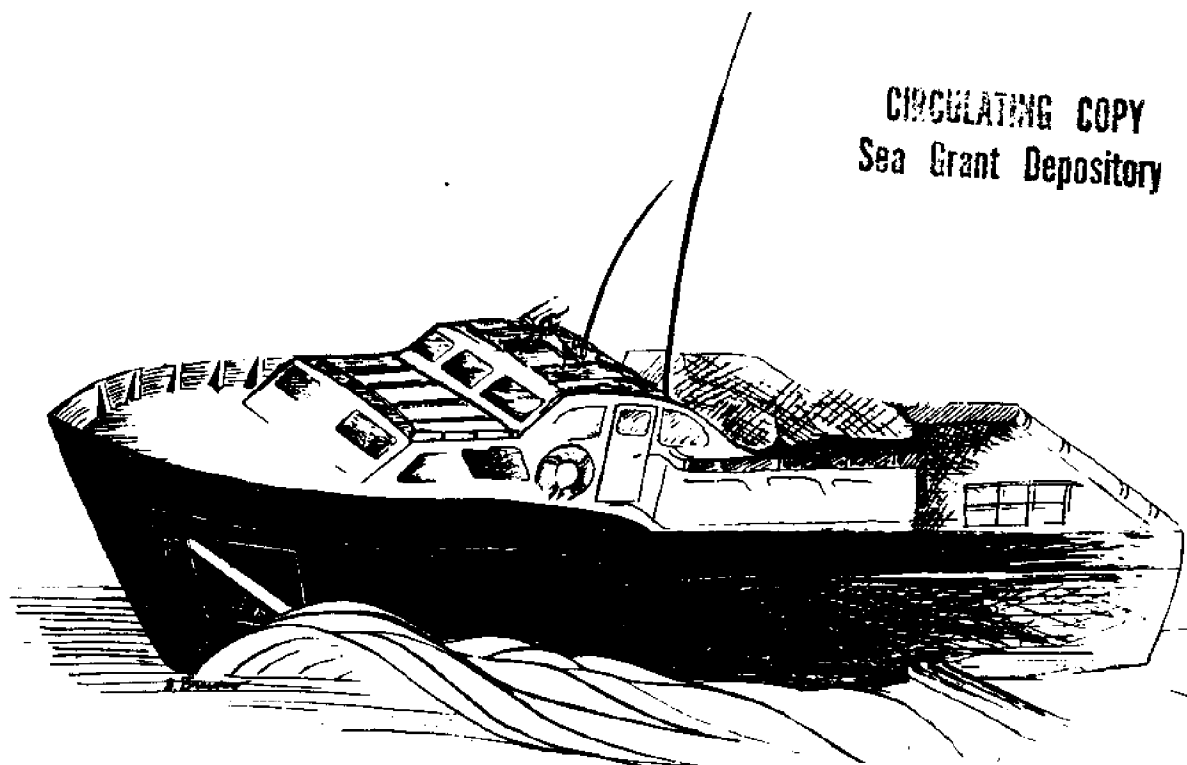


CHARTER DIVE BOAT OPERATIONS ON THE TEXAS COAST: *inside*

A GUIDE TO DETERMINING FEASIBILITY

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A Professional Paper
by
DONALD WAYNE PYBAS

CHARTER DIVE BOAT OPERATIONS ON THE TEXAS COAST:
A GUIDE TO DETERMINING FEASIBILITY

A Professional Paper

by

DONALD WAYNE PYBAS

Submitted to the Graduate Faculty of the
Department of Recreation and Parks
Texas A&M University
in partial fulfillment of the requirements for the degree of
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March 1978

Major Subject: Recreation and Resources Development


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A GUIDE TO DETERMINING FEASIBILITY

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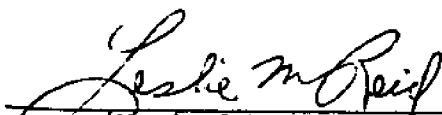
Approved as to style and content by:



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March 1978

ABSTRACT

There are few charter dive boat operations on the Texas coast. This study was conducted to identify and contact the operations in order to better understand the charter dive boat "industry" in Texas. A cooperative operator provided pertinent information that was corroborated by other operators. In addition to financial information, problems encountered by the Texas charter dive boat operators are discussed.

This paper was written with two objectives: (1) to provide a prospective operator with general guidelines for conducting a feasibility study, and (2) to conduct a financial feasibility analysis for a proposed charter dive boat operation to be located on the Texas coast.

During this investigation, it became apparent that a dive boat operation, either proposed or existing, cannot now generate a large enough income in Texas. However, this may change with new resource allocation decisions, technological breakthroughs, and innovative marketing techniques.

ACKNOWLEDGMENTS

Numerous individuals deserve my sincere thanks for assistance in the completion of this professional paper. First and foremost, my Committee Chairman, Dr. Robert Ditton, gave unending guidance and support during all phases of this effort. His careful review of earlier drafts and timeliness are greatly appreciated. Dr. B. Dan Kamp and Mr. John L. Seymour, both members of my graduate committee, deserve my gratitude for their constructive criticism and guidance during review. A special thanks goes to the various boat operators along the Texas coast, without whom this study would have been impossible. Providing significant assistance were Captain Alden Blood, Mr. Ed Bell and Mr. Monroe Krumnow among others. To my graduate colleagues in the Marine Recreation Research Lab, and particularly Jim Falk, I express grateful thanks for providing a sounding board for ideas during a long process. Also, a much deserved thanks is given to Beth Breuker for her art work and graphics.

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CHAPTER I

INTRODUCTION

Recreation is one of the largest and fastest-growing uses of the coastal zone, and is becoming a major economic force (Ketchum, 1972:84). As revealed by the U.S. Outdoor Recreation Resources Review Commission, 44 percent of those engaged in outdoor recreation preferred water-based recreational activities to all others (ORRRC, 1962). Since the ORRRC report, sport diving, as well as other water-based recreational activities, have increased in popularity in both inland and coastal settings.

With recreation a major use of coastal regions, and the population growing in the marine perimeter, employment opportunities have expanded with the growth of economic activity. This has caused increased competition for space (Ducsik, 1974:1). The popularity of sport diving in recent years seems to have paralleled that of the coastal population trend.

In the past three decades, sport diving has expanded from that of a "dare devil" activity of a few to a multi-million dollar industry. Indications from the national certification associations¹ show a rapidly increasing number of participants in the sport of scuba. Prior to 1950, the number of sport divers was negligible. From 1950 to 1970, an estimated one million divers were certified. In comparison, during the period from

The citations in this professional paper follow the style of the Journal of Leisure Research.

¹The recognized national associations include: National Association of Skin Diving Schools (NASDS); National Association of Underwater Instructors (NAUI); Professional Association of Diving Instructors (PADI); and Young Men's Christian Association (YMCA).

1970 through 1975, in excess of one million additional divers were certified (Hardy, n.d.). In essence, the sport diving population doubled in a five year period. However, as shown in Table 1, the number of individuals with diving skills exceed the number actively participating by nearly four to one. Of the estimated 474,000 individuals in the U.S. who actively participate in scuba diving, 120,000 reside in the Gulf Coast region (NOAA, 1975:7). Although it has been estimated that 70,000 individuals possess diving skills in Texas (Graham and Ditton, 1974), it is unknown how many of these are active participants in scuba diving. The rapid increase in sport diving is projected, along with other selected recreational activities, to continue as shown in Table 2 (Winslow and Bigler, 1969). With this increase in participation, expenditures for diver services and equipment have correspondingly increased.

Direct expenditures for equipment purchases alone for 1975 amounted to \$61 million in the U.S. In 1976, it was estimated these expenditures increased by 20 percent to \$73 million (Standard and Poor's Industry Survey, 1977:L13). In 1977, a reader survey taken by Skin Diver magazine indicated that approximately \$343 million was spent on diving trips during a 12 month period (Skin Diver, 1977:12).

In light of these trends and facts, it would seem there should be several viable charter dive boat operations along the Texas Gulf coast. A search of telephone directories and popular dive publications revealed only a few boats that provided divers service to offshore sites. Of the boats identified, no operator has been able to sustain his business on a full-time basis. They must seek alternative means of income, such as charter fishing, offshore oilfield work, commercial fishing, or perhaps

TABLE 1
ESTIMATED RECREATIONAL DIVERS
BY GEOGRAPHIC AREA OF RESIDENCE

	Individuals With Diving Skills	Individuals Practicing The Sport
East Coast	300,000	75,000
West Coast	790,000	198,000
Gulf of Mexico	480,000	120,000
Great Lakes & Inlands	290,000	73,000
Foreign	30,000	8,000
Total	1,890,000	474,000

(NOAA, 1975)

TABLE 2

**PROJECTED GROWTH COMPARISONS TO 1980
OF SELECTED OUTDOOR ACTIVITIES**

	<u>1965 AAGR*</u>	<u>1970 AAGR</u>	<u>1975 AAGR</u>	<u>1980</u>
Skin and Scuba Diving				
Occasions (Millions)	6 5.0%	7.7 5.0%	9.8 5.0%	12.5
Water Skiing				
Occasions (Millions)	33 6.1%	44.0 6.1%	59.0 6.1%	79.0
Boating				
Occasions (Millions)	130 3.8%	157.0 3.8%	189.0 3.8%	228.0
Swimming				
Occasions (Millions)	257 3.5%	308.0 3.7%	369.0 3.7%	443.0
Surfing				
Occasions (Millions)	14 3.0%	16.2 3.0%	18.5 3.0%	21.5

*AAGR — Average Annual Growth Rate

(Winslow and Bigler, 1969)

leave their boat idle while other income alternatives are sought. As the number of divers increases, along with the increasing population in coastal areas as indicated by Ducsik (1974), there should be a greater demand for dive charters in the coastal areas that possess the necessary resources.

