr.
Duke University	Eastward		117	474	$ 1,500K	$ 5,000	$ 1,100K	1.73%	$ 19,040	1964
Johns Hopkins	R. Warfield		106	266	1,400K	1,250K	1,250K	2.375%	19,027	1967
	Maury		65		100K	500	40K	5.0%	2,000	1950
Lamont-Doherty Geo. Obser.	Conrad	N	208	1,345	8,000K	nil	nil	nil	nil	1962
	Vema		197	1,000	4,000K	3,000	150K	8.2%	12,300	1923/53
Oregon State Univ.	Yaquina		180	865	4,000K	nil	1,000K	1.0%	16,892	1944/64
	Cayuse		80	173	450K	nil	1,000K	1.0%	7,992	1968
	Wecoma	NSF	177	962	4,000K	Builders Risk				
Scripps Insitute	Agassiz		180	896	4,000K	Eq. 5,000	Eq.176,870		Eq. 1,117	1944/62
	Melville	N	245	2,075	10,000K	Eq. 5,000	Eq.201,859		Eq. 1,280	1969
	Scripps		95	234	750K	H&eq5,000	H&Eq 5,000	1.95%	H&Eq. 7,003	1965
	T. Washington	N	209	1,330	8,000K	" 5,000	Eq.406,838		" 2,612	1965
	Alpha Helix		133	512	2,500K	" 5,000	" 90,025		" 553	1966
	Dolphin		96	150	750K					
Skidaway	Kit Jones		65		200K					
Texas A & M	Gyre	N	165	950	4,000K	nil	nil	nil	nil	1973
Univ. of Alaska	Acona	N	85	197	450K	nil	nil	nil	nil	1961
Univ. of Hawaii	Kana Keoki		156	900	3,000K	nil	nil	nil	nil	1967
	Moana Wave	N	174	950	4,000K	"	"	"	"	1973
Univ. of Miami	Gillis	N	208	1,428	8,000K	10,000	2,000K	2.50%	50,000	1962
	Iselin		170	830	4,000K	10,000	1,450K	2.957%	42,877	1972
	Calanus		63	111	250K	10,000	150K	1.70%	2,550	1970
	Orca III					10,000	50K	1.55%	775	
Univ. of Rhode Island	Trident		180	1,021	4,000K	25,000	100K**	2.25%	2,250	1944/62
Univ. of Southern Cal.	Velero IV		110	600	1,500K	1,500	600K	1.25%	7,500	1948
Univ.of Washington	T.G. Thompson	N	209	1,362	8,000K	nil	nil	nil	nil	1965
	Hoh	?	65	95	200K	"	"	"	"	1943/62
	Onar	?	65	81	200K	"	"	"	"	1954/63
Woods Hole Ocean. Instit.	Atlantis II		210	2,300	10,000K	30,000	4,000K	1.335%	55,650	1963
	Chain	N	213	2,100	10,000K	nil	nil	nil	nil	1944/59
	Knorr	N	244	1,915	10,000K	"	"	"	"	1970
	Oceanus	NSF	177	962	4,000K	Builders Risk				

*up to $1.00/$100.00 Prem. for replacement value - Yaquina $40,000, Cayuse $4,500)
**excludes $250,000 equipment.

$11.735,479 $251,418
(Ave.combined rate on those reported $2.14/100)

Note: Hull coverage on the Atlantis II was recently cancelled.

TABLE II(1987) — 1987-Hull Insurance (Including Machinery and Equipment) — July 22, 1988

Member	Ships	Owner	Length	Displ. Tonnage	New Replacement $ Value	Deductible	Inaured $ Value	Hull Rates	Annual $ Premium	Built/ Constructed
Duke Univ.	CAPE HATTERAS	NSF	135	539	5,000K	nil	nil	nil	nil	1981
Johns Hopkins	R. WARFIELD	Private	106	162	1,400K	3,125	1,000K	1.565%	15,658	1967
Lamont-Doherty	CONRAD	Navy	208	1,345	33,000K	nil	nil	nil	nil	1962
Oregon St.Univ.	WECOMA	NSF	177	1,103	11,000K	1,000	Eq. 1,339K	***	26,784§	1975
Scrippa Institute of Oceanography	MELVILLE	Navy	245	2,075	35,000K	Eq. 5,000	Eq.91K	***	728	1969
	T. WASHINGTON	Navy	209	1,362	35,000K	Eq. 5,000	Eq.476K	***	3,826	1965
	NEW HORIZON	State	170	1,080	3,879K	H 50,000	H&E 3,360K	1.20%	55,389	1978
	R.G. SPROUL	State	125	520	1,082K	H 10,000	H&E 1,047K	1.47%	20,327	1981
	FLIP	Navy	355	1,500	1,412K	**	982K**	--	**	1962
	ORB	Navy	69	325	366K	**	365K**	--	**	1967
Skidaway	BLUE FIN	State	72	90	500K	100	400K	3.0%	12,000	1972
Texas A & M	GYRE	Navy	189	946	4,000K	nil	nil	nil	nil	1973
Univ. of Alaska	ALPHA HELIX	NSF	133	512	5,600K	100,000	5,000K	0.425%	21,250§	1966
Univ. of Hawaii	MOANA WAVE	Navy	213	1,850	20,000K	nil	nil	nil	nil	1973/84
	KILA	State	103	350	750K	nil	nil	nil	nil	1977
Univ. of Miami	ISELIN	Private	170	830	5,500K	10,000	2,500K	1.75%	10,625+	1972
	CALANUS	Private	68	116	350K	1,500	200K	1.75%	1,000+	1970
Univ. of R.I.	ENDEAVOR	NSF	177	972	10,000K	0	nil	nil	nil	1976
Univ. of S. Cal.	OSPREY	Private	220	1,100	10,000K	15,000	1,500K	1.12%	16,875	1974
Univ. of Wash	T.G. THOMPSON	Navy	209	1,449	8,000K	nil	nil	nil	nil	1965
	BARNES	NSF	65	87	100K	nil	nil	nil	nil	1966/84
Woods Hole Ocean.Inst.	ALVIN	Navy	25	18	10,000K	nil	nil	nil	nil	1964
	ASTERIAS	Private	46	20	600K	1,750	175K	3.65%	6,388	1979
	ATLANTIS II	Private	210	2,300	25,000K	30,000	4,000K	0.687%	27,500	1963
	KNORR	Navy	245	2,075	25,000K	nil	nil	nil	nil	1970
	OCEANUS	NSF	177	962	12,000K	nil	nil	nil	nil	1975
Univ. of Del.	CAPE HENLOPEN	Private	120	165	3,000K	500	3,975K	0.35%	11,356§	1976
Univ. of Mich.	LAURENTIAN	State	80	180	2,000K	1,500	870K	0.952%	8,283+	1974
Univ. of Texas	FRED H. MOORE	State	167	1,202	1,000K	0	1,000K	0.875%	8,750	1967
Moss Landing	POINT SUR	NSF	135	539	5,000K	nil	nil	nil	nil	1981
Bermuda Bio. Sta.	WEATHERBIRD	Private	65	100	1,200K	7,500	450K	2.15%	9,675	1970

** Insured only when under tow - Flip premium $15.50/hr, $250K deductible; Orb $7.50/hr, $50K deductible

+ Port Risk only + per diem Iselin $13.25/day, Calanus $23.50/day, Laurentian $13.75/day

*** Equipment Only

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

TABLE III

LIABILITY TO OTHERS

July 7, 1975

		Marine Liability				Collision Liability			Excess Marine Liability		Pollution, Etc.	
		Limits per/per/per acc.	Deductible P & I	Crew	Prem.	Limit	Ded.	Premium	Limit	Premium	Limits	Prem.
Duke	Eastward	$1100K	1000	1000	11,788	1,100K	1,000	Incl.	15,000K	5,720	1,000	220
J. Hopkins	R. Warfield	500K	2500	2500	3,250	1,250K		Incl.	1,500K	1,975		
	Maury	100K/300K	250									
Lam. Doh.	Conrad	50K	500	1000	1,500	50K	1,000	Incl.	3,500K	28,975	107,200	536
	Vema	150K	500	1000	4,200	150K		Incl.	3,500K	7,750	49,700	249
OSU	Yaquima	300K	nil	nil	4,545	300K	nil	Incl.	3,000K	4,500		
	Cayuse	300K	nil	nil	2,786	300K	nil	"	3,000K	Incl.		
	Wecoma											
Scripps	Agassiz	250K/1000K	nil	note (1)	770	550K	10,000	3,000	1,500K	5,212	note 2	
	Melville	250K	"	"	" 3,520	250K	5,000	2,700	20,500K	9,031	" "	
	Scripps	250K/1000K	"	"	" 775	250K		Incl	15,000K	3,582	" "	
	Alpha Helix	250K/1300K	"	"	" 925	1,760K	10,000	5,600	15,000K	4,216	" "	
	T. Washington	250K	"	"	" 775	250K	10,000	475	18,850K	6,228	" "	
	Dolphin								See Note 7			
Texas A&M	Gyre	2800K	5000	1000	15,000	2,800K	5,000	Incl.	2,000K			
Univ. of Alaska	Acona		1000K									
Univ. of	Kana Keoki	1000K	1000	5000	13,200	1,000K	1,000	Incl.	3,000K[3]	1,250	Buy-back[4]	Incl.
Hawaii	Mona Wave	1000K	1000	5000	13,200	1,000K	1,000	"	3,000K	4,100	" " "	"
Univ. of	Gillis	500K				2,000K	10,000	Incl.				
Miami	Iselin	500K				1,450K	10,000	"				
	Calanus	500K				150K	10,000	"				
	Orca III											
Univ. R.I.	Trident	1000K	250	250	15,500	100K	25,000	Incl.			Buy-back[4]	Incl.
USC	Velero IV	500K		500		500K		Incl.	nil	nil	WQIS	Incl.
Univ. of												
Wash.	T.B.Thompson	1000K	nil	nil		nil	nil		25,000K[5]		nil	nil
	Hoh	1000K	"	"		"	"		25,000K		"	"
	Onar	1000K	"	"		"	"		25,000K		"	"
Woods Hole	Atlantis II	1500K	1250	1250	16,224				See Note 6			
	Chain	1000K	1250	1250	12,650	1,000K	2,500	2,500	" " "			
	Knorr	1500K	1250	1250	16,224	1,000K	2,500	2,500	" " "			

Note 1 - Crew P and I included in U of C Work Comp
Note 2 - Covers all vessels
Note 3 - Second layer for Kana Keoki missing?
Note 4 - Partial reinstatement of pollution exclusion
Note 5 - $25,000,000 limit free through State of Washington
Note 6 - Believed to be $42,500,000 excess P and I and collision
Note 7 - $50,000 top limit available

TABLE III(1987) — Liability to Others — July 22, 1988

Member	Ship	Marine Liability: Limit P/P/A	Deductible: P & I	Deductible: Crew	Marine Liability: $ Premium	Collision Liability: Limit	Collision Liability: Ded.	Collision Liability: Premium	Excess Mar.Liability: Limit	Excess Mar.Liability: $ Premium	Pollution: Limits	Pollution: $ Premium
Duke Univ.	CAPE HATTERAS	1,000K	5,000	5,000	26,300.	35,000K	5,000	incl.	35,000K	37,000.	5,000K	1,241.
John's Hopkins	R. WARFIELD	2,000K	2,500	2,500	9,660.	2,000K	2,500	incl.	250K	incl.	39K/500K++	200.
Lamont-Doherty	CONRAD	3,500K	5,000	none	76,844.	unlim	5,000	incl.	unlimited	incl.	5,000K	1,391.
Oregon State Univ.	WECOMA	300K	5,000	5,000	13,259.	5,100K	nil	incl.	4,700K	10,534.	100K	incl.
Scripps	MELVILLE	25,000K	1,000	§§	32,522.	25,000K	5,000	incl.	75,000K	incl.	25,000K	incl.
	T WASHINGTON	25,000K	1,000	§§	8,735.	25,000K	10,000	incl.	75,000K	incl.	25,000K	incl.
	NEW HORIZON	25,000K	1,000	§§	20,101.	25,000K	5,000	incl.	75,000K	incl.	25,000K	incl.
	R.G. SPROUL	25,000K	1,000	§§	18,613.	25,000K	5,000	incl.	75,000K	incl.	25,000K	incl.
	FLIP	25,000K	1,000	§§	5,227.	25,000K	5,000	incl.	75,000K	incl.	25,000K	----
	ORB	25,000K	1,000	§§	3,923.	25,000K	2,500	incl.	75,000K	incl.	25,000K	----
Texas A&M	GYRE	2,800K	5,000	1,000	43,000.	2,800K	5,000	incl.	nil	nil	2,800K	incl.
Univ. of Alaska	ALPHA HELIX	10,000K	100K	10,000	28,750.§	10,000K	100K	incl.	40,000K	incl.	10,000K	incl.
Univ. of Hawaii	MOANA WAVE	250K	10,000	10,000	32,430.	5,000K		incl.	4,750K	53,419.		incl.
	KILA	250K	10,000	10,000	17,350.	5,000K		incl.	4,750K	28,286.		incl.
Univ. of Miami	ISELIN	2,000K	2,500	1,000	8,500.+	2,000K	1,000	incl.	25,000K	20,000.§	500K/2,500K	1,040
	CALANUS	2,000K	2,500	1,000	3,850.+	2,000K	1,000	incl.	25,000K	20,000.§	500K/2,500K	165
Univ. of R.I.	ENDEAVOR	1,000K	1,000	1,000	36,500.	4,300K	5,000	incl.	3,300K	9,727.	Buy-back	incl.
Univ. of S. Cal.	OSPREY	1,000K	2,500	2,500	8,000.	1,000K	15,000	incl.	4,000K	27,500.		incl.
Univ. of Wash.	T.G.THOMPSON	500K	5,000	5,000	37,306.	incl.		incl.	19,500K	44,767.	500K	1,924.
	BARNES	500K	5,000	5,000	4,869.	incl.		incl.	19,500K	5,843.	500K	251.
Woods Hole	ALVIN	1,000K	500		26,450.	1,000K	2,500	2,200.	5,000K	5,865.	5,000K	self-ins.
	ASTERIAS	300K	500		3,000.	175K	1,750	6,388.	700K*/425K**	4,430.	nil	1st 1,000K
	ATLANTIS II	1,500K	1,250	2,250	22,500.	4,000K	30,000	27,500.	5,000K	4,037.	5,000K	Excess
	KNORR	1,500K	1,250	1,250	24,450.	1,500K	7,500	5,475.	5,500K	5,543.	5,500K	incl.
	OCEANUS	1,500K	1,250		21,750.	1,500K	2,500	5,475.	5,000K	3,055.	5,000K	
Univ. of Del.	CAPE HENLOPEN	5,000K	5,000	5,000	12,077.	5,000K		incl.	52,000K	18,785.§	500K/5,000K++	925.
Univ. of Mich.	LAURENTIAN	870K	1,500	1,500	6,357.+	11,130K		incl.	11,130K	10,472.	5,000K	662.
Univ. of Texas	FRED MOORE	1,000K	2,500	WC	7,450.	1,000K	1,000	incl.	10,000K	5,250.	5,000K	498.
Moss Landing	POINT SUR	5,000K	5,000	5,000	75,430.	3,100K	25K	7,750.	5,000K	incl.	5,000K	incl.
Skidaway	BLUE FIN	State			500.			State	Self Insured			State
Bermuda Biol.	WEATHERBIRD	1,000K	1,000	1,000	9,000.	1,000K	1,000K	incl.	4,000K	6,600.		

