8-25-1982

A Marina Complex for Jeddah Kingdom of Saudi Arabia- Final Arabia

Harrison Price Company

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Final Report
A MARINA COMPLEX FOR JEDDAH
KINGDOM OF SAUDI ARABIA

Prepared for:
SAUDI MARINA COMPANY
and
Rogers, Burgun, Shahine and Deschler
25 August 1982

Prepared by:
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Los Angeles, California 90005
213/937-3457
A MARINA COMPLEX FOR JEDDAH
KINGDOM OF SAUDI ARABIA

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EXECUTIVE SUMMARY

Saudi Marina Company is planning construction of a fully integrated marina complex at a site near the Coast Guard station in Jeddah, Kingdom of Saudi Arabia. This report presents the findings of an investigation of the economic feasibility of such a venture, and definition of the proper size and scope of operations for Jeddah marina.

PRESENT MARINA ACTIVITIES IN JEDDAH

There are no integrated marinas operating in Jeddah, on the Red Sea coast of Saudi Arabia, or on the Arabian Gulf shore as well. There are marinas in place or planned in Yanbu and Jubail, but these will not be competitive with Jeddah marina.

MARKET SUPPORT FOR JEDDAH MARINA

It is estimated that there will be some 8,300 qualified Jeddah residents in 1985 (the probable first operating year for Jeddah marina) who will have sufficient income to participate as boating members. There will be three times that number who will be qualified to join as social members. The boating qualification number is expected to increase to 12,000 by 1990; 17,000 by 1995; and to 23,000 by the year 2000.

At a five percent market penetration factor, there is support for 415 boat berths by 1985 and 850 by 1995. Potential social membership is estimated at twice these numbers.
PLANNING GUIDELINES FOR JEDDAH MARINA

Jeddah marina will be constructed in three phases: the first accomplishing all site preparation work and providing 400 berths with attendant shore support facilities; the second will add 200 more berths; and the third will complete the marina with a full 800 berth. There will also be room for 210 smaller boats in dry storage and for Jeddah’s small boat fishing fleet to have sanctuary within the harbor. Distribution of berth sizes is shown in the table below.

SUMMARY OF PLANNING GUIDELINES

<table>
<thead>
<tr>
<th>Berth Size, m</th>
<th>Number of Berths</th>
<th>Number of Berths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Width</td>
<td>Number</td>
</tr>
<tr>
<td>6</td>
<td>3.5</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>4.0</td>
<td>134</td>
</tr>
<tr>
<td>9</td>
<td>4.5</td>
<td>226</td>
</tr>
<tr>
<td>11</td>
<td>5.2</td>
<td>140</td>
</tr>
</tbody>
</table>

Plus six berths for 36+ meter boats on inside of breakwater.

1Free width means actual beam plus maneuvering room.

There will be a full capability boat repair facility with a marine railway and hoist; launching facilities for Jeddah residents not members of the Yacht Club; a Yacht Club seating 240 diners together with lounge areas; a Coast Guard station for surveillance of harbor comings and goings, and boating oriented shops and stores.

FINANCIAL PERFORMANCE

The estimated cost for Jeddah marina is SR 223.5 million. Assuming a 30 percent equity position, capitalization of interim interest, 12 percent and 8 years debt terms, the Jeddah marina operation will payout the invested capital in 7.25 years after debt service. This is equivalent to a 23.0 percent return on invested capital.
The site being considered for installation of the Jeddah marina is shown from the population.