Established dive sites along the Texas coast are predominantly offshore, possibly due to the turbidity and sediment load in near-shore waters. The number of divers (70,000) in Texas, although not all are active participants, substantiates that there is a potential market for a delivery system (charter dive boats) along the Texas coast. However, Texas divers may do little saltwater diving in Texas, owing to competing opportunities from inland locations that are closer to home or perhaps more attractive saltwater diving areas. This competition, as well as a variety of other reasons why not all 70,000 divers may dive on the Texas Gulf coast, may explain why there are few dive boat operations. Nevertheless, with the largest segment of the diving population in Texas located in Houston and the surrounding metropolitan area, it is still reasonable to assume that the demand for coastal diving services is great in this area (Manry, 1977). The uniqueness of the coastal diving experience also makes it difficult for other activities to be substituted. For as Ketchum (1972) has stated, skin diving and scuba diving among saltwater shallows and depths as well as among coral reefs is quite different from diving activities in inland freshwater. The challenge and risk involved, as well as the rewards, are much greater.

While there are many popular diving areas throughout the world with exceptionally clear water and vast amounts of biological and geological attractions, the coastal waters of the Gulf Coast states have significant

portions of relatively unproductive bottom (Parker et al., 1974). This factor alone may be enough to restrict the charter dive industry, as well as diving generally in Texas coastal waters. In addition, the cost of charter services and long distances travelled offshore may reduce their desirability. For example, the cost of a weekend trip to a site like the Flower Gardens Reef (110 miles off Galveston) is approximately equal to group charter flights to many areas in the Caribbean (Graham and Ditton, 1974). Some of these constraints may be reduced, however, with the deployment of the Liberty ship artificial reefs by the Texas Coastal and Marine Council. These new resources should become popular dive sites.

To properly plan for, and administer the developing sport of scuba, public and private decision-makers should know more about the people who participate in the sport (Regan, 1977:11). In a paper presented at the First National Conference on Marine Recreation, Graham (1975) utilized a "systems approach" to describe the problem of management for marine sanctuaries.² The system was broken down in three major segments: participant, environment, and activity. One of the most important considerations that should be evaluated to accurately assess demand is identification of the socio-economic characteristics of the diver. Expressed and actual patterns of use at designated and undesignated areas need to be identified if effective management decisions are to be made

²P.L. 92-532, Title III Sec. 302 (a) states that: A marine sanctuary is an area designated by the Secretary of Commerce of the ocean waters, as far seaward as the outer edge of the Continental Shelf, as defined in the Convention of the Continental Shelf (15 U.S.T. 74; TIAS 5578), of other coastal waters where the tide ebbs and flows, or of the Great Lakes and their connecting waters, which he determines necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values.

(Graham, 1975:84). This is particularly true in the planning of private business ventures. Market analysis can serve as a means for screening venture ideas and also for evaluating a project's feasibility in terms of the market. In each of these instances, the market analysis involves the search for and analysis of data that can be used to identify, isolate, describe, and quantify the market (Clifton and Fyffe, 1977:6). The Graham and Ditton (1974) diver behavior study provides insight into where divers dive and what activities they participate in when diving, and has been used, along with other sources, for understanding the Texas coastal diving market.

For safety reasons, the sport of scuba diving is a unique recreational activity in that it is usually engaged in by at least two or more individuals. The activity usually requires water resources of a certain quantity, quality and exclusiveness to permit an optimal experience. Thus, sport scuba diving tends to represent a facility and place specific event (Graham, 1975:85). This fact is supported by data collected by Graham and Ditton (1974).

In their study, two populations of divers were surveyed. One consisted of registrants at the Seaspaces Conference held at Houston, Texas, in October, 1974. The second population was a random sample of certified Texas divers. Participation patterns, preferences and factors influencing diving participation were obtained.

The median age of divers in the state sample was 30 compared to 29 for divers in the conference sample. Over 50 percent of the respondents in both samples had completed college and acquired additional graduate education. In the statewide sample, 45 percent earned more than \$15,000

with five percent about \$100,000. In the conference sample, 39 percent earned more than \$15,000, with three percent between \$55,000 and \$99,000 (Graham and Ditton, 1974:28).

The occurrence of dive trips taken by the two sample groups differed. The statewide group usually went on weekend trips to one site while the conference group usually went on one-day trips to one site. This would seem to fit with the finding that 24 percent of the statewide sample travelled more than 250 miles by land, while 27 percent of the conference sample travelled 75 miles or less to the water's edge (Graham and Ditton, 1974:33). A presumption that the statewide group travelled by car to their destination, therefore reducing actual time available for the diving trips, is made. The conference attendees travel less distance over land to their destination. Therefore, more frequent one-day trips were taken by the conference group. Distances travelled seaward for the two groups differed in that the statewide group travelled less distance in day and weekend trips than conference attendees. A majority of both groups travelled offshore within the 59 mile range. In addition, a large percentage of the statewide and conference groups (14 percent and 22 percent, respectively) travelled to a distance of 110 miles offshore.³

The period of most intensive diving activity on the Texas coast is from May 1 - September 1 and almost three-quarters of the diving activity on the Texas coast occurs during this period (Graham and Ditton, 1974:35).

³The Flower Gardens is one of the most popular dive sites due to it's make-up of live coral and marine animals even though it is the furthest offshore of any Texas dive site.

The majority of the divers responding indicated that they went diving within the 60 to 89 foot depth range, and said they were willing to accept a minimum visibility of 25 feet to less than ten feet. With the expansion of artificial reefs off the Texas coast, increased activities such as scuba diving should occur. In assessing the feasibility of providing a delivery system (charter dive boat) to these reefs, the diver responses mentioned above should be considered. With the exception of depth, respondent desires coincide with the resource provided. However, time limitations for a dive on the artificial reefs, due to the depth (101 - 104 feet), may be restrictive to the feasibility of a charter operation using them on a regular basis.

Background information concerning the feasibility of charter dive boats along the Texas coast is difficult to locate. As has been experienced with other types of boat operators, most are very reserved about revealing financial information concerning their businesses. Therefore, a search for a cooperative operator was made to acquire this information to better understand the financial aspects of a charter dive boat operation. This search was conducted through an inventory of charter operators. The inventory will be useful for establishing the location of current operations in relation to present market areas.

CHAPTER II

METHODOLOGY

In order to fulfill requirements for a professional paper, this investigation goes beyond an actual feasibility analysis. Objectives are twofold: (1) to provide a prospective operator with general guidelines for conducting a feasibility study, and (2) to conduct a financial feasibility analysis for a proposed charter dive boat operation to be located on the Texas coast. This study should be useful to a potential charter operator to determine whether investment of time and capital in such a venture would be feasible. It should also be useful to the established charter operator for corroborating projected income and expenses for future planning purposes. The analysis is based on data collected from dive charter operators.

This study uses a descriptive research methodology. A financial analysis was conducted to determine the feasibility of a proposed charter dive boat operation. Financial feasibility refers to the "self-liquidating" characteristics of a project - the generation of revenue sufficient to cover all costs, including interest on funds borrowed to finance the project and to produce a profit (Colgan, 1971:2). To conduct a feasibility study for a planned business, it is necessary to: (1) gather significant information about the planned enterprise and (2) analyze this data to determine the best possible alternatives (Neal and Trocke, 1971:3).

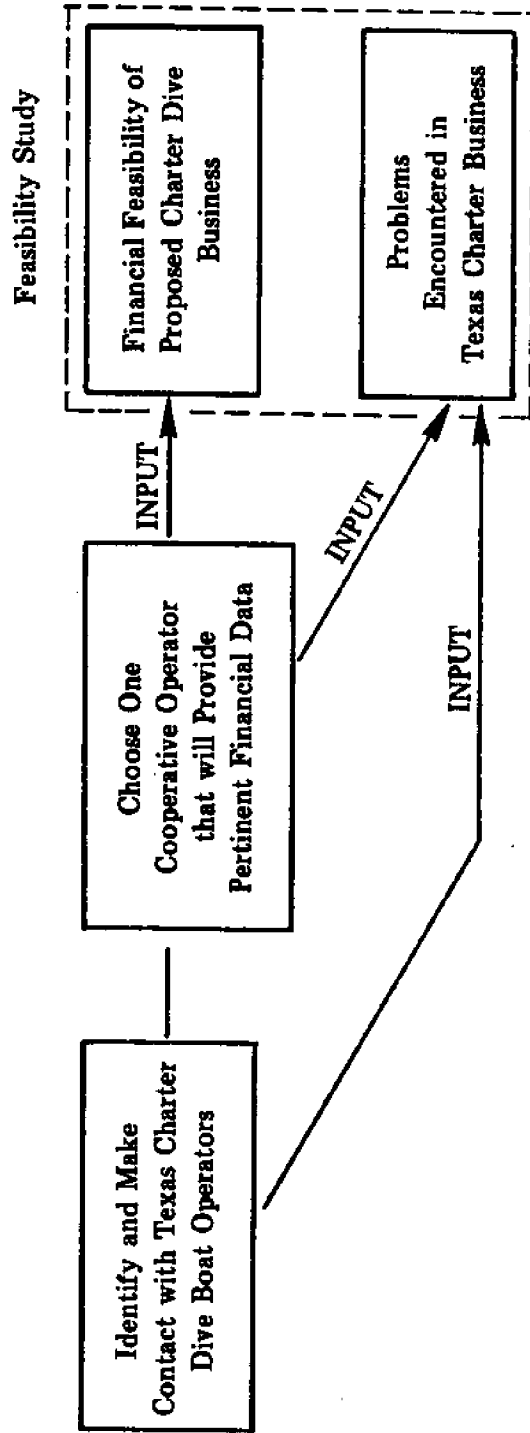
Identification of the existing industry on the Texas coast was accomplished through an inventory based on information from diving

organizations, publications, written and telephone communications, and coastal city telephone directories.