* Excess P & I
** Excess Collision
\+ Port risk only does not include per diem; Iselin $19.50/day, Calanus $13.70/day
++ CERCLA/Clean water Act
§ Blanket Institutional or State policy, assessed cost - not actuarial premium
§§ State workmen's comp. for first $250,000

TABLE IV — LOSSES — July 7, 1975

Member	Ships	Hull-Machinery	Scientic Equipment	P and I	W.C	Other	Term
Duke University	Eastward	nil	$3,500	(coll.) $1,500	$150	nil	11 years
Johns Hopkins	R. Warfield	nil	nil	nil	nil	nil	25 "
	Maury	nil	nil	nil	nil	nil	25 "
Lamont-Doherty Geo. Obser.	Conrad						
	Vema						
Oregon State University	Yaquina	$22,000	$25,000				
	Cayuse	nil					
	Wecoma	(under construction)					
Scripps Institution	Agassiz	nil			78,000 Crew 55,000 Others (includes Supplemental Benefits)		10 years
	Melville	(see Note 1)					
	Scripps	nil					
	T. Washington	nil					
	Alpha Helix	Ice damage?					
	Dolphin						
Texas A & M	Gyre	nil	nil	nil			10 years
		nil	nil	nil			
University of Alaska	Acona						
University of Hawaii	Kana Keoki	(Est.) $65,000 (See Note 2)		nil			4 years
	Moano Wave	nil		nil			7 "
University of Miami	Gillis	$75,000 (bow thruster)	$60-70,000	$20,000			10 years
	Iselin	nil					
	Calanus	nil					
	Orca III						
University of Rhode Island	Trident	$27,000		nil			5 years
Univ. of South. Calif.	Velero IV	nil	(19)$25,380				
Univ. of Washington	T.G. Thompson	nil			30,121		
	Hoh	nil					
	Onar	nil					
Woods Hole Ocean. Instit.	Atlantis II	$40,000 (M&M exhibit shows none)					
	Chain						
	Gosnold			$154,991			5 years
	Oceanus	(under construction)					
		$229,000	±$119,000	$176,491	$163,261		

(Total known losses - $687,752) (variable periods)

Note 1 - Cycloidal gear, shaft and other failures similar to those on the Knorr at WHOI repaired at Navy or contractor's expense.

Note 2 - Flooding of the Kana Keoki (August '74) was absorbed by the State of Hawaii - contractor possibly at fault.

TABLE IV(1987) LOSSES (1987)* July 22, 1988

Member	Ships	Hull-Machinery	Scientific Equipment	P and I	W.C.	Other	Term
Duke Univ.	CAPE HATTERAS	--	6,000	--	--	--	10 yrs.
Johns Hopkins	R. WARFIELD	59,694	nil	nil	nil	nil	20 yrs.
Lamont-Doherty	CONRAD			40,380			6 yrs.
Oregon State	WECOMA	nil	5,000	nil		nil	7 yrs.
Scripps Inst.	MELVILLE	nil	nil	190,000	nil	nil	10 yrs.
	T. WASHINGTON	Note 1			Note 2	Note 3	
	NEW HORIZON						
	R.G. SPROUL						
	FLIP						
	ORB						
Texas A & M	GYRE		Cancelled		5,234		5 yrs.
Univ. of Alaska	ALPHA HELIX	146,441	47,636	110,000			10 yrs.
Univ. of Hawaii	MOANA WAVE	nil	nil	nil	nil		10 yrs.
	KILA	nil	nil	nil	nil		
Univ. of Miami	ISELIN	nil	nil	1,699	nil	2,126	5 yr.
	CALANUS	nil	nil				5 yr.
Univ. of R.I.	ENDEAVOR	nil	nil	44,000			11 yrs.
Univ. of S. Cal.	OSPREY	nil	nil	nil	89,626	nil	10 yrs.
Univ. of Wash.	T.G. THOMPSON		137,808	157,133			10 yrs.
	BARNES						
Woods Hole	ALVIN		135,000	396,108			
Ocean. Inst.	ASTERIAS	90,000					
	ATLANTIS II						2-8 yrs.
	KNORR						
	OCEANUS						
Univ. of Del.	CAPE HENLOPEN	44,000	46,000				10 yrs.
Univ. of Mich.	LAURENTIAN		1,040				10 yrs.
Univ. of Texas	FRED H.MOORE	66,000	nil	14,607	N/A	nil	7 yrs.
Moss Landing	POINT SUR	nil	nil	Pending	4,888		5 yrs.
Skidaway Inst.	BLUE FIN	nil	1,600	nil			10 yrs.
Bermuda Bio.	WEATHERBIRD	12,000					3 yrs.

Note 1 Mechanical casualties repaired as operating and/or Navy expense

Note 2 Personnel employed by U of C included in University Worker's Comp. Program

Note 3 Scientific Party/Observers employed by other Institutions/Entities covered by U of C General Liability Program

* Insurance claims collected upon only

TABLE V

TOTAL MARINE RELATED PREMIUMS

July 7, 1975

MEMBER	ANNUAL PREMIUMS					TOTALS	
	Hull	P and I	Collision	Excess Mar. Liab.	Pollution	(Reported)	(Proposals)
Duke Univ.	$19,040	$11,788	Incl.	$5,720	$220	$36,768	$ 39,764
Johns Hopkins	21,027	3,250	Incl.	1,975		26,252	25,068
Lamont Doherty	12,300	5,700		36,725	785	55,510	66.000
Oregon State U.	24,884	7,331	Incl.	4,500		36,715	37,649
Scripps Instit.	12,565	6,765	11,775	28,269		59,374	64,000
Texas A & M	nil	15,000	Incl.	?		15,000	17,200
U. of Alaska	nil	?				?	5,500
U. of Hawaii	nil	26,400	Incl.	5,350		31,750	43,430
U. of Miami	96,202	(in CGL)	Incl.			?	128,205
U. of R. I.	2,250	15,500	Incl.	?		17,750	18,849
U. of So. Cal.	7,500	2,925	Incl.	nil	200	10,625	16,500
U. of Wash.	nil	25,452 W.C.	?	?		?	31,150
W.H.O.I.	55,650	45,098	5,000			105,748	135,100
Totals	$257,418	165,209	16,775	82,539	1,205	517,146 (82%)	628,415

Table V(1987) — Total Marine Related Premiums for 1987 — July 22, 1988

Member	Annual Premiums Hull	P & I	Collision	Excess Mar. Liab.	Pollution	Totals Reported	Proposed
Duke Univ.	$ nil	$ 26,300.	$ incl.	$ 37,000.	$ 1,241.	$ 64,541.	$ 75,000.
Johns Hopkins	15,658.	9,660.	incl.	incl.	200.	25,518.	30,748.
Lamont-Doherty	nil	76,844.	incl.	incl.	1,391.	78,235.	75,000.
Oregon St. Univ.	26,784.Eq.§	13,259.	incl.	10,534.	incl.	50,577.	66,000.
Scripps Inst.	80,270.(H&E)	89,121.	incl.	incl.	incl.	169,391.	
Texas A & M	nil	43,000.	incl.	nil	incl.	43,000.	40,000.
Univ.of Alaska	21,250.§	28,750.§	incl.	incl.	incl.	50,000.	55,000.
Univ.of Hawaii	nil	49,780.	incl.	81,705.	incl.	131,485.	90,000.
Univ.of Miami	11,625.+	12,350.+	incl.	40,000.§	1,205.	65,180.	80,844.
Univ.of R.I.	nil	36,500.	incl.	9,727.	incl.	46,227.	50,000.
Univ.of S. Cal.	16,875.	8,000.	incl.	27,500.	incl.	52,375.	
Univ.of Wash.	nil	42,175.	incl.	50,610.	2,175.	94,960.	109,000.
Woods Hole	33,888.	98,150.	47,038.	22,930.	incl.	202,006.	
Univ.of Del.	11,356.§	12,077.	incl.	18,785.§	925.	43,143.	25,632.
Univ.of Mich.	8,283.+	6,357.+	incl.	10,472.	662.	25,774.	
Univ.of Texas	8,750.	7,450.	incl.	5,250.	498.	21,948.	
Moss Landing	nil	75,430.	7,750.	incl.	incl.	83,180.	83,180.
Skidaway	12,000.§	500§	incl.	incl.	incl.	12,000.	12,500.
Bermuda Biol.(19)	9,675.	9,000.	incl.	6,600.	N/A	25,275.	
TOTALS	256,414.	644,703.	54,788.	321,113.	8,297.	1,285,315.	

+ Port risk only does not include additional per diem

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

Table I. Insurers and Brokers

Both the 1975 and 1987 Table I illustrates the broad spectrum of brokers and insurance companies used by the vessel operators. In 1975 Risk Engineering Services found the fleet was clearly not taking advantage of its buying power.[36] That conclusion is still valid today. Each institution manages its insurance program independently, using a broker to place the typically expensive single vessel coverage unless the institution operates multiple ships. In 1975, the fleet used 15 different brokers, ten different hull insurers, and 12 different P & I insurers. In 1987, there were 12 different brokers. Of these, three national brokerage companies insured 50% of the fleet. Although the Insurance Company of North America (INA) is currently the predominant marine insurer for the academic fleet, the trend is clearly toward placing risk through multiple insurers on a marine insurance slip. The usage of multiple insurers can be seen in Table I (1987) in the placement of the University of Texas and University of Alaska insurance. The 1975 study showed a lack of usage of leading marine insurers and a heavy usage of non-marine insurance companies. That situation is not as prevalent in the current insuring of the fleet.

Table II. Hull Insurance

The 1975 and 1987 tables present the hull statistics, including hull insurance, for those vessels surveyed for the respective studies. There are several observations that can be made from these tables. Of the 31 vessels listed in the 1987 table, 17 (55%) are owned by the Navy and ONR and, therefore, do not carry hull insurance. The remaining 45% are owned either by state or private institutions. All privately or

state owned vessels, except Hawaii, carried hull insurance in 1987. Although prohibited by the charter agreement, one operator of a federally owned vessel also carried hull insurance. In 1975 only one federally owned vessel carried hull insurance; however, four private or state owned vessels did not carry any hull insurance.

The 1987 Table II demonstrates the diversity of insurance methods many of the operating institutions are using to protect their marine risks. Although Oregon and Scripps do not insure federally owned hulls, they do insure the hull-related equipment they have placed aboard these vessels. Miami and Michigan use port risk only insurance with an additional per diem for those days the vessel is underway. Scripps insures the Orb and Flip only when the vessels are under tow to and from the research site. Alaska's and Delaware's vessels are included in their respective state's fleet policy which provides greater coverage at less cost. Apparently, some of the institutions are becoming more sophisticated in the placement of marine insurance.

In Table 11 the hull data is broken down by vessel ownership within the four major categories, NSF, ONR, state, and private. This table shows the absence of hull insurance for federally owned vessels. Insurance for equipment only was excluded, due to the specialized nature of the equipment and the artificial effect on the hull rates. Those institutions using specialized hull insurance are footnoted.