The marina described in this report will include all of these accommodations for the small boat fishing activities and the views from the atmosphere attending to the marina; and, for Jeddah marina, a place of letters which can be a place to relax, entertain, and enjoy the nautical receptions when appropriate; a collection of social and recreation activities—recreations on the boat; a communications center for contact in both dl—

As a facility providing a haven to the boating a center for maintenance for purposes of this study, a fully integrated marina complex is desired. Before proceeding with the Jeddah marina plans, the appropriate to do—

—there are sea area, and in other areas as opportunities arise.
—structure of additional marinas elsewhere in Saudi Arabia, in the Med—
—company plans eventually to expand its marine activities through con-
—extract, in addition, depending on local circumstances and market demand, now complex in Jeddah, Kingdom of Saudi Arabia, where no such facilities now

Saudit Marina Company is planning to construct a fully integrated marina

INTRODUCTION

Section
Figure 1
THE JEDDAH MARINA SITE
JEDDAH, KINGDOM OF SAUDI ARABIA
for presentation to the principals and others in Jeddah 4-7 October 1982.

that meeting are incorporated in this final report which is scheduled
preliminary, architectural consultant and Harrison. A. Price and W. Lawrence
Richard A. Moon of Rogers, Burgum, Shahn and Deschler, Mr. Lewis A.
Dr. Faisal Al-Sumail and MR. Amir Foudar representing Saudi Arabia Company.

date. The meeting held in Los Angeles 2 August 1982 was attended by

A. prefeasibility, Harrison Price Company. A prefeasibility progresses report

accomplished by W. Lawrence under the supervision of Harrison A.

and entreains 19 June 1982. Field work and presentation of this report was

react to the Saudi Arabia Company, was illustrated with field work in Jeddah

work architectural firm Rogers, Burgum, Shahn and Deschler under con-

This feasibility study, conducted by Harrison Price Company for the New

port for the new marina activities can be expected.

nearby to the northwestern and east of the marina site (from which much sup-

shown on the map is the location of new, important residential districts.

strategy, centrally located with respect to the central business districts.

as can be seen from the map, the proposed Jeddah marina site is quite

road which traverses the shore from north of Jeddah into the city.

of the coast guard headquarters, the desalination plant, and the commercial

district, several important government building locations, the location

immediate area showing the isthmus port of Jeddah, the central business
district.
Section II

AN OVERVIEW OF JEDDAH AND RED SEA PLEASURE BOAT ACTIVITIES

An important element in judging economic feasibility is the definition of the need for the proposed facility or activity, in this case the Jeddah marina. Accordingly, this Section of the report presents a discussion of such marina and boat berthing facilities as may be found in the potential market area to be served by the proposed Jeddah marina. Two visits were made to Sharm Abhur (commonly called the "creek" in Jeddah), a coral bottomed inlet from the Red Sea about 26 kilometers north of Jeddah's city center, where a number of large cruisers and fishing pleasure boats are moored in order to determine the nature of their activities. In addition, an investigation was made into boating activities at other Saudi Red Sea locations as well as in the eastern part of the nation along the Arabian Gulf.

PRIVATE PLEASURE BOATS IN JEDDAH

Private pleasure boating activity in Jeddah can be classified into three groups: large boats (generally six meters in length and longer) which are either in the water permanently or in storage with difficulty in getting into and out of the water; intermediate boats (four to seven meters) which are housed on trailers and launched at the shore with each use; and smaller boats which include sail surfboards and similar easily transported and launched craft. Apparently, essentially all of the larger boats are at Sharm Abhur as shown in Table 1 on the following page.
boats needing berths from six meters in length and longer.

smaller boats, the Jordanian marina will have a heavy emphasis on the larger
use. Accordingly, the adequate launching provision will be made for the
boats normally kept in the water as compared to those taken out after each
marina facility accessible to all. Bear in mind that the character of
served market and create new support by providing the fully integrated
propoosed Jordanian marina will; thus, appeal to a prosperity un-
which reason is the inaccessible ness of the Jordanian marina at many reasors of
another reason is the inaccessible ness of keeping boats in good shape and to many reasors of
...1
of large boats in Jordan is the complete lack of boat repait and main-
number is felt to be very small. One reason given for the small number of other large boats (away from Jordan) is not known, but the
exact easy transportation to Jordan also for
mosty keep on trarrers for
smaller boats in Jordan are
by private initiatives.
and difficult to get access to
at the Jordanian port of Jordan
other boats in the area boating
boating at Jordan are among the
Jordanian marina facility. The only
centers for initiatives are
which are built at reception
the dock adjacent to homes
a few cases, docked at shore-
ports are all.
The larger boats are either
of additional smaller boats.
early seen, there are some