After these charter dive boat operators were located, each was contacted either by telephone or by letter. Information concerning their boat characteristics, charter trips, investment costs, expenses, and perceived problems facing the industry was obtained from each in varying degrees. A cooperative operator was located and pertinent data were obtained for the development of a profit-and-loss statement and cash-flow statement. Based on this information, a feasibility analysis of a proposed charter dive boat operation was accomplished. Factors such as investment requirements, business description, markets, location selection, competition, income estimation, and profitability were examined in detail to determine whether the proposed charter dive boat operation was feasible. To make this determination, the operator's business goal(s) must be stated. Without the goals or objectives, a realistic determination of feasibility cannot be made.

The general format of this study is illustrated in Figure 1.

Figure 1
General Study Format



CHAPTER III

FINANCIAL FEASIBILITY OF A CHARTER DIVE BOAT OPERATION ON THE TEXAS COAST

Operator objectives should be made prior to establishing the operation. These objectives should reflect the ambitions or desires of the operator. The business objectives of the prospective operator in this study are twofold: (1) to produce a large enough volume of business to pay for the boat and equipment, while increasing the number of trips each year; and (2) to continue to enjoy a preferred life-style associated with diving. This chapter will examine various aspects of the proposed operation.

The Charter Dive Boat Operation

To describe a charter dive boat, as it is known on the Texas coast, the industry must be examined. In general, a charter dive boat is any licensed boat operation which provides a service for a fee to scuba divers desiring access to offshore dive sites. There are a variety of charter dive boat alternatives. Some charter for a small number of divers, six or less as required by the U.S. Coast Guard licensing regulations. This approach is used by several operators on the Texas coast. However, as one operator states: ". . .a small boat will break a firm," (Copeland, 1977). With a small boat there is room for very few divers, as equipment weight reduces the number of divers. Therefore, the price per diver to go offshore increases, reducing the desirability to divers. Another factor is that of comfort. With the smaller boat, room for divers to rest during

the trip out and back is negligible. This creates discomfort and dissatisfaction for the divers. The party or head boat approach would seem more suited for charter diving, as this type of boat affords the room for increased numbers of divers per trip and for their necessary equipment.

Using the party boat approach, each person is charged a price and a minimum number of people must go or the boat may not leave the pier. This contrasts with the charter approach where there is a set price for the boat no matter how many people go, up to the maximum allowed.

Using charter or party fishing boats to carry divers is an alternative that can be used by operators to supplement their income. Flexibility should be attractive to dive or fishing boat operators, in that they can expand their operating season. Any combination of the above three mentioned approaches can be encountered along the Texas coast.

Based upon an examination of the existing Texas charter dive boat industry and discussions with the operators involved, there is consensus that a larger boat with the ability to carry from 10 to 20 divers and equipment would be the most viable approach. With these facts taken into consideration, the larger boat approach has been used in this feasibility study. A combination of party/head boat and a fixed fee for the boat, no matter what number of divers are taken would be appropriate. This approach leaves room for the flexibility to do other types of work.

The following sections will deal with what should be included in a business plan in order to: (1) develop guidelines for the potential operator and (2) have readily available essential information for a loan officer when seeking financial assistance. In the business plan there should be a description of the business, the product or service, market,

business location and economic conditions, competition, and projected financial statements.

When selecting the boat for the dive charter operation, several factors should be considered. These include: seasonal variations in volume of divers, type and predictability of weather and oceanic conditions, and supply of fuel. Another important factor is the versatility an operator wishes to have. Perhaps during slow periods he may wish to pursue other alternatives, for example, charter/party fishing. Another concern is the financial situation of the prospective operator. Can he finance the boat size needed or desired for the operation? Developing a business plan should force the operator to come to grips with his management objectives and assist in selecting the appropriate boat.

Factors to consider in deciding upon boat size and type include: (1) characteristics of the industry; (2) flexibility that the operator wishes; (3) operator's financial situation; and (4) economies and diseconomies of size. Examination of each of these factors will assist the potential operator in selecting the boat that best fits his objectives.

The characteristics of the charter dive boat industry are related to the available dive sites on the Texas coast and the preferences of the coastal divers. Boat selection should be made with these points in mind. As dive sites are predominantly offshore, seaworthiness and ability to stay for some period of time are important in that the predictability of weather conditions may be difficult and oceanic conditions of the Gulf of Mexico can change rapidly.

Does the operator wish to engage in other business alternatives that use the boat? If the answer is yes, then a boat must be selected that

offers compatibility to these alternatives. The potential operator in this study has a desire to use his boat for party fishing groups as a fill-in during slow periods in the diving season (May-September). This calls for a boat that can give maximum open decks to allow fishermen to use the deck space. Also, the conversion must be accomplished with a minimum of difficulty, as the opportunity for making a fishing trip may make itself available quickly.

The operator's financial situation may very well limit the size of boat that he may purchase. In the case of the potential operator presented in this study, he is financially able to provide at least one-half the money required to purchase the boat and necessary equipment to begin the boat operation. However, this would not be the case if an unrealistic selection of boat type and size is made.

Lastly, the economies and diseconomies of boat size need to be considered. As stated earlier, a small boat is difficult to operate and make a profit. Therefore, the boat must be big enough to carry a sufficient number of divers to make it worthwhile. This is referred to as economy of size (Smith, 1975:144). The larger boat can haul more divers with less fuel per diver than a smaller boat. They can reach the dive sites sooner, stay longer and return sooner than smaller boats. The advantages of a larger boat offsets the greater total cost in most cases.

On the other hand, if too large a boat is selected, the overall cost of purchasing and operating the boat may not be feasible for a dive charter operation on the Texas coast. Although the larger vessel can stay at sea longer than the smaller one, it may be forced to return as frequently (at greater cost), due to diminishing weather conditions.

Also, the larger boat may have capability to carry more divers per trip, but to get the number of divers to make a full load every trip may be difficult.

In this study, boat size and type were selected with consideration given to business objectives, as well as financial and experience capabilities. Based on an analysis of all factors (i.e., operator's objectives, boat cost, fuel cost, maintenance, and experience) a 36 foot fiberglass, diesel powered boat, with a capability of carrying 18 divers and their gear (two tanks/dive), will be used for the proposed dive boat operation. The boat can be bought from the dealer with several options and with minor modifications for scuba tank storage. See Table 3 for a cost breakdown on the boat and additional equipment.

From reviewing literature on charter businesses in other parts of the country and from field study, it would seem that some level of association with a diving business or resort is necessary to attract a sufficient number of divers. Since sport scuba divers must have specialized equipment and services and since the number of locations that provide these services are limited, boat operators should make arrangements with these businesses to refer and/or book divers for the boat. The proposed boat operation will operate through, but not necessarily for, one of several diving related businesses. This business will act as a booking agent for divers in search of a delivery system (charter dive boat).

Formal arrangements for referring or booking divers may be made, on a commission basis. However, informal non-monetary arrangements may be sufficient. An arrangement between a dive business and the boat would seem symbiotic. For instance, the dive shop would benefit from the

TABLE 3
INITIAL INVESTMENT

Boat — 36 feet, fiberglass, head(shower), rest area, 185 hp. diesel engine	\$40,000.00
Loran	2,300.00
Radios, VHF, 53 and 12 channel	1,400.00
Radio, C.B.	200.00
Radar, 16 mile range	2,295.00
Depth Recorder	1,200.00
Dive Ladder, aluminum	150.00
Total for Depreciation	\$47,550.00
Sales Tax, 5%	2,377.50
Total Investment	\$49,927.50

Source: Basic boat information was obtained from boat manufacturers and dealers and from charter operators. Optional equipment information was obtained from various operators. The boat described is a Radoncraft, and can be ordered with various optional modifications. An alternate boat that is comparable (size and price) is a Hatteras Sportfisherman or a comparably sized Chris Craft. Boats are available at varying prices, depending on powerplants, options, and custom work.

business of additional divers seeking equipment and services in preparation for offshore dive trips. On the other hand, the boat would benefit from the diving businesses by providing a volume of divers for the boat through services and availability of equipment.

Determination of exactly what will be offered to the customer by the charter boat operation depends on the policy of each individual operator. Policies should stress the basic nature of the business-service and emphasize those particular aspects of the service that: (1) are most desired by customers, and (2) the company (operator) is best equipped to furnish (Kelley, Lawyer, and Baumbach, 1968:125).

When establishing the service policy, the operator should consult with competent advisors such as other successful boat operators, independent consultants, and perhaps even conduct a background search of what divers in the market area desire. The time spent doing these things may help counteract the beginner's tendency to offer what he likes and wants instead of what his potential customers like and want (Kelley, Lawyer, and Baumbach, 1968:563).

The Product and the Market

The business most likely to succeed is one which is based on a product or service that customers will pay for in sufficient volume to generate profit (Nelson, Leach, and Scanlan, 1976:17). Once the market is identified, the prospective dive boat operator should determine what the divers want and are willing to pay for. As Graham and Ditton (1974) reported, Texas Gulf coast divers desire the following in their diving experiences:

1. A reasonable distance from shore (30-40 miles);
2. A reef (or artificial reef) that attracts animal and plant life;
3. A minimum of 10-20 feet visibility;
4. Rock and sand bottom, respectively;
5. A minimum of other surface activities (fishermen, recreational, and commercial boat traffic);
6. Preferably between 60-89 feet in depth, maximum;
7. Perhaps "zoned" for certain activities at specific times;
8. Ready supply of air for refills at the surface, and;
9. Provision for fuel, food, parking, lodging, showers and some recreational activities associated with the "après" hours.