Hull rates have decreased since 1975 by 40%. If insurance premiums for equipment only is excluded from the 1975 and 1987 tables, the rates per one hundred dollars of insured value has decreased from an average of 2.49% in 1975 to 1.50% in 1987 (see Figure 3). A comparison of hull

TABLE 11 — 1987 UNOLS Hull Data — July 22, 1988

Member	1987 Ship	Lgth. Ft.	Displ. Tonnage	Crew & Scientist	Repl. $Value	Insured* $ Value	1987 Rate
National Science Foundation Owned Vessels:							
Duke Univ.	C. HATTERAS	135	539	22	5,000K	nil	nil
Oregon St.	WECOMA	177	1,103	32	11,000K	nil	nil
Univ. Alaska	ALPHA HELIX	133	512	24	5,600K	5,000K	0.425%§
Univ. R.I.	ENDEAVOR	177	972	28	10,000K	nil	nil
Univ. Wash.	BARNES	65	87	8	100K	nil	nil
Woods Hole	OCEANUS	177	962	24	12,000K	nil	nil
Moss Land.	POINT SUR	135	539	21	5,000K	nil	nil
U.S. Navy owned Vessels:							
Lamont-Doherty	CONRAD	208	1,345	44	33,000K	nil	nil
Scripps	MELVILLE	245	2,075	52	35,000K	nil	nil
Scripps	T. WASHINGTON	209	1,362	44	35,000K	nil	nil
Scripps	FLIP	355	1,500	15	1,412K	982K**	**
Scripps	ORB	69	325	15	366K	365K**	**
Texas A&M	GYRE	189	946	30	4,000K	nil	nil
Univ. Hawaii	MOANA WAVE	213	1,850	31	20,000K	nil	nil
Univ. Wash.	T.G. THOMPSON	209	1,449	45	8,000K	nil	nil
Woods Hole	KNORR	245	2,075	49	25,000K	nil	nil
Woods Hole	ALVIN	25	18	—	10,000K	nil	nil
State Owned Vessels:							
Scripps	NEW HORIZON	170	1,080	29	3,879K	3,360K	1.20%
Scripps	R.G. SPROUL	125	520	17	1,082K	1,047K	1.47%
Univ. Hawaii	KILA	103	350	16	750K	nil	nil
Univ. Mich.	LAURENTIAN	80	180	14	2,000K	870K	0.952% +
Univ. Texas	FRED H. MOORE	167	1,202	30	1,000K	1,000K	0.875%
Skidaway	BLUE FIN	72	90	11	500K	400K	3.0%§
Private Owned Vessels:							
Johns Hopkins	R. WARFIELD	106	162	17	1,400K	1,000K	1.565%
Univ. Miami	ISELIN	170	830	36	5,500K	2,500K	1.75% +
Univ. Miami	CALANUS	68	116	8	350K	200K	1.75% +
Univ. S. Cal.	OSPREY	220	1,100	36	10,000K	1,500K	1.12%
Woods Hole	ASTERIAS	46	20	5	600K	175K	3.65%
Woods Hole	ATLANTIS II	210	2,300	56	25,000K	4,000K	0.687%
Univ. Del.	CAPE HENLOPEN	120	165	19	3,000K	3,975K	0.35%§
Bermuda Bio.	WEATHERBIRD	65	100	6	1,200K	450K	2.15%

* Hull insurance for equipment only is excluded

** Insured only when under tow, Flip premium $15.50/hr, $150K deductible; Orb $7.50/hr, $50K deductible

+ plus per diem - Laurentian $13.75/day, Iselin $31.25/day, Calanus $23.50/day

§ Blanket Institutional or State policy, assessed cost - not acturial premium

rates for individual institutions from 1975 to 1987 is presented in Table 12. A major decrease in rates is seen for several vessels that have been in the fleet since 1975, note Atlantis II, Warfield, and Iselin. Although hull rates have improved and a rate of less than 2.0% is considered a good rate, these numbers are somewhat misleading. The hull rates do not take into account the varying deductible, actual, or insured value for the vessels. The selection of deductible in 1975 ranged from zero to 20.0% of the insured value and from zero to 2.0% in 1987. Clearly the fleet is taking less advantage of deductibles for discounting hull rates than in 1975. This is an area the risk managers should be using to negotiate lower rates.

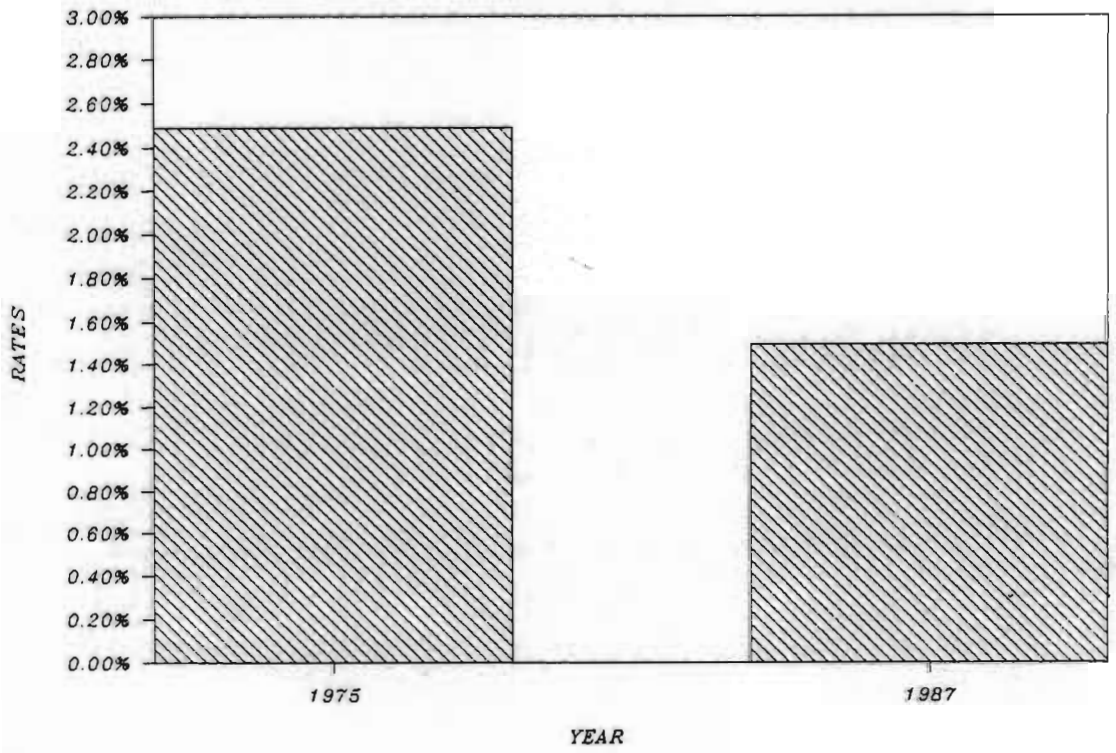

Figure 3. Comparison of Hull Rates - 1975 vs. 1987

TABLE 12

COMPARISON OF HULL RATES* - 1975 vs. 1987

July 22, 1988

Member	1975 Ships	Lgth. Ft.	Displ. Tonnage	Crew & Science	Insured $ Value	1975 % Rate	1987 Ships	Lgth. Ft.	Displ. Tonnage	Crew & Science	Insured $ Value	1987 % Rate
Duke University	EASTWARD	117	474	30	1,100K	1.73%	CAPE HATTERAS	135	539	22	nil	nil
Johns Hopkins	R. WARFIELD	106	162	17	1,250K	2.375%	R. WARFIELD	106	162	17	1,000K	1.565%
	MAURY	65	40	7	40K	5.0%						
Lamont-Doherty	CONRAD	208	1,345	41	nil	nil	CONRAD	208	1,345	44	nil	nil
	VEMA	197	1,000	35	150K	8.2%						
Oregon State	WECOMA	177	962	29	nil	nil	WECOMA	177	1,103	32	nil	nil
Univ.	YAQUINA	180	865	35	1,000K	1.0%						
	CAYUSE	80	173	15	1,000K	1.0%						
Scripps Inst.	MELVILLE	245	2,075	53	nil	nil	MELVILLE	245	2.075	52	nil	nil
of Ocean.	WASHINGTON	209	1,330	44	nil	nil	WASHINGTON	209	1,362	44	nil	nil
	AGASSIZ	180	896	29	nil	nil	NEW HORIZON	170	1,080	29	3,360K	1.20%
	SCRIPPS	95	234	13	500K	1.95%	SPROUL	125	520	17	1,047K	1.47%
	ALPHA HELIX	133	512	24	nil	nil	FLIP	355	1,500	15	nil	**
	DOLPHIN	96	150	12	nil	nil	ORB	69	325	15	nil	**
Skidaway	KIT JONES	65	133	6	nil	nil	BLUE FIN	72	90	11	400K	3.0%§
Texas A&M	GYRE	165	950	27	nil	nil	GYRE	189	946	30	nil	nil
Univ. of Alaska	ACONA	85	197	14	nil	nil	ALPHA HELIX	133	512	24	5,000K	0.425%§
Univ. of Hawaii	MOANA WAVE	174	950	24	nil	nil	MOANA WAVE	213	1,850	31	nil	nil
	KANA KEOKI	156	900	28	nil	nil	KILA	103	350	16	nil	nil
Univ. of Miami	ISELIN	170	830	25	2,000K	2.957%	ISELIN	170	830	36	2,500K	1.75%+
	CALANUS	63	111	8	1,450K	1.70%	CALANUS	68	116	8	200K	1.75%+
	GILLIS	208	1,428	39	150K	2.50%						
	ORCA III	46	12	7	50K	1.55%						
Univ. of R.I.	TRIDENT	180	1,021	35	100K	2.25%	ENDEAVOR	177	972	28	nil	nil
Univ. of S. Cal.	VELERO	110	600	23	600K	1.25%	OSPREY	220	1,100	36	1,500K	1.12%
Univ. of Wash.	THOMPSON	209	1,362	41	nil	nil	THOMPSON	209	1,449	45	nil	nil
	HOH	65	95	8	nil	nil	BARNES	65	87	8	nil	nil
	ONAR	65	81	8	nil	nil						
Woods Hole	ATLANTIS II	210	2,300	56	4,000K	1.335%	ATLANTIS II	210	2,300	56	4,000K	0.687%
Ocean. Inst.	KNORR	244	1,915	49	nil	nil	KNORR	245	2,075	49	nil	nil
	CHAIN	213	2,100	58	nil	nil	OCEANUS	177	962	24	nil	nil
							ALVIN	25	18	--	nil	nil
							ASTERIAS	46	20	5	175K	3.65%
Univ. of Del.							CAPE HENLOPEN	20	165	19	3,975K	0.55%§
Univ. of Mich.							LAURENTIAN	80	180	14	870K	0.952%+
Univ. of Texas							FRED H.MOORE	167	1,202	28	1,000K	0.875%
Moss Landing							POINT SUR	135	539	21	nil	nil
Bermuda Biol.							WEATHERBIRD	65	100	6	450K	2.15%
(19 Institute) TOTAL	(31 Ships)	4516	25,203	840	13,390	34.80	(31 Ships)	4588	25,874	782	25,477	20,944
AVG:(S=Ships)		146 (31S)	813(31S)	27(31S)	(14S)	=2.49%(14S)		148	835(31S)	26(30S)	(14S)	=1.50%(14S)

* Hull insurance for equipment only is excluded

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

\+ Port risk only does not include per diem

** Insured only when under tow - Flip premium $15.50/hr, $250K deductible; Orb $7.50/hr, $50K deductible

An additional observation from Table II (1987) is the difference in replacement value of vessels within the same class. This is seen within the Oceanus or AGOR 3 class. Within the Oceanus class replacement values for the three vessels are ten, eleven, and twelve million and within the AGOR 3 class eight, thirty-three, and thirty-five million. The replacement value is currently being set by the operating institutions and is based on their best estimate for area and situation. The replacement value has not been set by a marine surveyor. Both of these classes are owned by the federal government and are uninsured but the same trend exists within the vessels owned by state or private institutions for vessels of approximately the same length. A professional marine survey is normally required by an insurance company and would be especially helpful for state and private institutions to establish the potential loss should the vessel be lost or sustain severe damage.

Within the group of 14 ships carrying hull insurance, hull rates vary from 0.35% to 3.65% (see Table 13). The higher rates are associated with the smaller vessels, Asterias, Weatherbird, and Blue Fin, all of which are under 75 feet in length. The lowest rates have been obtained by state institutions that are in a state pool of insurance, as is the case for Alpha Helix and Cape Henlopen. For those vessels securing hull insurance the variation in rates is illustrated in Figure 4.

Table III. Liability to Others

This set of tables from 1975 and 1987 outlines the principle sources of marine and marine-related liability. Liability insurance provides

TABLE 13

1987 Hull Rates*

(For vessels carrying hull insurance)

July 22, 1988

Member	Ship	Length (ft.)	Crew & Scientist	Insured $ Value	Hull Rates	Annual $ Premium
Johns Hopkins Univ.	R. WARFIELD	106	17	1,000K	1.565%	15,658.
Scripps	NEW HORIZON	170	29	3,360K H&E	1.20%	55,389.
Scripps	R.G. SPROUL	125	17	1,047K H&E	1.47%	20,327
Univ. of Alaska	ALPHA HELIX	133	25	5,000K	0.425%	21,250.§
Univ. of Miami	ISELIN	170	36	2,500K	1.75%	16,625.+
Univ. of Miami	CALANUS	68	8	200K	1.75%	1,000.+
Univ. of S. Cal.	OSPREY	220	36	1,500K	1.12%	16,875.
Woods Hole	ASTERIAS	46	5	175K	3.65%	6,388.
Woods Hole	ATLANTIS II	210	56	4,000K	0.687%	27,500.
Univ. of Del.	CAPE HENLOPEN	120	19	3,975K	0.35%	11,356.§
Univ. of Mich.	LAURENTIAN	80	14	870K	0.952%	8,283.+
Univ. of Texas	FRED H. MOORE	167	28	1,000K	0.875%	8,750.
Skidaway Inst.	BLUE FIN	72	11	400K	3.0%	12,000.§
Bermuda Bio.	WEATHERBIRD	65	6	450K	2.15%	9,675.
					20.944	231,076.
		AVG. (14 Ships)			1.50%	16,505.