Sharm Abuah
Recreation compound,
Source: Capit Bernie Motley. OIL

<table>
<thead>
<tr>
<th>Type of Boat</th>
<th>Length of Boat (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed</td>
<td>6.1 - 9.1</td>
</tr>
<tr>
<td>Mixed</td>
<td>4.5 - 7.5</td>
</tr>
<tr>
<td>Motor (Italy)</td>
<td>4.0 - 5.0</td>
</tr>
<tr>
<td>Bateaux</td>
<td>1</td>
</tr>
<tr>
<td>Hatteres</td>
<td>16.0 - 22.0</td>
</tr>
<tr>
<td>Curettes - Curette</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Hatteres</td>
<td>16.0 - 22.0</td>
</tr>
<tr>
<td>Hatteres</td>
<td>2</td>
</tr>
<tr>
<td>Hatteres</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1

(North of Jordan)
Table Census of Sharm Abuah

(Length in meters)

Boat Census at Sharm Abuah

As can be seen, there are...
PROPOSED MARINAS ON THE RED SEA AND ARABIAN GULF

As noted earlier, there are no other marinas (certainly which could be classified as fully integrated facilities) in the immediate Jeddah area. At Yanbu, some 360 kilometers north-northwest of Jeddah, where an industrial city is under construction, there is an existing marina consisting of anchorage and some berthing space for fishing, work, and some pleasure craft. There is no marine railway or other aspect of a boat repair capability. It has been announced that, as part of the master plan for the industrial city of Yanbu, there will be a marina constructed which will be primarily for the recreational needs and use of Yanbu residents.

No evidence was discovered during field work in Jeddah of any other marina activity on the Red Sea shore of the Kingdom of Saudi Arabia. There are several fishing villages with boating activity— an ancient heritage in Saudi Arabia, but there are neither population concentrations (which provide support for a fully integrated marina) nor evidence of other marina activity on the Red Sea.

There is an activity planned for Jubail, on the Arabian Gulf, which is quite similar in context and purpose to that planned for Yanbu. Jubail, some 125 kilometers north of Dhahran and AlKhubar, is situated on the Arabian Gulf, is an ancient fishing village, and is the site of an extensive industrial city under construction. There is also an existing marina with the same purpose as at Yanbu, and there is a recreational marina in the master plan for Jubail just as at Yanbu. There are reported to be five small marinas in Kuwait which are not fully integrated, and which are dedicated to smaller boat uses. A larger boat marina is under construction there, but details are not available.

There are many fishing communities on the Arabian Gulf as on the Red Sea, each with the capability to berth (usually ashore) small fishing boats and their gear. There are also piers, wharves, and docks to service the many craft connected with offshore oil well activities, but none of these serve the private sector on a comparable basis to an integrated pleasure marina.
PLEASURE BOATING ACTIVITY ELSEWHERE IN THE AREA

The only two port cities, other than Jeddah, on the Red Sea which are of any consequence are Port Sudan, some 285 kilometers southwest of Jeddah in The Sudan, across the Red Sea, and Al Hudaydah, some 1,000 kilometers south of Jeddah in Yemen. Both of these port cities have facilities for handling commercial cargo and some passenger traffic (before the advent of air transportation, Port Sudan was the principal access point for African Moslem pilgrims to Jeddah and Mecca during the Hajj), but neither has more than rudimentary facilities for pleasure boating.

A major tourist attraction has been planned for installation between the Egyptian communities of Hurghada and Safaga, just south of the Gulf of Suez. This attraction will consist of several first class tourist hotels, casinos in the style of Monte Carlo, other recreational activities, and a marina. However, this marina is planned for the accommodation of boats used for fishing, diving, and sightseeing on a charter basis, and not as a fully integrated marina for private pleasure craft, although several berthing areas will be provided for visiting yachtmen.