It would seem that if an operator could provide at least some of these, he could enjoy a good volume of business. While many of these involve physical and legal/jurisdictional elements that are beyond the operator's control, he can still take them into account when making a decision regarding the location of his business.

During the peak diving period (May-September) on the Texas coast, divers go offshore as far as 110 miles (Flower Gardens Reef). However, most dive areas are within 25 to 75 miles from population centers where there are the necessary support facilities for the sport diving community.

Of the dive sites identified in the Texas Gulf coast area, the six most heavily used sites include (listed alphabetically): Beaumont Rigs, Buccaneer Field, Flower Gardens, Padre Island, Stetson, and V.A. Fogg (Graham and Ditton, 1974). Since 1974, five artificial reefs constructed from Liberty ships have been added to the list of diving sites and have become popular with fishermen, as well as divers. All of the dive sites

mentioned are within the desired 30 to 40 miles maximum range except Flower Gardens Reef and Stetson. A mixture of desired site types and visibility limits are available depending on weather conditions and time of year.

Depth may be a factor that restricts the number of divers desiring to visit a certain site. Depending on how many divers are restricted, this can only be resolved through better planning and siting of artificial reefs. It must also be recognized that those natural dive sites that are below the 60 to 89 feet depth used by divers may pose safety problems for divers and may not attract a sufficient number of divers necessary to sustain a dive boat.

The air supply can be provided two ways: a compressor and cascade storage system⁴ and secondly, sufficient storage space for extra tanks. Weight, cost, and time required for recharge are the restrictive factors involved. Given the size of boat and limitations of weight, the second alternative will be chosen for the proposed boat. An allowance of one spare tank per diver plus two for emergency backup will be used.

Market and potential market desires need to be considered, as the marketing concept is based upon the importance of the customers to a firm (Tate et al., 1975:197). The new boat operation should specify what market it is attempting to serve. A product or service which fulfills the needs and wants of a specifically-defined group of people is preferable to the product or service that is a compromise to suit widely

⁴A series of three or four large heavy cylinders manifolded together to the charging line for the small cylinder. For further information, see Empleton et al. (1974).

divergent tastes (Tate et al., 1975:200). A marketing segment which is not currently well-served should be selected based on such characteristics as economic status, age, education, and location. One authority has stated, ". . .if we are to market successfully, we must in one way or another continually search for 'holes' in the market. These holes are nothing but consumer needs and wants that exist because of inadequate or non-existent products or services" (Wickman, 1970:3).

Chapter I briefly described some of the characteristics of Texas Gulf coast divers. These need to be considered with the fact that a large number of divers who reside within approximately 50 miles of the coast (i.e., Houston) go offshore for diving. In one diving organization alone, more than 600 scuba divers a year visit the Flower Gardens Reef (Zingula, 1977).

Location Selection

When selecting a business location, the operator must have determined the product or service to be offered and identified the market to be served by his business. Several factors must be considered when deciding on a particular community: "(1) the nature of the business; (2) personal preferences of the operator; (3) transportation and access to the business by the operator and potential customers; and (4) type and quality of services performed by competitors" (Nelson, Leach, and Scanlan, 1976:24). One other important item should be added to this list, that of the market. Upon examination of these factors, it can be determined if a particular location would be suitable for such a business and if there is sufficient demand for another dive boat business.

The nature of the charter dive boat business lends itself to a coastal region. In the case of the Texas coast, this is restricted further to one of several coastal communities. The availability of direct open water access from the port is important to the charter operation. The transportation networks that allow direct access to the coastal communities from the market areas are also important. Figure 2 illustrates the communities that offer Gulf access on the Texas coast and the distribution of existing charter dive boats. Multiple dive boat operations tend to be concentrated in two coastal population centers: the Corpus Christi-Mustang-North Padre Island area and the Freeport area. Individual boats operate in areas such as Port O'Connor and Port Arthur. Finally, personal preference for a certain life-style, available facilities, and climate, among others, need to be considered in the location selection process.

After deliberation of where an additional charter service should be located, Galveston stands out as best meeting the criteria for location selection. The city of Galveston lies within 50 miles (see Figure 3) of where the largest concentration of divers reside and also within 40 miles (see Figure 2) of several of the most popular dive sites along the Texas coast. Also, presently there are no licensed charter dive boats operating out of Galveston (see Figure 2), even though sufficient support facilities, i.e., dive shop, harbor and repair facilities are readily available.

Figure 2 illustrates the geographical locations of current charter dive boats along the Texas coast and their relation to Texas dive sites. Markets are of great importance in that they provide the economic

Figure 2

Geographical Distribution of Texas Charter Dive Boats and Dive Sites.

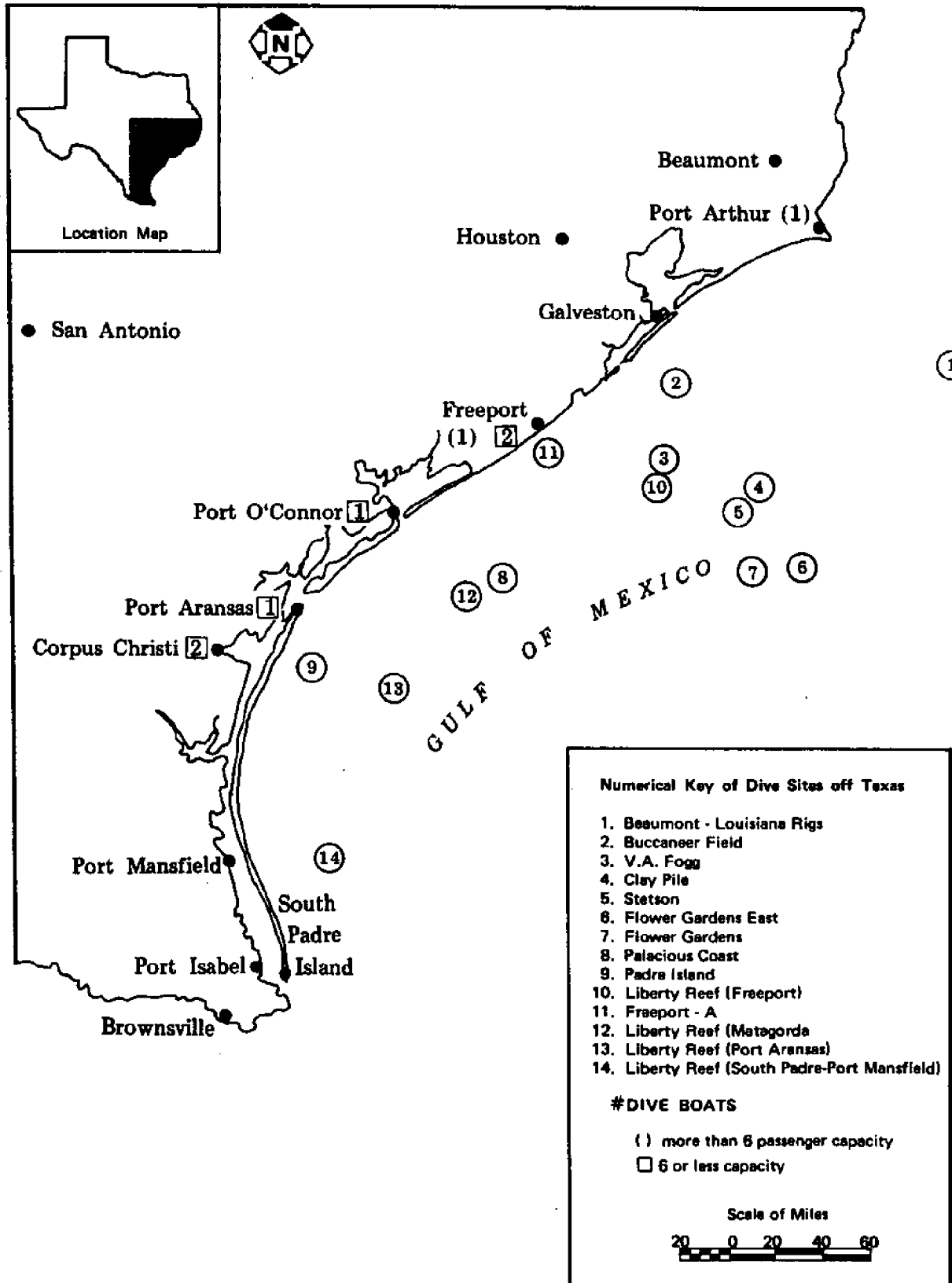
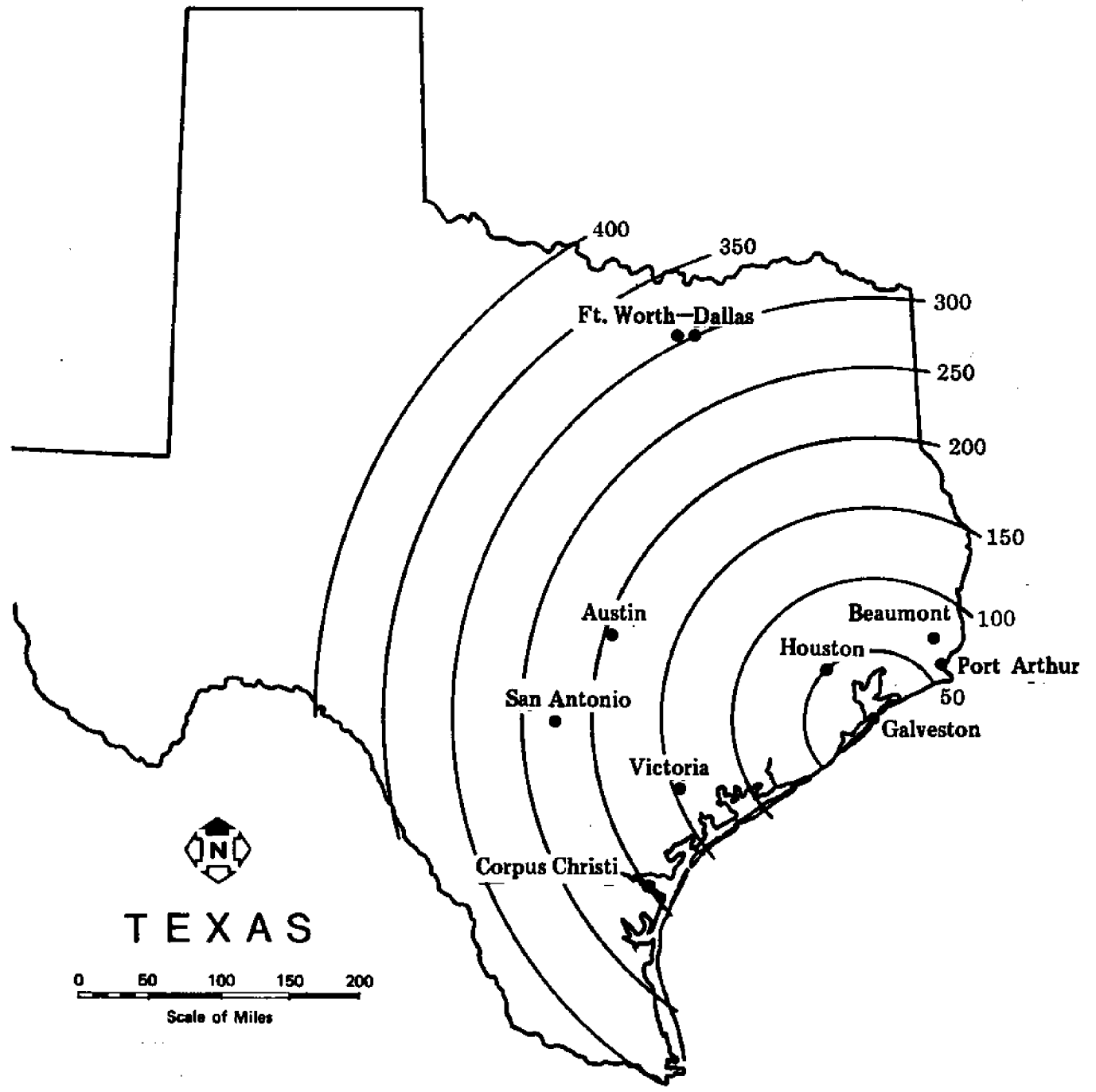