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

+ Port risk only does not include per diem

* Vessels insuring equipment only are excluded

H & E = Hull and equipment

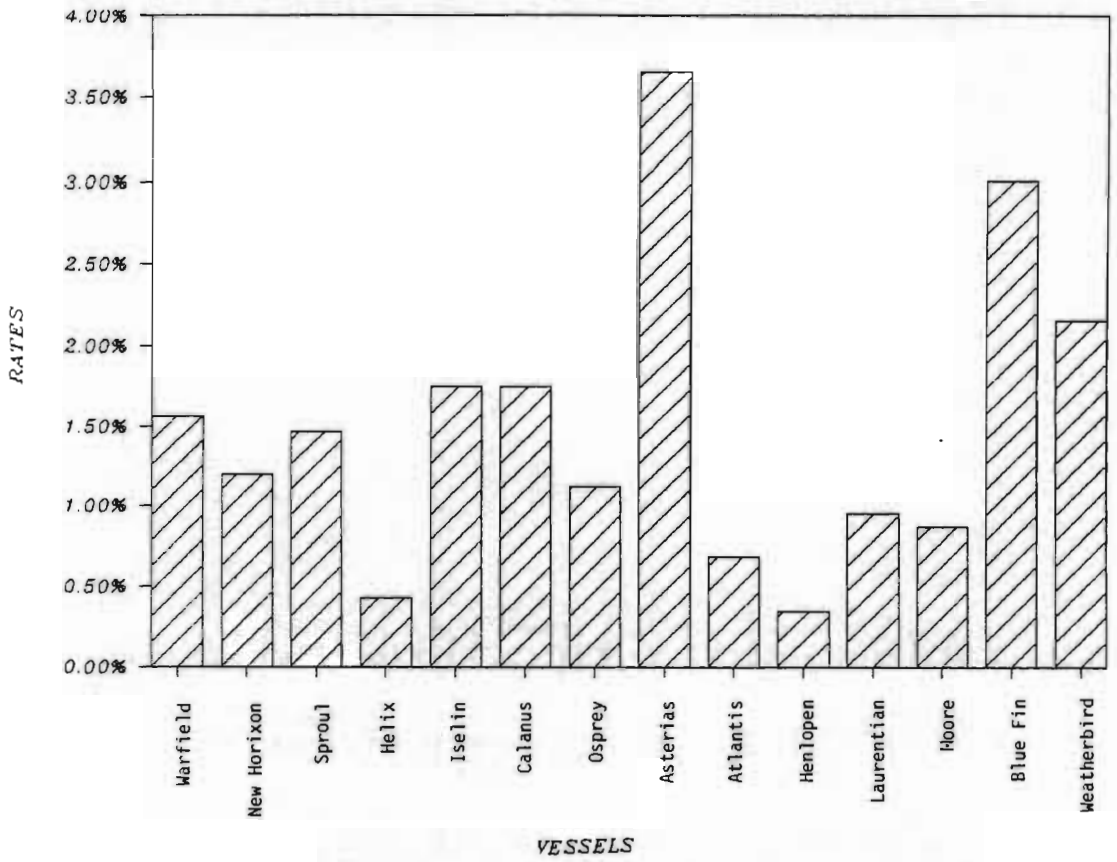

Figure 4. 1987 Hull Rates - Vessels Carrying Hull Insurance

coverage for all claims the insured is obligated to pay for bodily injury or property damage. The coverage is usually built in layers with the primary coverage being the first layer. The primary P & I company pays up to the limits of the policy, above the deductible. Excess coverage is normally placed with another company and covers the layer in excess of the primary and up to the limits of the excess policy. The primary limits for protection and indemnity ranged from $50K to $2,800K in 1975 and from $300K to $25,000K in 1987. Excess liability limits varied from $1,500K to $25,000K in 1975 and from $250K to unlimited

liability in 1987. The increased limits for liability in 1987 is indicative of the increased awards in death and personal injury settlements. As in 1975 a careful examination of primary limits matched with appropriate excess limits could reduce premium costs. Currently only one institution is carrying unlimited excess marine liability. Lamont-Doherty is currently a member of a P & I club; as such, they have unlimited liability coverage. Unlimited liability coverage at improved rates is a major advantage of belonging to a P & I club.

The range of deductibles for crew has increased since 1975--in 1975 the range was zero to $5,000, in 1987 the range was zero to $10,000. The limit per accident is usually the same as the limit per person, as it was in 1975. Just as the liability limits and deductibles range widely for the fleet, so do they range within classes of vessels. Within the Oceanus class the excess liability ranges from Endeavor of $3,300K, Wecoma $4,700K, to Oceanus of $5,000K. Within the AGOR 3 class, the differences are even greater with Thompson at an excess of $19,500K, Washington $75,000K and Conrad unlimited liability. The ranges of deductibles within these classes also vary greatly. Since the number of personnel per vessel within a class are quite similar, the amount of deductible and the limits of liability should be examined more closely to obtain the best available rates per person. On computing the cost of P & I coverage per person, the average cost for the fleet has risen from $398 per person in 1975 to $1,436 per person in 1987. The 1975 cost per person is computed only for those vessels which P & I premiums were reported. The difference in cost of P & I per person from 1975 to 1987 represents an increase in excess of 300%. A comparison of costs per

person per vessel is shown for 1975 and 1987 in Table 14. Figure 5 illustrates the rise in cost per person for those vessels that data was available for in 1975 and 1987. From this figure it is clear that the Washington is in an enviable position, while Moana Wave rates need to be examined more closely for improvement.

As was seen with hull insurance, the institutional risk managers are demonstrating a variety of means by which to obtain better rates for P & I insurance. Many state and private institutions are taking advantage of university blanket policies to provide P & I coverage at greatly reduced costs. Also institutions such as Miami and Michigan insure for

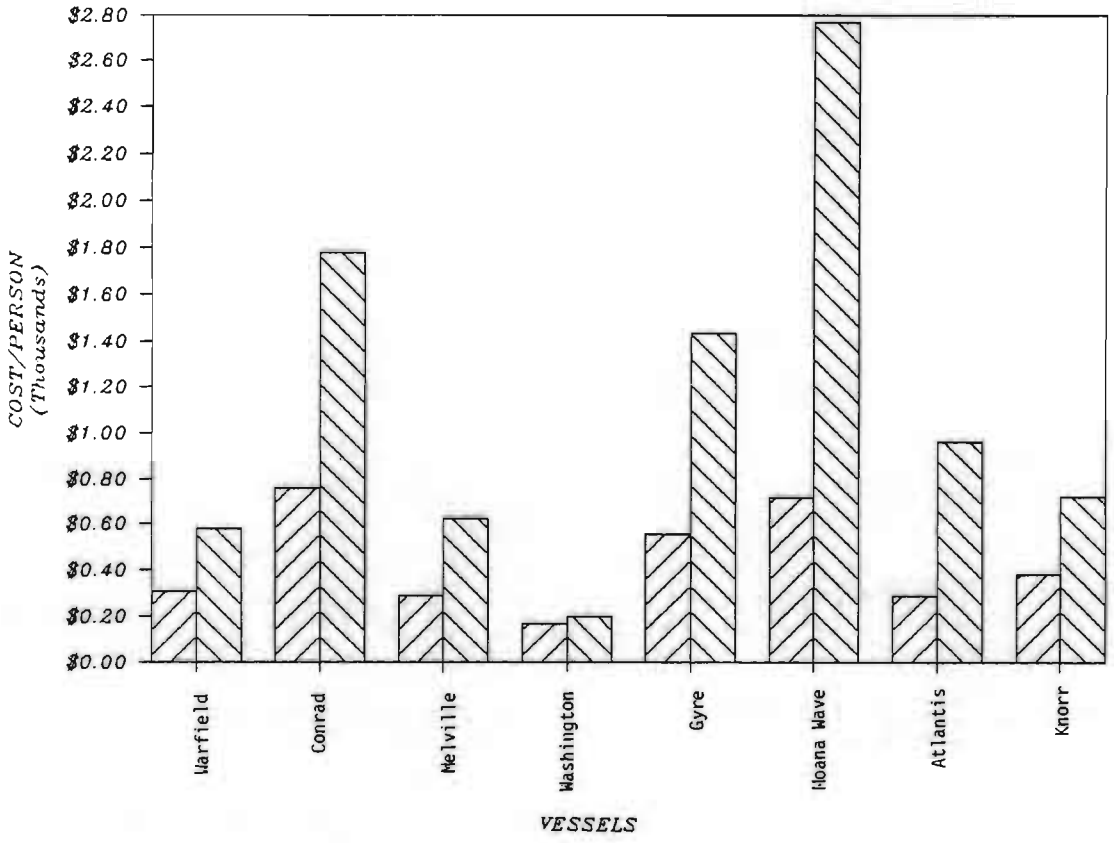

Figure 5. Vessel Comparison of P & I - 1975 vs. 1987

TABLE 14 COMPARISON OF P & I RATES - 1975 vs. 1987 July 22, 1988

Member	1975 Ships	Lgth. Ft.	Displ. Tonnage	Crew & Science	Total Premium	Cost/ Person	1987 Ships	Lgth. Ft.	Displ. Tonnage	Crew & Science	Total Premium	Cost/ Person
Duke University	EASTWARD	117	474	30	17,728	591	CAPE HATTERAS	135	539	22	64,541	2,934
Johns Hopkins	R. WARFIELD	106	162	17	5,225	307	R. WARFIELD	106	162	17	9,860	580
	MAURY	65	40	7	----	---						
Lamont-Doherty	CONRAD	208	1,345	41	31,011	756	CONRAD	208	1,345	44	78,235	1,778
	VEMA	197	1,000	35	12,199	348						
Oregon State	WECOMA	177	962	29	----	---	WECOMA	177	1,103	32	23,793	744
Univ.	YAQUINA	180	865	35	9,045	258						
	CAYUSE	80	173	15	2,786	186						
Scripps Inst.	MELVILLE	245	2,075	53	15,251	288	MELVILLE	245	2.075	52	32,522	625
of Ocean.	WASHINGTON	209	1,330	44	7,478	170	WASHINGTON	209	1,362	44	8,735	198
	AGASSIZ	180	896	29	8,982	310	NEW HORIZON	170	1,080	29	20,101	693
	SCRIPPS	95	234	13	4,357	335	SPROUL	125	520	17	18,613	1,095
	ALPHA HELIX	133	512	24	10,741	447	FLIP	355	1,500	15	5,227	348
	DOLPHIN	96	150	12	----	---	ORB	69	325	15	3,923	262
Skidaway	KIT JONES	65	133	6	----	---	BLUE FIN	72	90	11	500§	45
Texas A&M	GYRE	165	950	27	15,000	556	GYRE	189	946	30	43,000	1,433
Univ. of Alaska	ACONA	85	197	14	----	---	ALPHA HELIX	133	512	24	28,750§	1,198
Univ. of Hawaii	MOANA WAVE	174	950	24	17,300	721	MOANA WAVE	213	1,850	31	85,849	2,769
	KANA KEOKI	156	900	28	14,450	516	KILA	103	350	16	45,636	2,852
Univ. of Miami	ISELIN	170	830	25	----	---	ISELIN	170	830	36	29,540+,§	820
	CALANUS	63	111	8	----	---	CALANUS	68	116	8	24,015+,§	3,002
	GILLIS	208	1,428	39	----	---						
	ORCA III	46	12	7	----	---						
Univ. of R.I.	TRIDENT	180	1,021	35	15,500	443	ENDEAVOR	177	972	28	46,227	1,651
Univ. of S. Cal.	VELERO	110	600	23	----	---	OSPREY	220	1,100	36	35,500	986
Univ. of Wash.	THOMPSON	209	1,362	41	----	---	THOMPSON	209	1,449	45	83,997	1,867
	HOH	65	95	8	----	---	BARNES	65	87	8	10,963	1,370
	ONAR	65	81	8	----	---						
Woods Hole	ATLANTIS II	210	2,300	56	16,224	290	ATLANTIS II	210	2,300	56	54,037	965
Ocean. Inst.	KNORR	244	1,915	49	18,724	382	KNORR	245	2,075	49	35,468	724
	CHAIN	213	2,100	58	15,150	261	OCEANUS	177	962	24	30,278	1,262
							ALVIN	25	18	--	34,515	----
							ASTERIAS	46	20	5	13,818	2,764
Univ. of Del.							CAPE HENLOPEN	20	165	19	35,079§	1,846
Univ. of Mich.							LAURENTIAN	80	180	14	17,491+	1,249
Univ. of Texas							FRED H.MOORE	167	1,202	28	13,198	471
Moss Landing							POINT SUR	135	539	21	83,180	3,961
Bermuda Biol.							WEATHERBIRD	65	100	6	15,600	2,600
(19 Institute) TOTAL	(31 Ships)	4516	25,203	840	237,151	7,165	(31 Ships)	4588	25,874	782	1,032,191	43,092
AVG:(S=Ships)		146 (31S)	813(31S)	27(31S)		$398/person (18S)		148	835(31S)	26(30S)		$1,436/person (30S)

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

\+ Port risk only does not include per diem

P & I on port risk only basis, which allows an overall lower rate. A comparison of P & I cost per person per vessel is illustrated in Figure 6. The figure demonstrates the effect on rates from major losses, group buying power, and size of vessel. Group buying power can be seen in the consistently lower rates for the vessels at WHOI and SIO. The high rates for Asterias and Calanus are due to the small size of the vessels. The Blue Fin is an example of very low rates obtained under a state blanket policy.