Other than the Red Sea, the only immediate area where marina activity can be found is in the Mediterranean Sea where countless marinas of every variety can be found from the Arab Republic of Egypt, Cyprus, Turkey, and Greece to southern France and Spain. Inasmuch as the restrictions on tourist activity and lack of destination attractions are what they are in Jeddah and the surrounding areas of the Kingdom of Saudi Arabia, it is not felt that Mediterranean activity provides either a competitive factor or a source of visitor activity of any consequence to the Jeddah marina under study.
The previous Section of this report has presented data from which the conclusion can be drawn that there is no present facility in Jeddah—or anywhere else in the Kingdom of Saudi Arabia—which offers competition to the planned Jeddah marina. In addition, while there are several recreational marinas planned for Yanbu and Jubail, none are planned or, at least, none have been announced which will combine the activities planned for Jeddah. The next task, in establishing the financial feasibility of the facility planned, is to examine the characteristics of the population from which market support can reasonably be expected in order to determine the reasonableness of various alternative sizes of facilities with respect to market penetration. It is the purpose of this Section to present data from which the conclusion can be drawn resulting in definition of the size of the proposed Jeddah marina.

REGIONAL DEMOGRAPHIC DATA

The Jeddah Municipal Planning Department has recently compiled information on the population of Jeddah based on surveys conducted in 1971 and 1978 as well as the official Census of the Population conducted by the Saudi government in 1974.

The population of Jeddah in 1978, as well as projections for five-year periods to the year 2000, are summarized in Table 2 on the following page. These data are broken down by Saudi and non-Saudi workers and their
Table 2

POPULATION PROJECTIONS FOR JEDDAH
1978 -- 2000
(thousands of people)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi-workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- dependents</td>
<td>95</td>
<td>109</td>
<td>145</td>
<td>190</td>
<td>240</td>
<td>300</td>
</tr>
<tr>
<td>Subtotal</td>
<td>337</td>
<td>386</td>
<td>515</td>
<td>670</td>
<td>850</td>
<td>1050</td>
</tr>
<tr>
<td>Non-Saudi-workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- dependents</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>450</td>
<td>520</td>
<td>600</td>
</tr>
<tr>
<td>Subtotal</td>
<td>484</td>
<td>520</td>
<td>620</td>
<td>740</td>
<td>820</td>
<td>900</td>
</tr>
<tr>
<td>Total Population</td>
<td>916</td>
<td>1015</td>
<td>1280</td>
<td>1600</td>
<td>1910</td>
<td>2250</td>
</tr>
</tbody>
</table>

na = not available


dependents in order to demonstrate the different relationships which exist. Saudi workers in 1978 number 22.0 percent of the total Saudi population, while non-Saudi workers probably numbered about half, although exact data were not available. It is projected that there will continue to be about the same relationship for Saudi workers in the future but the non-Saudi relationship will change reflecting that 60.8 percent of the non-Saudi population will be workers (versus about half in 1978). The projections for the year 2000 expect the Saudi population to be 1,350,000 and the non-Saudi population to be 900,000 for a total Jeddah population of 2,250,000, up 122 percent from the estimated 1980 population of 1,015,000. The expected average annual growth rate during this 20-year period will be 4.1 percent.
Average household size enumerated in the 1978 survey was 4.97 for the entire Jeddah population; 5.83 people per Saudi family, and 4.89 people per non-Saudi family. Family income distribution, as measured in the 1978 Survey, is presented below in Table 3 which breaks down family income data by income range and by Saudi and non-Saudi families.