Figure 3.
Distance Relationships of Galveston to Major Texas Sport Diving Markets



justification for the existence of a business (Eckles and Carmichael, 1971:1). As with most recreational activities, there is a larger concentration of participants residing in the metropolitan areas due to the size of the general population and the popularity of the activity.

The household incomes of both the Houston and Galveston SMSAs (Standard Metropolitan Statistical Areas) shows that 44 percent and 30 percent, respectively, of the total population of the SMSAs falls within the \$10,000-\$25,000 income range (Marketing Economics Guide, 1976:77, 78). It is also noted that in 1975, Houston SMSA households had an estimated \$16,780 disposable personal income and the Galveston SMSAs was an estimated \$12,750. These factors along with the continued increase from \$16,224 in 1975 to \$21,497 in 1980 of average household effective buying income for the combined Houston-Galveston SMSAs would seem to indicate a continued potential market (Sales and Marketing Management, 1976:94).

After examination of these facts and figures, the potential charter boat operator should be able to determine that there is a sufficient number of divers in the Houston area willing and financially capable of purchasing services that will provide access to offshore sites. This would seem to be the case even though there may be a significant number of divers who own trailerable boats capable of reaching not too distant sites. One captain has stated that he is experiencing increased numbers of divers from the Houston area due to the loss of another charter boat in the Freeport area (Blood, 1977).

However, given the mean incomes of the two study samples in the Graham and Ditton study, why don't individuals buy their own boat for going diving? Several factors enter into this. First, large sums of

money are tied up in investing in a boat large enough to travel offshore safely. Boat storage and maintenance are additional costs that would discourage the potential boat owner, with the exception of possibly the most avid boater with multiple interests. These factors may be restrictive enough to persuade many divers to forego purchase of a boat and therefore seek alternative methods of delivery, i.e., charter dive boats.

All factors taken into consideration, a well conceived and managed charter dive boat operation should be feasible in the Galveston area.

Investment Requirements

Many prospective small business owners and managers have promising business ideas and plans. However, they may discover that the capital necessary to initiate their plans is not readily available (Nelson, Leach, and Scanlan, 1976:26). Needless to say, there are various sources where capital may be obtained.

Capital available to the operator includes cash on hand and cash available from these potential sources: "(1) savings accounts; (2) stocks and bonds; (3) the productive value of buildings, improvements, and equipment that can be used in the business; (4) the market value of buildings, improvements, and property; and (5) the amount of money that can be borrowed" (Smith, 1976:1). Other sources include friends, relatives, and partners. It is even possible to incorporate the business and sell stock.

Sources of capital can be broken down into equity and credit financing. The difference between the value of the project and the sum of all debts is the owner's equity (Maisei and Roulac, 1976:51). A net-worth statement can tell the individual the amount of capital or equity available.

Table 4 illustrates a hypothetical net-worth statement. From this, several sources of capital can be identified for the proposed operation. Further, the financial situation of the potential operator can be determined to see if he will be allowed to refinance mortgages on various properties to raise additional capital.

Credit or debt financing will usually be required of a potential operator since boats for charter purposes are expensive. As one captain stated: ". . .you can't find anything suitable, even in a used boat, for less than \$15,000 to \$20,000. . . (Groene, 1973:130). Unless an operator worked at a job with an extremely high income or was fortunate enough to have saved a substantial amount, he would have to seek financial assistance.

Sources of financing may include commercial banks, finance companies, and government agencies. The operator cannot be sure of obtaining financial help, but it is certain that if he or she is prepared when going to a lending institution, the chances are much greater that a loan will be obtained. Loan officers will usually want to examine four basic criteria when evaluating a loan application. These are: the character of the applicant, his income capacity, his available capital, and the economic conditions of the area (Nelson, Leach, and Scanlan, 1976:30).

Personal background information, such as income, savings, and debts should be provided in a format like the net-worth statement shown in Table 4. Other information like credit and personal references and experience with boats will also be of assistance to the loan officer in making his decision.

TABLE 4
 EXAMPLE OF NET--WORTH STATEMENT
 FOR A POTENTIAL OPERATOR, JANUARY 1, 1978

Assets	Liabilities
Current	Current
Cash \$ 100	Demand note \$ 2,000
Checking 850	Credit card account . . . 600
Savings 2,400	Income taxes 1,200
Government bonds. 6,000	
Common stocks . . 1,800	
Cash available from insurance 900	
<u> </u>	<u> </u>
\$12,050	\$ 3,800
Other	Other
Home \$22,000	Home mortgage \$18,000
Furniture 3,000	Rental property
Clothing 1,000	mortgage 21,000
Auto 2,500	Truck loan 5,000
Truck 6,300	
Rental property . . 38,000	
Land 15,000	
<u> </u>	<u> </u>
\$87,800	\$44,000
	Net worth 52,050
<u> </u>	<u> </u>
Total \$99,850	\$99,850

(Adapted From Smith, 1976)

The economics of the specific location and general region are important. A lender may not be positive if conditions are not favorable due to decreasing population, high unemployment, poor access, and transportation. These matters are usually well known by financial lenders as they conduct business on a continuing basis. However, the potential operator should gather these data for his own information in selecting the location of a new business, in addition to indicating to the loan officer that he is sensitive to the current economic setting, as was done earlier in this section.

Available working capital means not only money for investment in the boat but current living requirements until the business can begin to receive income. This working capital is assumed to be available from current cash on hand, checking accounts and sometimes savings accounts. If sufficient working capital is not available, the business is in trouble before it starts. A secondary source of income may be necessary even after the business is in full operation. As indicated by Ditton et al. (1977), all 88 charter fishing boat operators on the Gulf coast, with the exception of one, had some additional means of income.⁵ Short-term borrowing may be needed during the first and third quarters of 1978, as shown in Table 7. These loans would enable the operator to meet cash obligations (if any) in these and subsequent quarters without financial embarrassment or bankruptcy.

⁵Due to the extensive overlapping of the Texas charter dive boat and charter fishing boat industry, much of the related information compiled in Charter Fishing on the Texas Gulf Coast by Ditton et al. will be used for analysis purposes in this study.

Analysis of Profitability

Profit may be described as that which is left over for the businessman after the goods are paid for and the bills are met (Kelley, Lawyer, and Baumbach, 1968:493). Profits, however, should not be left to chance; they should be planned for, not hoped for.

The profit-and-loss statement presented in Table 5 is a summary of all activity involving income and expenses projected for the proposed operation during a particular period. It also illustrates the profit, or loss, during a financial period (three one-year periods).