The characteristics of collision liability in 1987 are similar to 1975; premiums are generally included within the cost of the primary

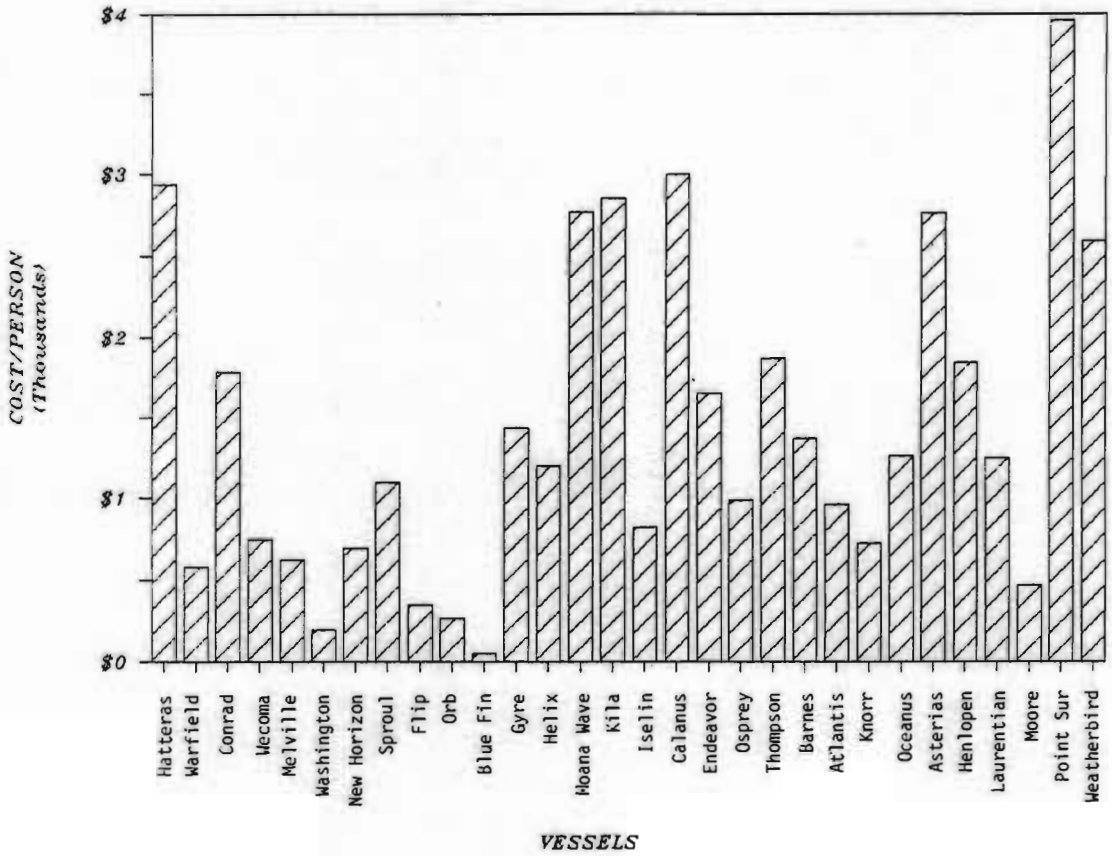

Figure 6. 1987 Fleet P & I

liability, and deductibles are higher. The deductibles range up to $30,000. Again, this same diversity of deductibles and limits occurs amongst sister ships. Excess marine insurance is purchased by all operating institutions except Texas A&M. The cost varies widely and there are pronounced differences within classes. Using the Oceanus class as an example, the range is $3,300K coverage at a cost of $9,727 ($2,948/1,000K) for Endeavor, Oceanus carried $5,000K in coverage at a cost of $3,000 ($600/1,000K) and Wecoma $4,700 coverage at a cost $10,534 ($2,241/1,000K). In cases where institutions provide excess blanket coverage, such as Delaware, Miami, and Alaska, upper limits of coverage is very high at low premium rates. Vessels at these institutions are assessed at a cost per million dollars of coverage at approximately half the cost of premiums of the Oceanus class. These large blanket policies demonstrate the buying power when economies of scale are possible and used.

Pollution liability coverage was purchased by all except one institution in 1987. This is an increase in fleet protection over 1975. Bermuda Biological Station is currently the only institution not purchasing pollution liability. It is interesting to note that Woods Hole Oceanographic Institute (WHOI) is self-insured for the first million dollars of pollution liability.

Table IV. Losses

These tables list the fleet losses in the general categories of hull and machinery, scientific equipment, P & I, and workmen's compensation. They reflect only the losses actually paid for by the insurance companies. Losses not insured for or below the deductible are not

included. Therefore, a true picture of the fleet losses is not represented by these tables. This is well illustrated in the hull and machinery losses--the fleet has had at least four shipboard fires but only two are represented in the loss figures. Fires on board the Warfield and Asterias are reported but not the Iselin and Culver (owned by Bermuda and resulted in replacement). As in 1975, the information on losses was difficult to obtain. The problems encountered in obtaining accurate loss statistics was discussed in Chapter 4. Although the loss records are incomplete, a comparison of the tables shows the trends within the various categories. The loss records are compared in Table 15. The 1987 table includes losses only for UNOLS vessels. Losses such as the Hola Hola, Gulf Stream, and those under current litigation are not included.

As discussed in the 1975 report,[37] to accurately assess the overall fleet record, losses and claims must be compared with premium costs. This requires loss histories of at least five years and preferably for ten years. In the 1987 study the only reported loss record less than five years was the Weatherbird and, in 1975, the Kana Keoki reported losses for four years. The average of the loss period for the 1975 report was eleven years and in 1987, eight years. The trend in the loss claims for these periods are shown in Figure 7. During the period since the 1975 report the losses for hull and machinery have nearly doubled, scientific losses have tripled, and P & I losses have quadrupled. Though workmen's compensation losses are reported in the 1987 report, they are not illustrated in Figure 7 due to the lack of data. Workmen's compensation records were impossible to obtain from many institutions.

TABLE 15 COMPARISON OF LOSSES - 1975 vs. 1987 July 22, 1988

Member	1975 Ships	Hull/ Machinery	Scientific Equipment	P&I	Workmens Comp.	1987 Ships	Hull/ Machinery	Scientific Equipment	P&I	Workmens Comp
Duke University	EASTWARD	nil	3,500	1,500	150	CAPE HATTERAS	nil	6,000	nil	state
Johns Hopkins	R. WARFIELD	nil	nil	nil		R. WARFIELD	59,694	nil	nil	
	MAURY	nil	nil	nil						
Lamont-Doherty	CONRAD					CONRAD			40,380	
	VEMA									
Oregon State	WECOMA	nil			state	WECOMA	nil	5,000	nil	state
Univ.	YAQUINA	22,000	25,000							
	CAYUSE	nil								
Scripps Inst.	MELVILLE	nil				MELVILLE				
of Ocean.	WASHINGTON	nil				WASHINGTON	nil	nil	190,000	state
	AGASSIZ	nil				NEW HORIZON				
	SCRIPPS	nil			133,000	SPROUL				
	ALPHA HELIX	ice				FLIP				
	DOLPHIN	nil				ORB				
Skidaway	KIT JONES	nil	nil	nil	state	BLUE FIN	nil	1,600		
Texas A&M	GYRE	nil	nil	nil	state	GYRE		nil		5,234
Univ. of Alaska	ACONA	nil			state	ALPHA HELIX	146,441	47,636	110,000	
Univ. of Hawaii	MOANA WAVE			nil	state	MOANA WAVE	nil	nil	nil	
	KANA KEOKI	65,000		nil	state	KILA	nil	nil	nil	
Univ. of Miami	ISELIN	nil				ISELIN	nil	nil	1,699	
	CALANUS					CALANUS	nil	nil		
	GILLIS	75,000	70,000	20,000						
	ORCA III	nil								
Univ. of RI	TRIDENT	27,000			state	ENDEAVOR	nil	nil	44,000	
Univ. of S. Cal.	VELERO	nil	25,380			OSPREY	nil	nil	nil	89,626
Univ. of Wash.	THOMPSON	nil			30,121	THOMPSON		137,808	157,133	
	HOH	nil				BARNES				
	ONAR	nil								
Woods Hole	ATLANTIS II	40,000				ATLANTIS II				
Oceanographic	KNORR			154,991		KNORR				
Inst.	CHAIN					OCEANUS			396,108	
						ALVIN		135,000		
						ASTERIAS	90,000			
Univ. of Del.						CAPE HENLOPEN	44,000	46,000		
Univ. of Mich.						LAURENTIAN		1,040		
Univ. of Texas						FRED H.MOORE	66,000		14,607	
Moss Landing						POINT SUR	nil	nil	Pending	4,888
Bermuda Biol.						WEATHERBIRD	12,000			
AVG. 11 yrs.		$229,000	$123,880	$176,491	$163,271	AVG. 8 years	$418,135	$380,084	$953,927	$99,748

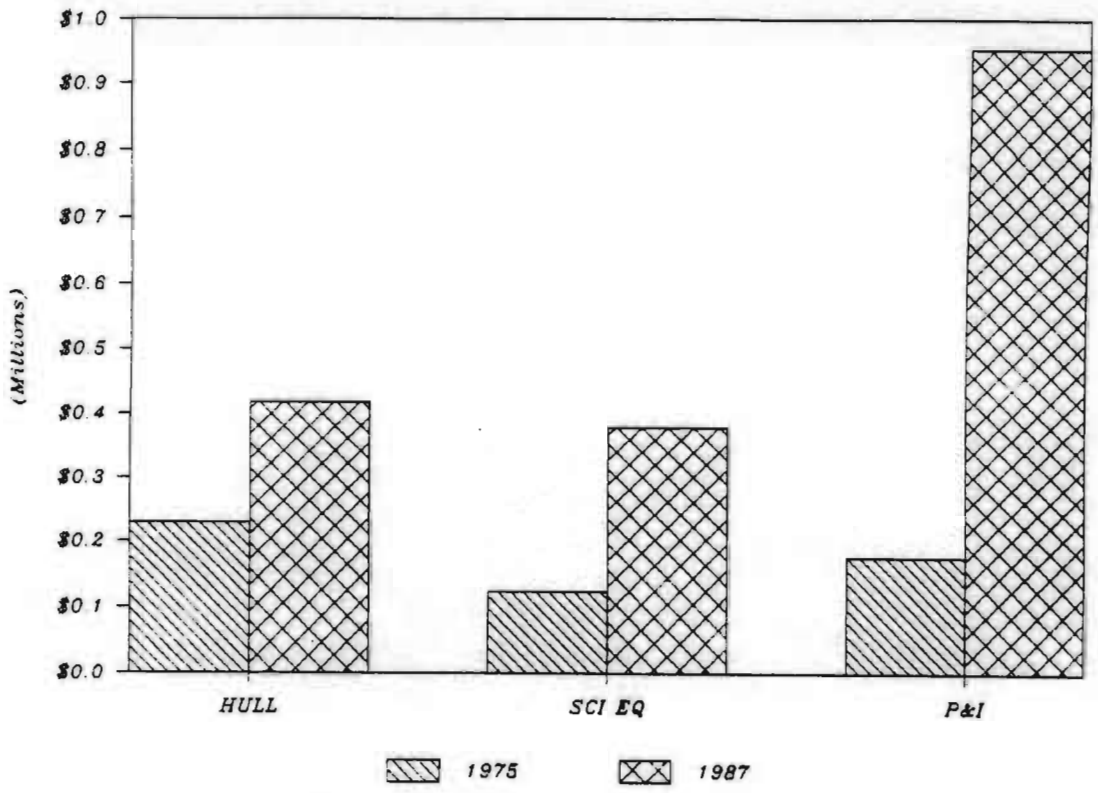

Figure 7. Comparison of Losses - 1975 vs. 1987

Table V. Total Marine Related Premiums

The total marine premiums for each institution are reported in Table V for 1975 and 1987. The premiums for the 1987 table were obtained from the 1987 policies, as provided by the institution. Where these numbers were not consistent with the corrected tables provided by the operator, the numbers were verified by telephone. In 1975 total hull insurance costs for non-federally owned vessels nearly equaled total P & I costs for all vessels regardless of ownership.[38] This is not the case in 1987 where P & I costs are over three times as high as hull costs. The increase in premiums from 1975 to 1987 are illustrated

in Figure 8. From this graph, it can be seen that the major portion of the fleet insurance costs is for protection and indemnity.