Table 3

FAMILY INCOME IN JEDDAH
1978 SURVEY
(thousands of Saudi Riyals per year)

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Number of Families in Each Group¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Saudi</td>
</tr>
<tr>
<td>Under 12</td>
<td>2,668</td>
</tr>
<tr>
<td>12 to 24</td>
<td>12,259</td>
</tr>
<tr>
<td>24 to 60</td>
<td>31,004</td>
</tr>
<tr>
<td>60 to 120</td>
<td>14,260</td>
</tr>
<tr>
<td>120 and over</td>
<td>7,935</td>
</tr>
<tr>
<td>Total number</td>
<td>68,126</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Percent of Families in Each Group¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Saudi</td>
</tr>
<tr>
<td>Under 12</td>
<td>3.9</td>
</tr>
<tr>
<td>12 to 24</td>
<td>18.0</td>
</tr>
<tr>
<td>24 to 60</td>
<td>45.5</td>
</tr>
<tr>
<td>60 to 120</td>
<td>20.9</td>
</tr>
<tr>
<td>120 and over</td>
<td>11.7</td>
</tr>
<tr>
<td>Total percent</td>
<td>100.0</td>
</tr>
</tbody>
</table>

¹Number and percentage excludes those who did not know their income (1.8%).

Source: Jeddah Municipal Planning Department -- the 1978 Survey; compiled and corrected by HARRISON PRICE COMPANY.
COMPETITIVE FACILITIES

In keeping with analysis of data presented and discussed in the previous Section of this report, there are no competitive facilities in Jeddah or the immediate area which are in existence or planned (announced) which would compete with the fully integrated marina proposed by the Saudi Marina Company for installation in Jeddah.

POTENTIAL SUPPORT FOR A JEDDAH MARINA

In keeping with accepted practice in analyzing market potentials, an income group of families receiving 500,000 Saudi Riyals per year in 1985 (1985 Gregorian) or more has been selected as the universe from which the support for Jeddah marina will be drawn (equivalent to $150,000 US per year). While this selection criterion is arbitrary in nature, it represents (1) a conservative approach to selection of those who can well afford to participate in the planned Jeddah marina activities, and (2) consideration of the differences which exist in costs between Jeddah and the United States, which data bases have served as guidelines for evaluating the Jeddah marina potential.

With this in mind, the existing data may be projected to 1985 through the following process.

[1] The 1978 survey showed 40.1 percent of all families in Jeddah were Saudi, and 59.9 percent were non-Saudi.

[2] The 1978 survey showed that 11.7 percent of Saudi and 6.2 percent of non-Saudi families had incomes of SR 120,000 or more per year.
[3] At ten percent average inflation per year between 1978 and 1985 (the probable first operating year for Jeddah marina), SR 120 K becomes SR 157 K, equivalent to about $75 K, US.

[4] Assume the share of population in that income group is increasing by three percent per year (an increasing relative affluence), and assume that the ratio of number of families to total population remains the same (432,000/68,126 for Saudi = 0.158, and 484,000/101,912 for non-Saudi = 0.211 -- from Tables 2 and 3).

[5] Then, in 1985, determining first the total number of families and then the share with high incomes, there will be 14,910 Saudi and 9,990 non-Saudi families with incomes of SR 257 K or better for a total qualified market support of 24,800 Jeddah families. This number will increase to 36,200 by 1990; 50,700 by 1995; and 70,000 by the year 2000.

[6] Assume (on a statistical distribution basis), that one-third of these families will have twice that income or better (SR 257 K x 2 = SR 514 K). Then some 8,300 Jeddah families will comprise the market support for boating memberships at Jeddah marina in 1985. This number will increase to 12,000 by 1990; 17,000 by 1995; and to 23,000 by the year 2000.

A five percent market penetration, selected as conservative but reasonable for estimating qualified membership potential at Jeddah marina based on experience elsewhere as adapted to the Jeddah circumstances, would correspond to a total initial demand in the startup year (1985) for 415 berths. That same five percent market penetration factor will correspond to a market demand for 600 berths in 1990, for 850 berths by 1995, and 1,150 berths by the year 2000. Accordingly, the Jeddah marina facility will be
built in three phases, opening in 1985 with some 400 berths, adding 200 more in the fourth operating year (1988), and an additional 200 in 1990.