After acquiring pricing information from several sources (other operators, examination of studies, marine advisory personnel, and bankers) and after identifying cost per trip, depending on the operator's objectives, some price can be placed upon the service of the boat for the trip. The average price per diver on the Texas coast has been approximately \$30. The proposed operation will be set up on a flat rate of \$400 per trip, with a maximum of 18 divers, which averages out to \$22.22 per diver. The pricing approach to be used here is commonly used by charter boats where a set fee is charged no matter how many divers go. As the number of divers increases (up to the maximum that can be safely carried), cost per diver decreases. The reasonable price and the quality of the boat should attract divers who may otherwise not go diving. The price also is not fixed. It can be adjusted upward if a higher margin of profit is desired. However, for analysis purposes, the price of \$400 was utilized. Total income for a given year is calculated by multiplying number of trips by the price per trip. In the case of the first year, 50 trips are projected for a total of \$20,000 income.

TABLE 5

**3--YEAR PROJECTED PROFIT--AND--LOSS STATEMENT
FOR PROPOSED DIVE BOAT**

	<u>1978</u>	<u>1979</u>	<u>1980</u>
(Trips)	(50)	(60)	(70)
INCOME			
Gross Revenue	\$20,000.00	\$24,000.00	\$28,000.00
EXPENSES			
<u>Fixed</u>			
Insurance	\$3,000.00	\$3,000.00	\$3,000.00
Dock fees	900.00	900.00	900.00
Repairs	800.00	800.00	800.00
Depreciation	4,525.00	4,525.00	4,525.00
Advertising	<u>150.00</u>	<u>150.00</u>	<u>150.00</u>
Total Fixed	\$9,375.00	\$9,375.00	\$9,375.00
<u>Variable</u>			
Fuel	\$1,430.00	\$1,716.00	\$2,002.00
Captain wages	2,500.00	3,000.00	3,500.00
Deckhand wages	1,250.00	1,500.00	1,750.00
Ice	97.50	117.00	136.50
Refreshments (sodas)	428.50	514.20	599.90
Tank rental	<u>4,500.00</u>	<u>5,400.00</u>	<u>6,300.00</u>
Total Variable	\$10,206.00	\$12,247.20	\$14,288.40
TOTAL EXPENSES	<u>\$19,581.00</u>	<u>\$21,622.20</u>	<u>\$23,553.40</u>
NET PROFIT BEFORE INTEREST AND TAXES	\$ 419.00	\$ 2,377.80	\$ 4,336.60

(Format adapted from Smith, 1976)

SOURCE: Data were derived from a cooperative dive boat operator and were corroborated by other operators.

Expenses are broken down into the fixed and variable types according to the time frame being used in the analysis. Fixed expenses are expenses that do not change over a one-year period. These include insurance, dock fees, repairs, depreciation, and advertising. These expenses will be incurred whether the boat makes no trips or 100 trips.

Insurance is usually one of the largest expenses for a charter operator. Insurance rates are based on several criteria: value, size, and age of the boat, the condition and safeness, and the captain's experience and safety record. As one marine insurance agent stated:

". . .different underwriters have different ways of protecting themselves, for instance, some won't insure boats that have fiberglass fuel tanks, some give credits for safety equipment such as sonar or depth sounders, some give credit for specific lay-up period. . .and hull rates are affected too by the deductibles you want" (Van Ameringen, in Groene, 1973:140). Insurance can be broken down into hull and liability insurance. Hull insurance is required by lending institutions much the same way as new cars are insured. This type covers the boat itself. Secondly, liability insurance provides coverage for injury that could happen to passengers.

Moorage or dock fees are determined by location and boat size. It is to the operator's advantage to moor in a convenient location for passengers and ease of access to open water. These facts and the size of the slip required for the proposed dive boat mean a monthly rate of \$75 or an annual cost of \$900 for storing the boat.

Repairs have a fixed component in yearly haul-out and a variable component in wear and tear from use. These components will vary between

operations depending on the operator's ability to perform maintenance and the number of haul-outs per year.

Depreciation is a non-cash expense that allows an operator to allocate the cost of his fixed asset over the boat's useful life. The calculation of the amount of depreciation depends upon (1) the depreciable basis (that is, the value of the boat to be depreciated); (2) the depreciation method (straight-line); (3) the useful life (number of years over which depreciation is spread); and (4) the salvage value, if any. Depreciation is calculated by dividing the depreciable basis (\$47,550) by the years (10) of useful life (Maisel and Roulac, 1976:360). In the case of a charter boat, a ten-year depreciation period will be used.

Two things need to be considered when contemplating advertising the operation. One is how much expense should be devoted to advertising and the other is the kind of advertising desired. Initially, funds may have to be set aside for more formal advertising approaches, such as notifying inland city sport diving businesses and related clubs, and advertising in sport-related periodicals to generate business. However, once return business has been accomplished, word-of-mouth advertising may be the most effective on a regional basis. Advertising has been defined as: ". . .whether you think of it as public relations, communication, sales or anything else, it is the business of encouraging customers to do business with you. Your efforts are divided into two parts: getting the old customer to repeat business and expand the kind or amount of services he buys from you, and attracting the new customer" (Eastman, 1975).

Variable expenses will vary according to the number of miles travelled seaward during a trip and the number of trips taken. These expenses include fuel, wages, ice, refreshments, and tank rentals.

While fuel will be a major expense, this expense can be dampened by using diesel fuel instead of gasoline. The rate of consumption for the proposed dive boat is 12 gallons per hour with a cruising speed of 15 miles per hour. Mileage per gallon is approximately 1.25, while fuel is supplied at a cost of \$.46 per gallon (Krumnow, 1977).

Crew wages are paid to a licensed captain and a deck hand. In the calculations (Table 5, p. 32), wages for both were estimated from current charter wages on the Texas coast. The captain's wage for a trip is, on the average, \$50. Using this figure, a yearly income can be calculated. First year income is \$2,500 (50×50) and increases as the number of trips increases. Wages for the deck hand were also estimated from interviewing operators on the coast. The average wage per trip was \$25. In the case of this boat, a dive master⁶ can act as an additional hand if the situation warrants. Since dive masters are responsible for members in the party during all phases of the trip, they can deal with operational, as well as safety matters.

Ice and refreshments for passengers and crew are provided as a complimentary service. In reality, this cost is internalized in the charter fee. Ice can also be used to keep lunches and any speared fish fresh. The cost for ice (30 lbs.) and sodas (two cases) per trip is

⁶The dive master is usually the senior most experienced diver in the group. He/she is in charge of surface diving operations and on the bottom, as well. Dive masters can be officially trained, but need not be.

\$11.52. If passengers wish to bring additional refreshments onboard, they may.

Another service that is provided at some expense is that of tank rental. This saves the diver the trouble of having to rent or borrow an additional tank for this two-tank trip. By making arrangements with a local shop, the tanks can be rented by the operator and delivered to the boat, stored and be ready before the first diver comes aboard. These tanks are rented at a rate of \$5 per tank. Having 18 tanks totals \$90 per trip, which over a year's time makes this service a very large expense. This also has been internalized in the charter fee.

Table 5 (p. 32) shows income and expenses for three years, starting with 50 trips per year expanding to 60 trips the second year and 70 trips in the third year. For the proposed boat operation to break even, a minimum of 48 trips must be taken at a fee of \$400 per trip. This minimum number of trips is determined by subtracting the portion of total cost which varies in proportion to the volume of sales (variable [\$204.12]) from the fee per trip (\$400) leaving a sum of \$195.88. By dividing the total yearly fixed cost (\$9,375) by \$195.88, results in the minimum number (48) that the proposed charter boat must make to simply break even on a yearly basis. Table 6 summarizes the per trip variable cost and shows how the minimum trips to break even were calculated.

Projecting Cash-Flow

Cash-flow projections, as well as the profit-and-loss projections and net-worth statements, have proven valuable in analyzing new marine businesses (Smith, 1976). Each has its own purpose: the profit-and-

TABLE 6
YEARLY BREAKEVEN

VARIABLE COSTS PER TRIP

Fuel — 12 gal/hr at 15 mph, approximate rate 1.25 mpg, cost .46/gal., distance traveled 75 miles round trip \$1.00 oil/trip	28.60
Wages — Captain	50.00
Deckhand	25.00
Ice — 30 lbs @ .65/10 lbs	1.95
Refreshments (2 cases soda)	8.57
Second Tank rental — \$5/tank (18)	<u>90.00</u>

TOTAL VARIABLE COST PER TRIP **\$204.12**

$$\frac{\text{TOTAL FIXED COSTS}}{\text{CONTRIBUTION MARGIN}^*} = \frac{\$9,375}{(400-204.12)} = \frac{\$9,375}{\$195.88} = 48 \text{ trips}$$

*Unit Price-Variable Cost per Unit

loss statement predicts the future profitability of the business; cash-flow measures the ability of this business to meet cash needs and accumulate cash reserves over time; and net-worth statements measure the long-term financial trend.

In Table 7, the cash expected to flow in and out of the proposed charter dive boat operation is projected quarterly for 1978 and 1979 and annually for 1980. This projection of cash-flow is another important tool that the potential operator should present to a loan officer when applying for long-term loans (Etter, 1977).

As stated, cash-flow projection illustrates what flows in and out of the business. Cash inflow for the first year is derived from equity, sales (see Table 5, p. 32), the long-term loan for purchase of boat and equipment, short-term loans as needed, and sales of capital items. Due to the net-worth of the potential operator, he was able to put up \$20,500 of his own funds to initiate the project. Sales have been projected and obtained from the profit-and-loss statement projections. Available funds from a financial institution amounted to \$25,000, while the short-term funds were approximately \$5,000. The short-term borrowing was for providing additional working capital. The total amount of inflow for the first quarter was \$53,600.