C. Protection and Indemnity Coverage for State Owned or Operated vs. Privately Owned or Operated Vessels

Within the academic fleet, the major increase in insurance cost has been in the category of protection and indemnity. The increase in this category reflects the U.S. courts' generous attitude towards seamen in death and personal injury cases. A major complaint of the insurance companies is that the awards for the same injury vary widely and therefore they have no way to predict their losses and adjust premiums on a sound actuarial basis.[39] The cost to provide P & I insurance to the

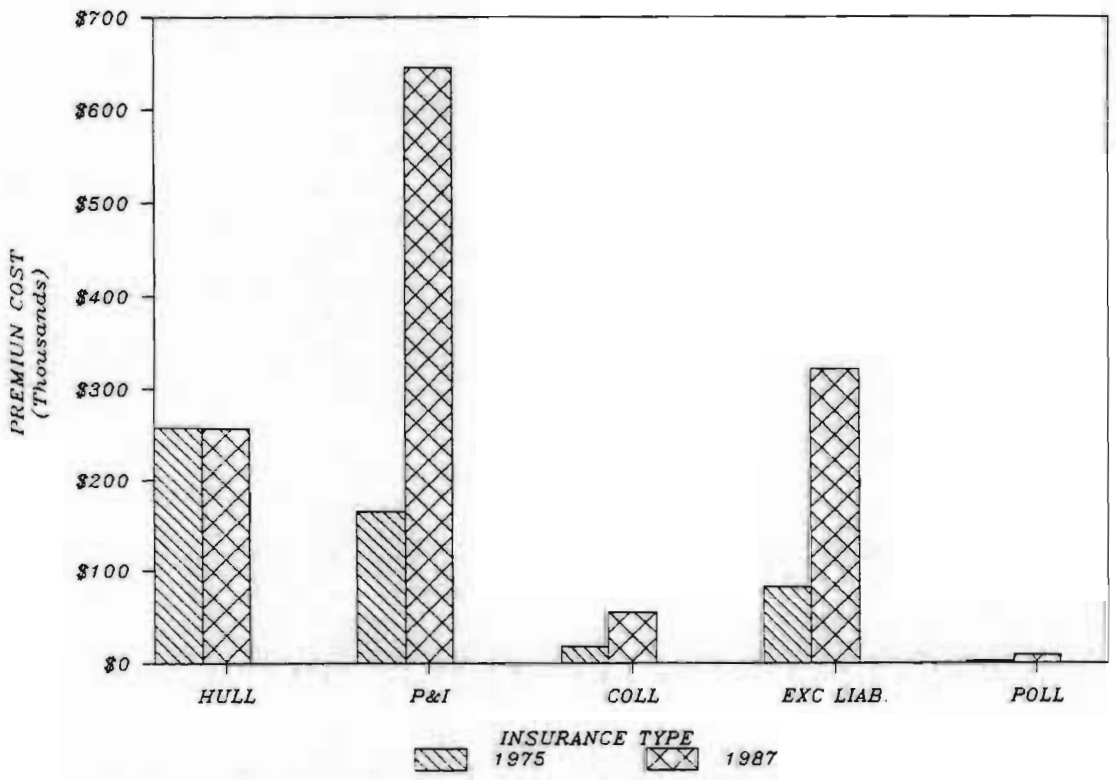

Figure 8. Comparison of Premiums - 1975 vs. 1987

academic fleet has risen from an average of $398 per person in 1975 to $1,436 per person in 1987 as illustrated in Figure 9. For those vessels operated by state institutions the cost is slightly lower, $1,259, while the cost of those vessels operated by private institutions is higher, $1,669. This difference reflects the state institutions' ability to capitalize on the participation in blanket policies for marine and personal liability protection.

Protection and indemnity rates for vessels operated by state institutions should be able to further reduce their premiums as a result of a June 1987 Supreme Court decision. In Welch v. Texas State Department of Highways and Public Transportation,[40] the Supreme Court

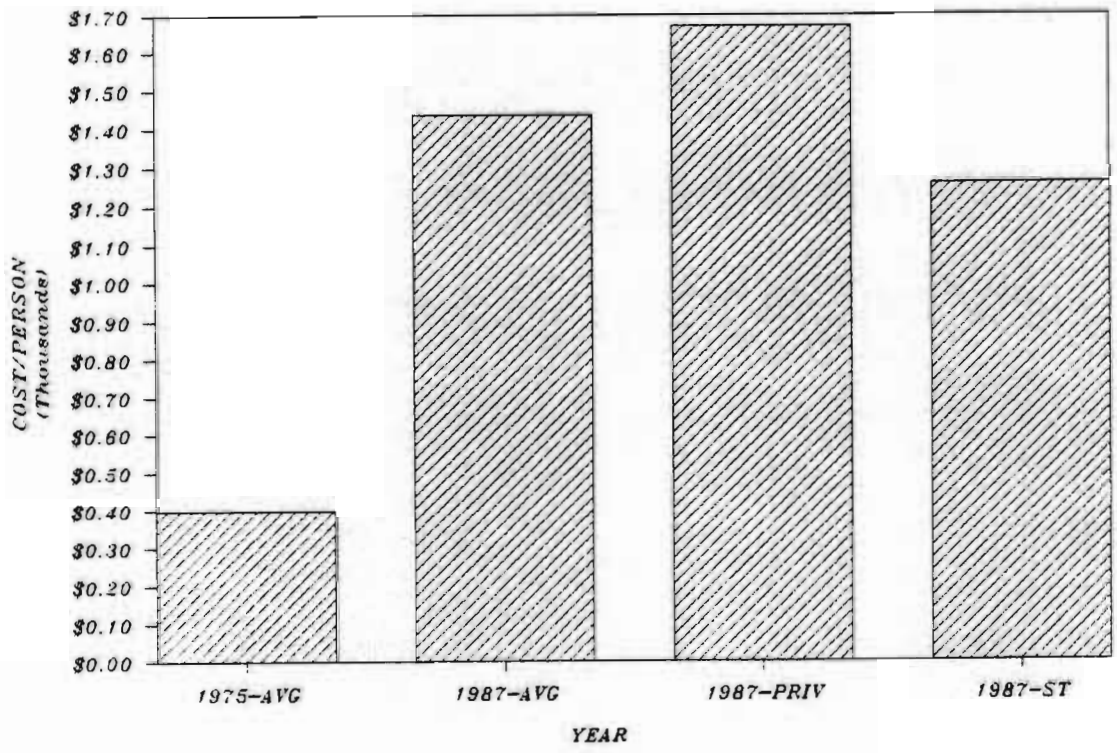

Figure 9. Comparison of P & I - 1975 vs. 1987

ruled that a suit may not be maintained against a state or an agency or department of a state unless the state has waived sovereign immunity. Under the 11th Amendment, federal process against a state is barred whether by its own citizens or citizens of another state. This bar applies to maritime actions. A state may consent to suit in admiralty either expressly or impliedly. An express waiver is usually in the form of allowing suit in a particular case. An implied waiver arises from the language of a state law.[41]

In Welch v. Texas, Jane Welch, marine technician, filed suit against Texas under the Jones Act for injuries sustained when crushed between a mobile crane and the dock. Welch was an employee of the State of Texas, Department of Highways, which operated a public ferry service out of Galveston. The district court[42] dismissed the action as barred by the 11th Amendment. The court held: 1) The language of the Jones Act did not include an express decision by Congress to abrogate 11th Amendment immunity of states; and 2) The exclusive remedy provision in the Texas worker's compensation statute provides that governmental units carrying worker's compensation are entitled to immunity granted by the worker's compensation act. The court of appeals affirmed the lower court's decision.

The Supreme Court upheld that the 11th Amendment bars a citizen from suing one's own state and prohibits admiralty suits against a state. Moreover, it held that Congress has not expressed in unmistakable language its intention to allow states to be sued in federal court under the Jones Act. Further to the Welch case, Collins v. State of Alaska,[43] July 1987, the ninth circuit court of appeals held that the 11th

Amendment barred seaman's common law and Jones Act claims against the State of Alaska. In Collins v. Alaska an injured seaman working aboard an ocean-going ferry owned and operated by the State of Alaska, Division of Marine Highways, brought suit, for damages for negligence under Jones Act, unseaworthiness of vessel, and payment of maintenance and cure. Citing the Welch case the suit was dismissed as barred by the 11th Amendment.

As a result of the Supreme Court decision, prohibiting suits in admiralty by state employees, P & I rates for state institutions should decrease. Private institutions are not protected by the 11th Amendment and will continue to require full P & I coverage. These institutions are listed in Table 16. State institutions requiring limited P & I coverage are listed in Table 17. These tables also show the P & I cost per person for each vessel. Those state institutions operating vessels listed in Table 17 should renegotiate the P & I premiums to obtain lower rates. Oregon State has already renegotiated their policy and, as a result of the Welch decision, obtained a refund on their P & I premium.

TABLE 16

Full P & I Coverage Required
(Privately Owned or Operated Vessels)

July 22, 1988

Member	Ship	Crew & Scientist	Marine Liability $Limit P/P/A	Marine Liability $Premium	Collision Liabiltiy $Limit	Collision Liabiltiy $Premium	Excess Liability $Limit	Excess Liability $Premium	Pollution $Limit	Pollution $Premium	Total $Premium	Cost/ Person
Duke Univ.	C.HATTERAS	22	1,000K	26,300	35,000K	incl.	35,000K	37,000	5,000K	1,241	64,541	2,934
Johns Hopkins	R. WARFIELD	17	2,000K	9,660	2,000K	incl.	250K	incl.	500K	200	9,860	580
Lamont-Doherty	CONRAD	44	3,500K	76,844	unlim.	incl.	unlim	incl.	5,000K	1,391	78,235	1,778
Texas A&M	GYRE	30	2,800K	43,000	2,800K	incl.	nil	nil	2,800K	incl.	43,000	1,433
Univ. of Miami	ISELIN	36	2,000K	8,500+	2,000K	incl.	25,000K	20,000§	25,000K	1,040	29,540	820
Univ. of Miami	CALANUS	8	2,000K	3,850+	2,000K	incl.	25,000K	20,000§	25,000K	165	24,015	3,002
Univ. of S.Cal.	OSPREY	36	1,000K	8,000	1,000K	incl.	4,000K	27,500	4,000K	incl.	35,500	986
Woods Hole	ALVIN	--	1,000K	26,450	1,000K	2,200	5,000K	5,865	5,000K	incl.	34,515	-----
Woods Hole	ASTERIAS	5	300K	3,000	175K	6,388	700K	4,430	nil	incl.	13,818	2,764
Woods Hole	ATLANTIS II	56	1,500K	22,500	4,000K	27,500	5,000K	4,037	5,000K	incl.	54,037	965
Woods Hole	KNORR	49	1,500K	24,450	1,500K	5,475	5,500K	5,543	5,500K	incl.	35,468	724
Woods Hole	OCEANUS	24	1,500K	21,750	1,500K	5,475	5,000K	3,055	incl.	incl.	30,280	1,262
Unov.of Del.	CAPE HENLOPEN	19	5,000K	12,077	5,000K	incl.	52,000K	18,785§	500K	925	31,787	1,846
Bermuda Bio.	WEATHERBIRD	6	1,000K	9,000	incl.	incl.	4,000K	6,600	incl.	incl.	15,600	2,600
TOTAL		352		$295,381		$47,038		$152,815		$4,962	$500,196	21,694
AVG.(S=Ships)		25		$21,099							$35,728	1,669
per person = $1,699												(13S)

\+ Port risk only + per diem; Iselin $19.50/day, Calanus $13.70/day

§ Blanket Institutional or State policy, assessed cost - not actuarial premium

TABLE 17

Limited P & I Coverage Required
(State Owned or Operated Vessels)

July 22, 1988

Member	Ship	Crew & Scientist	Marine Liability $Limit P/P/A	Marine Liability $Premium	Collision Liability $Limit	Collision Liability $Premium	Excess Liability $Limit	Excess Liability $Premium	Pollution $Limit	Pollution $Premium	Total $Premium	Cost/ Person
Oregon St.	WECOMA	32	300K	13,259.	5,000K	incl.	4,700K	10,534.	100K	incl.	23,793.	744
Scripps	MELVILLE	52	25,000K	32,522.	incl.	incl.	75,000K	incl.	25,000K	incl.	32,522.	625
Scripps	T. WASHINGTON	44	25,000K	8,735.	25,000K	incl.	75,000K	incl.	25,000K	incl.	8,735.	198
Scripps	NEW HORIZON	29	25,000K	20,101.	25,000K	incl.	75,000K	incl.	25,000K	incl.	20,101.	693
Scripps	R.G. SPROUL	17	25,000K	18,613.	25,000K	incl.	75,000K	incl.	25,000K	incl.	18,613.	1,095
Scripps	FLIP	15	25,000K	5,227.	25,000K	incl.	75,000K	incl.	25,000K	incl.	5,227.	348
Scripps	ORB	15	25,000K	3,923.	25,000K	incl.	75,000K	incl.	25,000K	incl.	3,923.	262
Univ. Alaska	ALPHA HELIX	24	10,000K	28,750.§	19,000K	incl.	50,000K	incl.	10,000K	incl.	28,750.	1,198
Univ. Hawaii	MOANA WAVE	31	250K	32,430.	5,000K	incl.	4,750K	53,419.		incl.	85,849.	2,769
Univ. Hawaii	KILA	16	250K	17,350.	5,000K	incl.	4,750K	28,286.		incl.	45,636.	2,852
Univ. R.I.	ENDEAVOR	28	1,000K	36,500.	4,300K	incl.	3,300K	9,727.	incl.	incl.	46,227.	1,651
Univ. Wash.	T.G. THOMPSON	45	500K	37,306.	incl.	incl.	19,500K	44,767.	500K	1,924.	83,997.	1,867
Univ. Wash.	BARNES	8	500K	4,869.	incl.	incl.	19,500K	5,843.	500K	251.	10,963.	1,370
Univ. Mich.	LAURENTIAN	14	870K	6,357.+	11,130K	incl.	11,130K	10,472.	5,000K	662.	17,491.	1,249
Univ. Texas	FRED H. MOORE	28	1,000K	7,450.	1,000K	incl.	10,000K	5,250.	5,000K	498.	13,198.	471
Moss Landing	POINT SUR	21	5,000K	75,430.	3,100K	7,750.	5,000K	incl.	incl.	incl.	83,180.	3,961
Skidaway	BLUE FIN	11	1,000K	500.	State	incl.	State		State		500.	45
	TOTAL	430		349,322.		7,750.		168,298.		3,335.	528,705.	21,398
AVG.(17 Ships)		25		20,548.							31,100.	1,259

per person = $1,259

§ Blanket Institution or State policy, assessed cost - not actuarial premium

+ Port risk only does not include per diem

CHAPTER 6. MARINE INSURANCE PROGRAM OPTIONS

A. Background

Modern marine insurance dates from the middle ages. The London market was well established by the seventeenth century and is still pre-eminent in the shipping world. The first marine insurance company to be formed in the U.S. occurred in 1792 with the formation of the Insurance Company of North America (INA). Although the London market is still the predominate marine insurer, most of the UNOLS research vessels are insured with U.S. companies [see Table I (1987)], who then place much of their reinsurance risk in the London Market.