Social memberships -- members without boats in berths at Jeddah marina -- will come from the larger universe of Jeddah residents with incomes of SR 257K or better and are planned to number about twice the boating memberships for an ultimate capacity membership of 800 boating and 1,600 social memberships.

As further substantiation of the conservative aspect of this derivation of market support potential, it is widely known that most Saudi families have more than one source of income, which additional source(s) may not be accounted for in the data shown in Table 3 on page 12. In other words, the percentage of Saudi families with incomes of SR 257K per year or better is probably understated in the data released from the 1978 Survey results.

BASIC SIZING FACTORS AND PHASING OF DEVELOPMENT

The proposed Jeddah marina site (Figure 1, page 4) is outstanding in its location and physical attributes. Accordingly, while the market is not presently visible due to lack of facilities, it is expected that the combination of advantageous site, superior facility planning, attractive design, and capable management will serve to bring support to the Jeddah marina operation quickly.

Any new project such as the proposed Jeddah marina will have a period of initial growth to capacity, especially if it is the first of its kind in the market area. Accordingly, while the overall market is defined as being able to support 800 berths, the basic sizing definition for Jeddah marina will be 400 initial berths in the first phase, 600 with second phase addition, and 800 with third phase addition. With these thoughts in mind, and assuming that there will be a vigorous and successful pre-opening promotion of memberships and boat sales, it is assumed that Jeddah marina will open
in 1985 with 320 berths committed and that 600 social members will join
during the first operating year. There will then be 380 boating members
by the end of the second year, and 700 social members. The third operating
year will find 401 boating and 780 social members; the fourth 500 and 950;
the fifth 600 and 1,150; the sixth 700 and 1,350; the seventh and later
years will level off at 760 boating and 520 social memberships, or 95 per-
cent of capacity.

Details of planned phasing are discussed later in this report, starting on
page 30. A listing of marina elements included in each phase will be
found in Table 4 (continued) on page 32.
the ideal for Jeddah marina, phased to start with 400, increase to 600,

assumptions already discussed lead to section of an 800-berth marina as

Marina Configuration

Harbor and Berthing Facilities

of support activities for the marina operation which are on the land area.
the "wet" areas in the marina and the shore facilities include all aspects
and operating guidelines. The harbor and berthing facilities are all of
facilities for construction planning and operational planning guidelines, making them part of
facilities, are divided into four groups: harbor and berthing

cadastre which will be appropriate in Jeddah.

Previous sections of this report have discussed the background for the pro-

Planning Guidelines for a Jeddah Marina

Section IV
and end with 800 berths at full completion. Aspects of phasing are dis-
cussed later in this Section. Analysis of required areas for maneuvering
and mooring, for the berthing area, and other water access areas, together
with the required land area (mostly to be filled) show that there is a
minimum shore run (distance along the Corniche Drive) of 1,200 to 1,400
meters to accommodate Jeddah marina adequately.

The suggested plan will include north and south jetties (running westward
from the shore) connecting to a breakwater offshore (running north and
south, generally) which will protect Jeddah marina from sea swells, winds,
and weather. The minimum seaward reach will be some 350 to 400 meters,
but construction of the breakwater 450 to 500 meters off shore will pro-
vide an additional inner harbor area which will afford water skiers and
small sailboaters a secure recreation area. Such configuration will pro-
tect the harbor from storms (prevailing from the southwest), and provide
an incoming breeze during normal times (prevailing from the northwest).
The longest boats (36 meters) will be moored alongside the breakwater on
the harbor side and will be afforded access via a paved roadway on the
tops of jetties and breakwater.

The Coast Guard will require a surveillance station strategically located
so that it can observe all comings and goings into and out of Jeddah
marina. The station will be provided at the harbor entrance and will be
able to command all activities.