Projected operating costs are taken directly from Table 5 (p. 32). Projected capital purchases include the boat and equipment. Long-term principal and interest payments are those provided for in a loan contract. Short-term principal and interest payments are made when cash is available. Lastly, in the cash outflow, money is needed to meet family living expenses. There must be some income provided for this purpose or other

TABLE 7

3-YEAR PROJECTED CASH-FLOW STATEMENT FOR PROPOSED CHARTER DIVE BOAT BUSINESS*

	1978				1979				1980
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
Balance forward	\$ 20,500	\$ 543	\$ -281	\$ 545	\$ 96	\$ 963	\$ 172	\$ 869	\$ 85
Cash inflow									
Charter sales	2,800	7,200	8,800	1,200	3,200	8,800	10,000	2,000	28,000
Capital sales	-----	-----	2,500	-----	-----	-----	-----	-----	-----
Long-term borrowing	25,000	-----	-----	-----	-----	-----	-----	-----	-----
Short-term borrowing	5,000	-----	-----	700	-----	-----	-----	-----	-----
Total cash available	53,300	7,743	11,019	2,445	3,296	9,763	10,172	2,869	28,085
Cash outflow									
Operating costs	1,429	3,674	3,674	1,429	1,633	4,491	5,103	1,021	14,288
Insurance	-----	1,500	1,500	-----	-----	-----	3,000	-----	3,000
Income taxes	-----	200	200	200	200	300	400	200	1,600
Capital purchases	49,928	-----	-----	-----	-----	-----	-----	-----	-----
Long-term principal	-----	-----	-----	-----	-----	2,000	-----	-----	2,300
Long-term interest	-----	-----	-----	-----	-----	1,300	-----	-----	1,000
Short-term principal	-----	1,000	3,500	500	-----	-----	-----	700	-----
Short-term interest	-----	150	100	20	-----	-----	-----	63	-----
Family living w/drawal	1,400	1,500	1,500	200	500	1,500	800	800	4,000
Total cash outflow	52,757	8,024	10,474	3,349	2,333	9,597	9,303	2,784	26,188
Net cash	543	-281	545	96	963	172	869	85	1,897

(Format adapted from Smith, 1976)

* Rounding error

SOURCE: Data were derived from a cooperative dive boat operator and were corroborated by other operators.

means of income must be sought. Total cash outflow for the first quarter was \$52,757 leaving \$543 net cash to be forwarded to the next quarter. This process is continued for several years to give the operator an idea of where he stands in terms of meeting future needs.

As was demonstrated, the operator may need supplemental loans in the early years until the operation's reputation and the operator's skill are established. However, these short-term loans were kept to a minimum. During the third quarter of the first year, the operator's truck was sold due to a lack of need for this vehicle. This was of assistance in holding down the need for borrowing. During the projected period, as the operation gains visibility, charter trips can be expected to increase in number from 50 the first year to approximately 70 by 1980. This latter estimate coincides with the average number (68) of Gulf charter fishing trips taken by charter boats on the Texas coast (Ditton et al., 1977). As Table 7 (p. 39) indicates, this business will not provide sole support for a family in the first several years, but it can be an income supplement.

The figures presented in the tables of this chapter are estimates of what could be or averages of responses for operators interviewed. Adjustments can be made when developing any of these projection tools as prices for certain services, boats, fuel, interest charges, and wages may vary. Also, depending on the economic situation at the local or national level, cost may vary for establishing and operating a charter dive boat operation.

CHAPTER IV

REVIEW OF PROBLEMS ENCOUNTERED BY CHARTER
DIVE BOAT OPERATORS

This chapter will provide a discussion of what charter boat operators in Texas perceived as problems in their businesses. The order in which these problem areas are discussed does not indicate their magnitude of importance or severity.

Distance

Some operators have stated that certain man-made dive sites (i.e., Liberty ship artificial reefs) were placed too far offshore. It was felt that distance from shore, perhaps, has an effect on the participation of the public due to the limited capabilities or lack of equipment to navigate such distances. This would seem to counteract the primary purpose of artificial reef programs. The 63rd Texas Legislature (1973) passed a State Senate resolution to the effect that the Parks and Wildlife Department was authorized and directed to take the necessary action to assure the maximum benefit to the citizens of Texas in the acquisition and placement of Liberty ships in or adjacent to the territorial waters of this state (Texas Legislature, 1973). It was determined that 30 miles beyond the jettied passes was considered a reasonably safe distance for small boats to venture (Texas Council on Marine-Related Affairs, n.d.). Although smaller charter dive boats venture to these distances, they usually have better navigational equipment than the private boater. Sudden changes in weather can be very hazardous to these small boats.

The numerous offshore petroleum platforms that are scattered across the upper Gulf of Mexico provide alternative dive sites. While many of these platforms are approximately the same distance offshore as the Liberty ship reefs, the depth range is considerably less. For example, Buccaneer Field, a series of gas platforms off Galveston, has an average depth of 65 feet compared to the Freeport Liberty ship reef which is in from 101 to 104 feet of water (Texas Coastal and Marine Council, 1973). The platforms offer a variety of depths to the diver as the entire water column is available. Therefore, platforms appear to offer more potential to divers wishing to dive offshore within their desired depth limits, as well as allowing more time per dive without decompression becoming a factor. These kinds of facility tradeoffs were important to operators.

Another factor concerning distance is that of economics. As the distance travelled seaward increases, the cost per trip increases. One operator stated that "reefs are too far from harbor for frequent use," and "cost of fuel makes the trip uneconomical" (Etie, 1977). As prices increase, the marginal utility of these artificial reefs is reduced with decreased use by the public.

In planning an artificial reef program, access would seem to be inextricably tied to that of proximity to or availability of related goods and support services. If only a very small number of users can access the resource from coastal communities, then the resource was not placed so that it could provide maximum benefit to the users. For example, the accidental sinking of one of the Liberty ships close to Freeport has become a very popular site with fishermen and divers. This reef is providing more benefit to users due to its close proximity to boat ramps

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and harbor facilities than most of the other artificial reefs.

Without belaboring the importance of determining the optimum location for artificial reefs (it is beyond the scope of this study), the capabilities and costs of securing access for diving must be better considered in planning for artificial reefs.

Conflicts

Another area dealing directly with the dive sites is that of user conflicts. Kusler (1975) stated that there are three common types of conflicts between coastal zone uses:

- Intra-use conflicts between the same types of uses (e.g., motor boat hits motor boat),
- Inter-use conflicts between different types of recreation uses (e.g., motor boat hits swimmer, marina displaces wildlife area), and
- Conflicts between recreation and non-recreation uses (e.g., industry destroys beach recreation area).

Interaction of these types of groups does not always raise conflicts. However, when certain events take place or a large enough number of one type of participants are present, conflicts are more than likely to occur.

Many of the conflicts encountered by divers are spatial conflicts with other recreational users (inter-use) of the coastal lands and waters (Carver, 1974:89). In the case of offshore dive sites, the types of uses are restricted by their remoteness. Boaters, fishermen, and other recreational user groups are found offshore. Also related to the remoteness of offshore sites, few, if any, boaters will use offshore sites strictly for cruising purposes but rather as a means to go fishing.

Some fishermen seem to have a feeling that divers frighten fish from an area by their presence or through their attempts to spear the fish. During a survey of Texas charter/party fishing boat operators on the Texas coast concerning their use of Liberty ship artificial reefs, several stated "too many divers using the reefs" as a reason for not using these reefs (Schwartz, 1977). However, this is not the sole reason for not using the reefs, as several factors enter into the decision to use them. These would include distance, lack of desired sport fish species, and difficulty in navigation among others. This documented bad feeling toward divers is not widespread, as fishermen will sometimes ask divers about the locations and types of fish they have seen. Areas offshore will be large enough usually to accommodate a considerable number of divers and fishermen. These uses are usually not congregated in one locale due to the size of the site. For example, the Freeport Liberty ship reef consists of two 430 foot ships with a surface area of five and one-half acres each. These ships are placed 400 feet apart so as to not disrupt circulation of bottom currents (Lee, 1975). This would seem to be sufficient space to allow both divers and fishermen to use this site simultaneously.

Insurance

Another problem area mentioned by several operators is that of insurance. As stated earlier, insurance is a major expense to the charter dive boat operator. A former dive boat operator stated that his insurance company wanted \$36,000 yearly from him to carry passengers (Bell, 1976). However, this is an extreme case, and the usual cost is considerably less. Some reasons that insurance is high could be as follows: ". . .our

reasons for not wanting to write charters at present are: unknown liability exposures, no control of the maintenance and upkeep to determine seaworthiness of the vessel, and lack of marine underwriting expertise which limits us in the proper underwriting of this exposure" (Groene, 1973:139).

The number of insurance companies that do insure charters seem to be limited. This, in conjunction with an undetermined risk factor, causes insurance prices to be high. This trend of increased cost is likely to continue.

Unlicensed Boats

"Bare-boat" is a term with more than one meaning. In other parts of the country, especially the east coast, bare-boats are large cruising boats that are rented or leased out without a crew. In Texas, a bare-boat is a charter boat that is not licensed by the U.S. Coast Guard for carrying passengers for hire.⁷ Legal charter operators who take parties diving or fishing are concerned about these bare-boats for more than one reason. Bare-boat operators take business away from licensed operators. Also, more often than not, bare-boat operators are unfamiliar with dive areas, operating procedures and safety precautions. Not only do they risk the safety of passengers and boat but they also often fail to provide satisfactory diving experience for customers. One operator felt that stricter enforcement by U.S. Coast Guard and USCG Auxiliary of these type of operations may cause inconvenience to licensed operators but that

⁷For information on U.S. Coast Guard requirements in regard to licensing for carrying passengers for hire, see CG-191 (six or less) or CG-323 (over six).

in the long run it would be to their benefit (Krumnow, 1977).