There are two points to be aware of in understanding marine insurance in the U.S.: first, unlike most insurance markets, it is virtually unregulated; and second, the companies are able to make money even though loses may exceed premiums (premium to loss ratio). Unlike other areas of insurance, the marine underwriter has greater control over the pricing decisions and whether or not he wants to insure the risk. The continued independence of the marine underwriter is necessary since there is a greater potential for catastrophic losses in the marine market, and it allows the flexibility to compete with the comparatively unregulated international markets.

Insurance companies generate large sums of money from premiums which they quickly invest before losses are claimed. When interest rates are high and investments are successful, the company can afford to

lose money on the premium to loss ratio. When interest rates decline and investments are not as lucrative, the companies cannot depend on investments to offset underwriting losses and premiums must rise. During the early 1980s the decline in the merchant fleet, coupled with increasing losses and declining interest rates resulted in increasing marine insurance rates. This trend will continue until one or more of these parameters reverses and the cycle begins anew.[44]

Participation in a group insurance program is one method for controlling the cost of insurance. A group insurance program is generally less expensive for several reasons. First, the insurance company's overhead is reduced by insuring one large client rather than 19 individual operators. Second, a group generating in excess of a million dollars in premiums is attractive to a company trying to maintain a large cash flow and thus better rates can normally be obtained. Third, by maintaining stringent safety standards losses can be reduced to the point that rates will decline. Fourth, if the group stays with the same insurance company for several years and maintains a good safety record rates will be lowered accordingly.[45]

The options available to the academic research fleet for obtaining affordable marine insurance vary from independent stock insurance companies to self-insurance. The major forms of organization are stock insurance companies, Lloyd's associations, mutuals, and reciprocals. For the academic fleet to take full advantage of these various organizational forms, they could combine those elements of the various programs which would best serve the fleet's needs. The fleet could further spread the the risk, in these various programs through the use of reinsurance.

Reinsurance is a contract whereby one party (the reinsurer) agrees to indemnify the other party against a risk assumed by the latter on an insurance policy to a third party. Reinsurance may include a portion or all of the risk assumed by the reinsured party under the original policy.[46] Normally the third party cannot recover from the reinsurer but recovers from the underwriter who wrote the policy of insurance.

B. Stock Insurance Companies

A stock company is an incorporated business organized as a profit-making venture owned by stockholders. The operations of the company is regulated by state law and must comply with state requirements for capital and reserve funds. The contract of insurance is usually written at a fixed premium for specified protection. The insured receives no dividends from the earnings of the company and does not pay an additional premium if the losses exceed income.

The management of a stock insurance company is the obligation of the stockholders. They elect the board of directors, who in turn delegates authority to the officers of the company for day-to-day operations. The company often does business nationally or world-wide and their contracts of insurance are written through brokers or agents. These representatives of the company are paid a commission for the business they generate.[47]

The majority of the academic fleet are presently using stock insurance companies to provide individual coverage. Although the present participation is done on an individual basis, the fleet could be more competitive using stock companies through volume purchasing. In volume purchasing the individual policies would be placed through a

single broker or agent to obtain economies of scale. This is appealing in that individual institutions would remain in control of their own insurance package while benefiting from group purchasing. The purchasing could be done for the UNOLS fleet as a whole or on regional basis, with greater economies of scale being obtained with the largest number of participants. A broker or insurance company would be selected for placement of the insurance. Individual institutions could tailor their policy to their institutional needs and the savings would be generated from the volume of business and the insurance company's knowledge of the risk potential of the oceanographic group.

With the diversity of management within the academic fleet, a wholesale purchasing program has an additional advantage. Many of the vessels are managed by state institutions that carry blanket coverage for part or all of their marine risk. Often the blanket policy insures the institution's small boat operations and scientific equipment both at sea and ashore. Many state-operated institutions are reluctant to lose this coverage by going into a group insurance program. In a volume purchasing program these institutions could retain the benefits of the blanket policies while obtaining savings on hull and P & I coverage.

C. Lloyd's Associations

"A Lloyd's association is an organization of individuals who underwrite insurance on a cooperative basis."[48] Lloyd's is not an insurance company and does not issue insurance policies, but is an association providing services to members who write insurance as underwriting members of Lloyd's. Each member writes policies and underwrites risk as an individual. The individual underwriters have unlimited liability for

the insurance they underwrite. Their business and personal assets are available for settlement of claims.

Proposals for insurance are placed before Lloyd's underwriters by brokers seeking insurance for their clients. The broker presents a "slip" to the underwriter. Each underwriter signs the slip and indicates the percentage of the liability they will cover. In the event of loss each underwriter is responsible only for the agreed upon percentage of the loss. Since each Lloyd's member is an individual company, should a dispute arise on a policy where several members have signed the slip, the insured would have to sue each underwriter.

Within the academic fleet a number of institutions are presently insuring through the Lloyd's association for both P & I and hull insurance [see Table I (1987)]. The insurance is normally placed through a U.S. broker who may distribute the total liability among one or more underwriters. Each underwriter is then responsible for their respective percentage of the liability.

D. Mutuals

A mutual insurance company is a non-profit insurance carrier owned by the policyholders. Clients become members by purchasing an insurance policy. The purpose of a mutual is to provide low-cost insurance.[49] In a mutual there are no stockholders nor are capital stocks issued. The policyholder, as a member, has rights and obligations to the company. The policyholder participates in the management of the company and shares in the company's financial success or failure. The participants pay an initial assessment at the beginning of each insurance year. If losses are greater than premiums, they are assessed

an additional premium to cover the losses; if premiums are larger than claims, the member receives a dividend or the excess may be used to build a surplus by which to pay future losses. Large mutual companies do not usually assess members; the policyholders pay only a premium, while small mutual companies are often assessable until they acquire adequate surplus to cover losses.

Mutual insurance can cover both hull and P & I risks. The mutual usually covers the first $25,000 to $50,000 and the additional risk is covered through reinsurance. For the academic fleet, the major consideration is the high premiums for the initial years. The cost during the initial years is often greater than commercial insurance. To determine if a mutual would be feasible for the academic fleet, one should consider the long-term cost of the premiums and not just the initial costs. Similarly, the loss record should be considered for the fleet in conjunction with the long-term cost. On examining the loss record for the past eight years, the reported losses have averaged about $250K per year. The fleet is currently paying about $1,250K in premiums which should allow for the initial high premiums of a mutual insurance plan.

The P & I clubs are mutual insurance associations that protect the insured against third-party liabilities. "Protection and Indemnity ("P & I") insurance provides shipowners with coverage for a wide range of liabilities they may incur in the course of operating ships, beyond that provided by their ordinary hull and machinery policies. Its importance to shipowners today can be gauged by the estimate that approximately 90% of the world's ocean-going merchant tonnage is entered with one of the numerous P & I associations, or "clubs", as they are commonly

called."[50] The first P & I clubs were formed to cover risks not covered by ordinary marine policies on ships with a collision or running down clause; that is, excess collision liability or liability for personal injury and death. The traditional marine insurance policy is a contract of indemnity against losses from destruction or damage to marine property. A collision or running down clause provides protection against liability for collision damage to other vessels and property carried thereon. In the mid-nineteenth century hull underwriters were reluctant to insure more than 75% of the liability, reasoning that, by not fully insuring the hull, the owners would have a greater incentive to prudently operate and maintain the vessel. As losses became more prevalent ship owners, particularly in England, banded together in "P & I clubs" to mutually indemnify each other with respect to various types of liabilities in excess of those covered by their marine hull policy, including collision liability in excess of the 75% coverage, loss of life, and personal injury.[51]

The P & I club is a non-profit organization. The members share the costs of claims and club expenses. Premiums are based on actual claims with an additional margin used to build a reserve against unusually large losses. In the London market the club's liability is unlimited, but has the benefit of any limitation defense available to the shipowner. The U.S. P & I club market is limited to a maximum of $300 million per vessel per accident.[52] The rates of each vessel owner is affected by his own loss records and the management of the club. Since the rates are affected by loss records, membership in a P & I club is very selective and demands high safety standards. In the mutual P & I

club the vessel owner depends on the club for liability coverage and, for that protection, shares in the losses and benefits of the club.

E. Reciprocal Exchanges

A reciprocal is a cooperative insurance organization formed by a group of individuals who cooperate for the purpose of exchanging one another's insurance risks. The policyholder is both the insured and the insurer. There are no stockholders. The reciprocal is not incorporated but is an association of individuals who assume their liability as individuals and not as a group.[53]

In a reciprocal, a portion of the insured's premium is used to pay the manager of the reciprocal and the remaining amount contributes to the insured's account. When claims are paid, each account pays proportionate to their share of the loss, there is no joint liability. Insurance pools are usually organized as reciprocals and may operate without the security of reinsurance. During the initial period of participation in a pool, premiums are usually high while the insured builds his account. Once the account has accumulated a specified reserve, which must be left with the reciprocal as long as they remain insured, the premiums are returned to the policyholder.

The marine insurance industry is cyclical and is just coming out of a period of astronomical costs and limited availability. Pools offer availability and low rates. They are usually highly selective as to membership and demand rigid safety standards, such as, a current marine survey, current stability letter, annual alarm testing, and crew safety and survival training. When considering a new member they may review such items as stability tests, crew experience, loss history, main-

tenance records, and area of operation. Since losses directly affect premiums, all operators are encouraged to maintain rigid safety standards.

CHAPTER 7. RECOMMENDATIONS AND CONCLUSIONS

Marine insurance for the academic fleet has become too costly to ignore. The research vessel operators and the funding agencies must examine the options for improving coverage and decreasing costs. The impetus for improvement must come from within. There are several marine insurance options available by which fleet insurance can be improved. The data obtained during this study suggest three possible courses of action for the academic fleet, they are: 1) do nothing - continue with the current insurance program; 2) do everything - establish a pool insurance program; and 3) middle ground - group insurance.

A. Do Nothing - Continue with the Current Program

Presently each institution operating a vessel within the academic fleet manages its insurance program independently. Current insurance prices are experiencing a downward trend. Operators who are negotiating new policies are experiencing a decrease in premiums. As long as insurance costs continue on a downward trend, the momentum to change the system will decline. In spite of this, there is buying power in group purchasing and therefore cost benefits.

In a "do nothing" type of approach, the market decides the rates and the individual operating institution is at the mercy of the industry. If losses are high in other vessel operations, such as the fishing fleet, or, if the merchant fleet continues to decline, thus

decreasing the risk pool, the remaining marine insurance clients pay increased premiums. The advantage to remaining in the current insurance program is that it is simple. No further expenses are necessary for administrative changes and institutions taking advantage of state insurance programs could continue to do so. Any new program would face the problem of institutional inertia; that is, the reluctance to change procedures. Where the vessel's insurance is managed by a university insurance office, there appears to be some reluctance to give up part of their responsibility to a fleet program. By remaining in the current program the fleet ignores the most significant trend in insurance in the last decade. Group purchasing has lowered rates in other areas of insurance and could do so for the academic research fleet. By continuing to individually purchase insurance the fleet loses the cost benefits of group insuring. In other sea-going industries rising costs of insurance affect profits, thereby providing a greater incentive to find methods to decrease insurance costs. The costs for the academic fleet are mainly paid by the federal government so there is less incentive for improving rates than if it were coming from a company's profits.

Should the fleet and funding agencies decide to continue with the present system, there may be potential savings from reviewing individual programs for deductibles, upper limits for P & I and hull, improving interaction with institutional risk managers, reviewing losses, and making a concerted effort to eliminate safety problems and potential health risks. And, as in any purchasing transaction, it pays to shop around. Many of the institutions have been using the same broker since

1975; even if the brokerage is doing a reasonable job, competition is always healthy. As a single purchaser the individual institution is buying from a stock insurance company whose main aim is to make a profit for the stockholders, not to pass on dividends to the insured.

B. Do Everything - Establish a Pool Insurance Program

This report, as in the 1975 report, recommends the fleet establish some type of group insurance program. The fleet is doing well, currently, in terms of today's marine insurance market. Both the P & I rate of $1,436 per person and a hull rate of 1.50% are considered good rates in the current market. However, these rates could be improved through group insuring. A pool or reciprocal would provide the greatest financial gains. As discussed in Chapter 6, a vessel insurance pool is a group with a common interest who put money or promissory notes into a common fund for the purpose of covering each other's hull and machinery and P & I claims. Rates for pool policies are often 40 to 60% less than standard rates.[54] The obvious advantage of a pool insurance program is long-term coverage at significant savings.