A harbormaster's office and tower will be placed in such a manner as to
afford good observation of marina activities, to facilitate internal con-
trol, and to provide easy access to all berth areas.

**Berthing Areas**

Individual boat berths will be provided alongside finger piers extending
into the harbor area. Each berth will be individual, separated from others
from time to time based on extensive surveys of actual marina operations.

Zoning Regulations for Berthing, Tying-Up, and Safety of Small Craft

Berth lengths versus beam requirements have been determined on the basis of a full length of the marina,

ramped from the land area by a concrete bulkheaded extending essentially area as well. The berthing area, and other water areas, will be separa-

A project depth of three meters will be satisfactory for the main harbor

that some 25 percent of the boats in shallow marinas will be sailboats.

With sufficient depth for sailboats, with their keels (it is expected

point the bottom and roll the underwater surface, these clearances pro-

space for some stowing and clearance so that boat properties will not

area must vary between two and not quite three meters, allowing sufficient

Marina guidelines indicate that minimum depths of water in the berthing

will be provided at each berth.

connection (both 120 and 240 volt), potable water, and telephone jacks,

industrial parking on the pier at berthing. Such utilities as electric-

be berthed on concrete piers of ten-meter width (on concrete piling)

berthed on floating concrete piers of four-meter width. Larger boats will

All boats which are in the length group from six to eleven meters will be

facilitate such berthing.

to pier, and balconies, chairs, and other mooring gear will be provided to

not required at sea. It is assumed that all boats will be berthed transom

electric and cable, hoses, and other gear normally used at the berth but

boast of a secure and sufficient size to accommodate the

smooth utility trucks similar to golf carts, there will be a locker at

larger piers and transportation will be provided at the ends of the

masts to such operations. Parking will be provided at the ends of the

ways and including sufficient room for tenders and the protection not-

good by length with corresponding widths allowing for easyturns and

by a 1.5-meter walkway running the length of the berth. Berths are case-
in the United States and Canada. The numbers of each berth length given in the table below have been defined on the basis of standard practice, refined to reflect Jeddah marina usage.

NUMBER OF BERTHS IN THE JEDDAH MARINA
Length versus Width

<table>
<thead>
<tr>
<th>Berth Size, m</th>
<th>Free Width</th>
<th>Number of Berths</th>
<th>Berth Size, m</th>
<th>Free Width</th>
<th>Number of Berths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Length</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3.5</td>
<td>40</td>
<td>5</td>
<td>13</td>
<td>5.5</td>
</tr>
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<td>4.0</td>
<td>134</td>
<td>17</td>
<td>15</td>
<td>6.5</td>
</tr>
<tr>
<td>9</td>
<td>4.5</td>
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<td>28</td>
<td>18</td>
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<tr>
<td>11</td>
<td>5.2</td>
<td>140</td>
<td>18</td>
<td>21</td>
<td>7.6</td>
</tr>
</tbody>
</table>

Plus six berths for 36-meter (±) boats on inside of breakwater.

1Free width means actual beam plus maneuvering room in the berth.

All finger pier berths are even, allowing for distribution of slips on either side of the finger piers should such design be advantageous. The breakwater will be long enough to provide for nine to ten longer boats, calculated on the basis of three times boat length for clearances, but only six will be provided during the three-phased construction of the Jeddah marina. Additional spaces will be provided as the demand arises.

For accommodating boats shorter than the minimum six-meter berth, there will be provided a dry storage building consisting of 14 stalls, four high by 26 long, serviced by a specially rigged fork lift truck for launching and restorage. Thus, those boatmen who choose not to own longer boats will be afforded access to Jeddah marina. The dry storage facility is discussed later in this Section in connection with the boat repair and launching facilities.
Maneuvering and Mooring Areas

The general harbor and maneuvering areas provide (1) access from the berth areas to the harbor entrance and return, (2) access to the refueling and icing station (discussed later), (3) access to the Coast Guard checking station, (4) access for the fishermen who will be provided a special harbor area, and (5) access to and from the marine ways and boat hoist (the launching area) in connection with boat repairs and in-and-out launching activities for the smaller boats.