Weather

One problem that is presently beyond the control of any agency or individual is the weather. The Gulf coast area is highly susceptible to rapid weather change and conditions can get severe rapidly. With bad weather, operators must cancel charter trips. This makes it difficult to meet financial obligations. One operator stated that he had 50 percent cancellation of charter trips before June 1st of last year (Copeland, 1977). If weather deteriorates after the boat leaves port, usually a total refund will be given. Once the first dive is complete, no refund is given (Blood, 1977). When planning a dive charter boat operation, the weather and its impact on business activity must be taken very seriously. It would be worthwhile to contact the weather service and get information concerning past weather patterns.

Business

The volume of customers that is required to sustain a viable business is very important to the charter dive boat operator. During the initial years it will be necessary to attract new customers. One captain who has been in the business for ten years indicated that his boat is already reserved for every weekend from April, 1978 to October, 1978 (Blood, 1977). However, this may not be the case for all operators who have not been in business as long, and who therefore lack the established return clientele he enjoys. This operator also stated that his operation is experiencing increased numbers of divers from out-of-

state making reservations, with some as far away as Indiana (Blood, 1977). Perhaps out-of-state markets are becoming aware of Gulf dive sites through increased exposure by dive publications. Increased advertising just prior to peak diving season (May-September) in such publications should refresh memories of divers familiar with Texas Gulf coast sites and services and attract new divers.

Planning ahead for the peak diving season must be accomplished so operators can be prepared to take advantage of a maximum amount of business. This means scheduling haul-outs and preventative maintenance during slow periods, hopefully avoiding breakdowns during operation which are costly in time and money. Consideration must be given to alternative means of income (if needed) during offseason.

The income alternative may not be compatible with the unpredictable schedule of charter dive boat operations. Teaching school is a good example of securing alternate means of income. This allows freedom for weekends and summer months, coinciding with peak diver participation periods. As not all operators qualify or desire to teach school, other alternatives should be sought, if needed.

Diver Education

One last problem area mentioned by at least one operator was that of divers providing misleading information about experience levels and their lack of knowledge pertaining to proper boat procedures. One interviewed captain discontinued carrying divers because of their attitudes and their alleged tendency to be untruthful (Williams, 1976). Divers who give misleading information and who use improper procedures on the boat are,

more than likely, a small portion of offshore divers but they have, nonetheless, reduced the opportunities for other divers to visit offshore sites (at least through this one operator). Another operator cited an incident where three divers were in a near accident due to failure to follow diving procedures in the Gulf. These divers surfaced well beyond a safe distance for swimming with strong surface currents running (Bell, 1977). Perhaps open water boat training should be stressed more in general open water training sessions of formal classes. The Appendix lists general safe boating practices for divers as recommended by the National Association of Underwater Instructors.

The problems discussed here were expressed by current or former charter dive boat operators. They are problems that touch all operators or potential operators. While there are many other problems like mechanical breakdown that occur in day-to-day operation of a charter business, these problems occur on an individual basis. These kinds of problems were not examined. The problems identified in this chapter affect each operator, and in a broader sense, the industry as a whole. Some conclusions and recommendations suggested in Chapter V may be helpful in buffering or mitigating these problems.

CHAPTER V

CONCLUSIONS

The fact that there are so few dive boat operations on the Texas coast may be an indicator of difficulty in maintaining a dive charter operation in Texas. The amount of annual turnover in dive charter boat operations is high.

Business objectives may determine how long and how intensively the business will operate. Some examples of business objectives for a charter dive operation are: invest to make money; invest for tax write-off; part-time hobby related; just in business to make boat payments; and life-style amenities. The proposed dive charter boat operation in this paper was based on the objectives of making boat payments and life-style and hobby interests. This is typical of the business objectives of most charter operators in Texas as was found by Ditton et al. (1977).

After examination of the existing Texas charter dive boat industry and the capital requirements (Chapter III) of a proposed boat operation, one conclusion stands foremost: presently, a dive boat operation, either proposed or existing cannot generate a large enough income from dive charters alone to be feasible as a sole source of family income in Texas. However, this may change in the future with new resources allocated in Texas offshore waters (i.e., Liberty ship reefs), new technological breakthroughs providing better boat designs and propulsion plants, and the growing popularity of Gulf Coast areas as vacation destinations. Until then, alternative sources of income must be sought if the operator wishes to remain in business.

Another business objective would be that of a tax write-off, which provides a tax shelter from the operator's other profit making enterprises, much the same way as any other investment would. This could be done by an individual who perhaps cares little about providing the services described in earlier chapters. More than likely, this individual wishes only to own the boat for personal use and needs a deductible investment. However, this is usually not the objective of the serious charter businessman.

An alternative that is used by at least one identified operator was that of the part-time hobby related operator. This operator is an active sport diver and owns a boat large enough (27 feet) to carry four divers and their equipment (three tank dive), but small enough to be trailerable. During the off-season, the boat can be stored at home and trips can be made when the weather is good whenever the operator desires. This operator is providing a service to other divers primarily to recover the cost of operating the boat for his hobby, which is mutually beneficial (Seich, 1977).

Much the same as the operator looking for a tax write-off, the operator just trying to make payments may come into the business of chartering, perhaps for only a season. This may be good for the boat owner, but other serious charter operators may lose customers due to cheaper prices. However, such operators may not be familiar with divers and dive sites and this situation may become undesirable.

Lastly is the objective of the life-style amenities of the charter boat business and the atmosphere that many coastal communities possess. This objective is fairly widespread and is usually related more to

fishing than diving. However, this objective is not ruled out for charter dive boat operators, as it does exist in certain instances.

These objectives have been presented on an individual basis, but due to an overlapping of reasons for being in business, an operator usually has a combination of objectives. Some may be primary objectives, while others are secondary, and may or may not be accomplished depending on the operator's management goals.

The proposed operation in this study has chosen a combination of objectives as stated in Chapter III. As the necessary capital requirements are large, the returns would not be considered financially attractive for investment purposes. However, considering the objectives and interests of the operator and over a period of time this operation should grow into an attractive business venture, depending on the economic conditions of the market areas and availability of fuel. Perhaps the charter fee is below that necessary to displace the operating expenses and to meet the various payments associated to the boat. As the pricing structure is flexible, it could be easily raised to where it is competitive with other boats and still enjoy the previous volume of business.

Expansion of services to divers can be accomplished by changing dive sites to be visited each month or by providing special events like photo contests and parties, to attract divers. Another approach would be to provide an entire services package for the diver. This might include transportation, a room at a local inn, social activities and dives for one package price. Cooperation between two or more community businesses may be an alternative that could be most rewarding in terms of increased business to the operation.

As stated earlier, the operation must have a minimum of 48 dive trips to break even. If this minimum cannot be attained, then alternative sources of income must be sought. One charter boat operator indicated that he had taken 35 trips (796 divers) during 1976 and 41 trips (938 divers) during 1977 for offshore diving (Blood, 1977b). Even with this large number of divers, this operator also participates in party fishing, commercial fishing and light salvage activities. This would seem to be a good example of how to utilize the boat on a full-time or nearly full-time basis.

Overall, for a dive charter operation on the Texas coast to be successful, a large enough market must be identified to provide the volume of business and to do this the operation must be located within easy access of this market area. In the case of the proposed charter dive boat operation, a large market (Houston area) is within a short distance of Galveston with good access. Lastly, the business management of the operator may very well be a deciding factor in the success of the operation. A good feasibility study is not a guarantee of success. The vital factor in the success or failure of the undertaking is "good" management (Spears, 1974).

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APPENDIX

NAUI Safe Boat Diving Practices

1. Select a Coast Guard licensed boat that is fully equipped with the required safety equipment and has diver support and safety equipment.
2. Ask to receive Boat Diving Techniques Training as a part of your basic, sport or advanced diving courses.
3. Rely on the Skipper's knowledge of the most suitable dive sites. Plan your dive using the specific site information provided by the crew or divemaster.
4. Only sign up for trip destinations that are consistent with your ability and dive plan.
5. Arrive at the boat at least a half hour before departure. Stow your *well marked* gear in the assigned locations. Respect the boat facilities: no wet suits in the bunk room nor dropping tanks or weight belts on the deck.
6. Between dives keep dive gear in your bag to avoid lost or broken equipment. Assist your buddy with his/her tank. Do not sit on the deck to put your tank on or you may get hit on the head by another diver's tank.
7. Use your equipment to dive easily and safely. Do not over weight yourself. Only use your BC to fine-tune your buoyancy during the dive or to compensate for a heavy game bag at the end of the dive.
8. No loaded spearguns are *EVER* allowed on the boat or boarding ramp. Bring a container for your game. Help keep the boat deck clean and clear.
9. Use the boat exit points recommended by the crew. Move away from the boat exit once you are in the water. Either snorkel clearly on the surface or begin your descent down the anchor line. Do not use scuba to skim just under the surface. If you just skim the surface you cannot be seen by passing boats or other divers.
10. Fins should be put on last while you are waiting near the exit. Do not walk around the deck wearing fins.
11. Be sure to use a compass and submersible pressure gauge. Plan your dive so you end the dive with a reserve of air and are able to return to the boat while still underwater.
12. Be aware of changes in current conditions during the dive. Use natural clues such as seaweed. Look for current lines trailed behind the boat on the surface. Do not hesitate to pull yourself hand-over-hand back to the boat using this line.
13. Use common sense, training, and experience—and ask questions if you are unsure. Allow for a "margin of reserve" and do not push your endurance limits. Watch for other divers waving one arm while on the surface. They are signaling a diver in distress. Divers who maintain personal control and are comfortable in the water have safe, enjoyable experience underwater.

**Explore the far away places.
Boat Dive Often**

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