The limited value of the business involved makes a reciprocal for the academic fleet impractical, unless the entire fleet participates. For those institutions whose insurance program includes non-UNOLS vessels this could be a disadvantage, since the rates for their remaining vessels would probably increase. In a reciprocal the pool management would establish rigid safety standards and have control of the fleet's insurance. This would result in a loss of control by institutional insurance offices. The establishment of the reserve fund is the major disadvantage of placing the acadamic fleet in a reciprocal.

Although the purchase of reinsurance could be used to decrease the initial premiums the formation of a pool for the academic fleet is highly unlikely due to the mechanics of establishing the pool. The federal funding agencies do not have a ready mechanism for placing large amounts of monies in a reserve fund. The mechanics of financing a pool is further complicated for the funding agencies by the return of dividends on established accounts. Although a pool insurance offers the greatest cost savings, it is highly unlikely that the fleet could take advantage of such a program.

The Risk Retention Act was considered as an alternative by which the fleet could establish self-insurance. The Act allows similar businesses sharing the same liability risk to form a risk retention group in the form of a stock company through the use of securities to self-insure themselves. However; the law cannot be used to write hull insurance.[55] Since the funding agencies do not have a mechanism to "set aside" securities, and hull insurance could not be provided to those vessels requiring hull insurance, the Risk Retention Act is not a viable option to self-insure the fleet.

C. Middle Ground - Group Insurance

To take advantage of economies of scale the fleet must be in a group program. The various options were presented in Chapter 6. Since it is highly unlikely the fleet could participate in a program which requires large initial premiums or funds to establish, the recommendation is to establish an insurance coordinator or fleet risk management office which would place the fleet insurance through a broker on a group basis.

Insurance Advisory Service

In the report of 1975, Risk Management Services recommended the formation of a risk management office. It is a recommendation worth endorsing again. A risk management office would serve as an advisory group for UNOLS operators in matters relating to marine risk and insurance.[56] The function of such a group would be to evaluate areas of risk, adequacy of coverage, and recommend the best insurance markets. A risk management office could fit within the UNOLS or possibly Joint Oceanographic Institutions, Incorporated (JOI) charters.

A variation on the marine risk office would be contracting with an insurance consulting firm through UNOLS. This type of service could be managed similar to Medical Advisory Service. A basic review and service package could be provided directly by the funding agencies through UNOLS with the individual institution paying the contractor for special services or services beyond the basic package.

Group Insurance

A group insurance program could take one of two forms; insure the fleet in a wholesale program through a stock company or syndicate such as Insurance Company of North America or through a mutual club such as Lamont-Doherty's coverage through Britannia Club. Insurance companies find group insurance programs very attractive since most groups have large deductibles, selective membership, and high safety standards. The most important characteristic of a group insurance program is the selective membership. Low loss rates translate into low insurance rates. In a P & I club the premium is based on actual losses, plus an administrative fee and a profit or fee for reinsurance for catastrophic

losses. In a wholesale stock insurance program the premium is a set fee but determined from the loss record of the group. Since premiums are based on losses it is to the participant's benefit to maintain favorable loss records. Participants with poor loss records are usually penalized with larger premiums or expelled from the club.

Should a group policy be pursued, both hull and P & I policies will need special treatment for groups within the fleet. Presently federally funded vessels are not allowed to insure for hull loss, therefore only half the fleet would be eligible for hull insurance. This would certainly decrease the buying power of the fleet. As a result of the Welch decision, special consideration would also have to be to made for those vessels that are state owned or operated. The P & I rates should improve for vessels subject to sovereign immunity.

A proposal from one of the largest P & I clubs can be found in Appendix 2. Godfrey-Merritt recommends insuring for protection and indemnity through a P & I club with the club placing the hull insurance through Lloyd's. For the proposed program to be economically viable the majority of the fleet would have to participate. They recommend deductions for per person and all others at about current fleet deductibles. For hull insurance, a per ship with an aggregate deductible was recommended--rates would depend on the options chosen by the fleet. From previous conversations with Godfrey-Merritt diving and over-the-side equipment would be included in the all-risk policy and limits of liability would be unlimited.

Advantages

The advantages of establishing a group policy for the fleet which

would be coordinated through a fleet risk management coordinator are several. First, there are potential savings in premium costs as a result of group buying power. The potential savings would increase with the number of vessels included in the program. Participation in a wholesale stock company policy or a mutual club would not necessarily require all vessels to participate, but the majority of the fleet would have to participate to obtain any substantial savings.

Second, greater uniformity could be obtained in basic coverage and pricing. Sister ships with similar risks presently vary greatly in amount of coverage, deductibles, and premiums. These could be standardized to maximize savings. Exclusions and special riders could be negotiated on a fleet basis. At the request of the National Science Foundation, exclusions such as diving, remote operated vehicles, over-the-side equipment, and geographical restrictions were explored. The major concern was for over-the-side equipment risk. Those representatives of P & I clubs with which we have discussed this coverage did not feel this was a problem. The policy would be "all risk" and could include over-the-side equipment.

Third, reduce losses by determining problem areas and procedures for improvement. Even though loss histories are not well maintained at most institutions, the data reported (see Table 15) clearly show an increase in losses. As stated in Chapter 5, discounting workmen's compensation claims, losses have increased nearly 300%. Better loss records need to be maintained to get a true picture of losses and potential risk. This information will be required for group insurance participation.

Fourth, improve safety standards. Since premiums are based on losses most mutual clubs maintain rigorous safety standards to decrease loss claims. The RVOC is currently working on improving the safety standards and to provide a safety manual. The proposed risk management coordinator could assist the RVOC in providing safety standards compatible with insurance company or club standards and the UNOLS fleet standards. The upgrading of these manuals and standards is highly recommended, irrespective of any other changes in the insurance program. Should the fleet participate in a group insurance program these items will be necessary. In conjunction with improving the safety standards, safety training should be improved for both crew and scientific personnel. Training for scientific personnel has consistently proven to be a problem. Scientists have opposed the use of their time for such training. Any improvements in scientific safety training will have to come from the director level or funding agency.

Fifth, provide a person to answer questions on policies, coverage, and risk for the fleet. This person could also serve as a liaison by which to promote coordination of marine risk management between the ship operator and the institutional risk manager. The marine superintendent needs to be more involved with determining the risk for the vessels and the risk manager needs to provide greater information to the operator, such as copies of policies, loss records, and claim settlements. It is further recommended that the operator become familiar with their policy and the limits of the liability including special riders and exclusions.

Disadvantages

The disadvantages of the middle ground approach are mainly the mechanics of setting up such a program. First, there is the cost of setting up and staffing an office of risk management. The federal funding agencies would have to be willing to establish and fund the position. The location of the office could be with JOI in Washington, D.C. or the UNOLS office in Seattle.

Second, the institution would have less control over the vessel insurance program. The individual institution may not be willing to forego their control over the vessel liability. As stated by RVOC member Bill Mitchell, "Educating the ship operators will be a minor affair in contrast to convincing each institution's risk manager to accept someone else's interpretation of their responsibility."[57]

Third, to comply with club or insurance company safety regulations well may place additional operational restrictions or standards on the vessel operations. Many P & I clubs inspect every vessel and set safety requirements for the vessels prior to membership. These standards may be more rigid than presently exist within the fleet.

Fourth, the funding agencies would have to require institutions to become members of a group insurance company. They may be hesitant to make such a requirement. The resistance to losing control of the vessel's risk management and overcoming the institutional resistance to change may be impossible to overcome.

D. Summary

The cost of marine insurance has become a concern to the vessel operators and the funding agencies. To control the current trend in

rising costs, the fleet needs to be placed in a group insurance program. In the 1975 report, Risk Engineering Services made the recommendation that the fleet should participate in a true group insurance program.[58] The current study reaffirms this conclusion. Operating independently in individual insurance programs is inefficient and costly for the fleet. A group insurance program is both workable and possible. Through the use of the middle ground approach, the fleet could establish a group insurance program. The National Science Foundation, as the major funder, must decide if the fleet is to participate in such a program.

Although the vessels of the fleet are presently inspected every two years for maintenance and safety, these inspections should be expanded to include risk management. The insurance coverage of the fleet should be examined regularly to prevent over- or under-insuring. The institutional operator and risk managers should become more knowledgeable about their marine insurance program and the vessel operations should be reviewed from the prospect of potential accidents, safety standards, and liability. A well-conceived group insurance program will actively strive to reduce and eliminate all types of losses or claims. The idea makes sense; if savings in cost and improvement of our safety record are considered important objectives, it ought to be tried.

APPENDIX 1. Questionnaire

Please complete the following questionnaire and return to: Dolly Dieter, Center for Ocean Management Studies, University of Rhode Island, 19 Upper College Road, Kingston, RI 02881.

1. What is the ownership of each vessel you operate (NSF, ONR, Institution, or State)? If ownership is other than Institution/State, send one copy of the vessel charter party agreement.

2. What are the navigational limits in your current insurance policies for each vessel you operate?

3. What is the approximate number of sea days per year for each vessel you operate?

4. How is each vessel you operate documented or registered? List each vessel. If vessel is not documented or State-registered, indicate as such.

5. Were the vessels you operate built to class and have the vessels been maintained to class? List each vessel and classification body (ABS, Lloyds or USCG).

6. What hull insurance do you presently carry for each vessel you operate? How is this coverage paid for (NSF, ONR, State funds, other)? Is the hull insured for current market value? If not, to what percent (100%, 63%, 0%, ?%).

7. Do you presently carry insurance for loss of over-the-side equipment? If so, what is the cost deductible and exclusions? If you insure over-the-side equipment, send one copy of the rider or policy.

8. What are the exclusion clauses for diving ROVs or explosives in your policies? Do you carry special policies for these activities? If so, what is the cost?

9. What special provision does your institution have for insuring students, visitors, non-institutional personnel, observers, visiting scientists, or any other participant that is not an employee of your institution?

10. Please comment on any special needs you presently have. Do you anticipate any special needs or coverage in the next five years?

11. Suggestions or comments on the Marine Liability Study would be helpful.

ADDITIONAL INFORMATION TO BE SENT WITH QUESTIONNAIRE:

1. One copy of your current marine insurance policy;

2. One copy of your current workmen's compensation policy;

3. One copy of the user's manual for each vessel you operate;

4. One copy of your institution's policy on required insurance; and

5. One copy of Section 12 and Section 13 (Insurance Coverage) from your 1988 proposal.

Name of individual completing form_____

Institution_____

Telephone_____Telemail contact_____

APPENDIX 2. Ideas/Notes - Godfrey-Merritt

GODFREY·MERRITT
INSURANCE BROKERS

Godfrey Merritt and Company Limited
International House,
1 St. Katharine's Way, London E1 9UN.
Telephone: 01-265 0102 (5 lines).
Telex: 8952251 GMINS G.
Fax: 01-481 3268. (Groups 2 & 3)

TO: COMPANY .....

ATTENTION Mr. Dennis Nixon .....

FROM: Mike Amiss .....

DATE: 21st July, 1988 .....

SUBJECT: National Science Foundations and Unols .....

PAGES: .....(including this one)

MESSAGE:

IDEAS/NOTES

Many apologies for delay but to be honest; I have been over stretching myself. We have had several informal meetings with both Hull Leaders and Club Underwriters and have the following suggestions.

P & I

Presently have two possibly three Group Clubs interested in insuring the above as a Group Cover would be following Rules and on an unlimited basis. It would be subject no other Group Club involvement. Minimum Crew Deductible US$ 5,000 All Others US$1,000.00. Best indication so far US$2500 - US$2000 per man. Would require the majority of the vessels to attach as explained interesting Club's in new areas is a slow process, we are slowly paving the way.

Hull

Our problem both Hull & P and I is the great difference between each vessels present insurance arrangement. Much depends on the Group as a whole purchasing philosophy. On a fleet of 19 vessels we would suggest an aggregate deductible in addition to the each and every deductible of at least US$500,000, also the record would seem to lend itself to an aggregate deductible. (But as Ownership/ Management is separate we would have to create a fund by using L.O.C.'s). Collision could be placed with the P and I creating additional savings.

It would also be possible on such a large Group to place upto 25% of the values on an I/V disbursement basis. Possibly caping the number of total losses or buying reinstatements upto say 5 CTL's. Shall explain in full if required.

The effect of the above would reduce all rate's by 10-20%. Aggregate deductible would bring rates down further.

Hope above is of assistance.

Regards
Mike Amiss

NOTES

1. Risk Retention Amendments of 1986, 15 USC 3901, 99-563 [S.2129]; 27 October 1986.

2. John G. McMillan, Washington, D.C., to E. R. Dieter, September 28, 1987, Transcript on File Seward Marine Center, University of Alaska, Seward.

3. Steering Committee for Academic Research Fleet Study, Ocean Sciences Board, Commission on Physical Sciences, Mathematics, and Resources, National Research Council, Academic Research Vessels 1985-1990, (Washington, D.C.: National Academy Press, 1982), 1.

4. University-National Oceanographic Laboratory System, "The Research Fleet," (Seattle, WA.), 27.

5. Robertson Dinsmore, "The University Fleet," Oceanus 25:1 (1982): 8-11.

6. Supra 4, p. 28.

7. University-National Oceanographic Laboratory System Charter, Amended and Readopted 23 October 1987, (Washington, D.C.), 3.

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