The larger boats, generally being more difficult to maneuver, will be placed nearest to the harbor entrance, and smaller boats farthest away. Sail boats usually have single-screw auxiliary propulsion, making them more difficult to maneuver than twin-screw cruisers and fishermen. They will be given closer to the entrance priority in placement.

Inasmuch as there will probably be an occasional visiting yacht or two (in Jeddah marina for repairs, to evade a storm, or to take on needed provisions), three mooring places for such visitors will be provided within the general harbor area. Each mooring site will consist of a marked buoy with three anchors (120° spacing) to give lateral stability set 65 meters apart in a triangular spacing to allow for moored boats to swing safely at their moorings.

As noted earlier, the finger piers will be floating for smaller boats and concrete piers on concrete piling for larger. In view of the severe damage inflicted on wood by such Red Sea fauna as the limnoria and toredo worms, all water-contact structures will be of reinforced concrete. In addition to the practicality of such structures for long life and ease of maintenance, they present a handsome facing to the boatmen members of Jeddah marina--clean, practical, and light in character.

The fishermen's area will provide for Jeddah's small boat fleet presently using some of the area in which the Jeddah marina is scheduled for construction. It will provide similar shore facilities to those now occupied.
SHORE FACILITIES

Shore facilities will include all of those marina elements which support the operation and the purpose of the Jeddah marina. These include boat repair and dry storage, the Yacht Club and recreation areas, boating shops and stores, such other harbor structures as the Coast Guard station and a harbormaster's building, and parking for each of these activities.

Boat Repair and Dry Storage

There will be an area of about 2.1 hectares in which are situated a boat repair building, its open yard area, access to marine ways, a dry storage building, and a marine hoist and launching area.

The boat repair area will include a 25 by 100 meter building with painting room in one end and a machine shop/engine maintenance and repair/radio and electronics repair area in the other end. The primary function of the boat repair facility will be to make available to the boatmen a complete array of machine and hull maintenance and repair capabilities, provided in such a manner as to facilitate use and minimize both waiting and down times. Because there are no such facilities on the Red Sea coast of the Kingdom of Saudi Arabia outside of the over-crowded commercial ways at the Islamic Port of Jeddah, it is expected that all of the Sharm Abhur boats will use these facilities.

The paint room will have a high enough bay to accommodate boats up to 20 meters in length brought in, on cradles, for superstructure painting which requires protection from the atmosphere.

The open yard area surrounding the boat repair building will provide space for assembly of cradled boats on the way to or from various activity sites; for receiving boats delivered to the marina for launching; for receipt of
supplies and gear used in support of boat repair activities; for access
to the marine ways leading into the harbor water; for eventual installation
of a transfer table for lateral dispersion of boats brought up the marine
ways; and for a marine hoist used for lifting smaller boats (less than 21
meters in length) out of the water and replacing them.

The marine railway will probably be 15 meters wide (with clearances)
and 120 meters long, half of this length submerged and the other half on
land leading to the boat repair building. The marine ways will be sloped
in such a manner as to facilitate the picking up of any boat up to 40
meters in length for transfer ashore for maintenance or repair. A lateral
transfer table will be provided (installed during the third phase of con-
struction) in order to allow for servicing more than one larger boat at
one time. Such a transfer table consists of rails, rolling platforms,
and attendant motive power to pull the craft off the marine railway and
move it to one end or the other of the yard area.

The launching area will consist of (1) a marine hoist, operating on
rails, suspended over a well-like area of water in such a manner as to
facilitate the removal, with proper sling equipment, of smaller boats
(21 meters and under, corresponding to 38 to 40 metric tons in hoist
capacity) and transfer of these boats to cradles ashore for maintenance,
repair, or outshipping (this marine hoist will be used far more than the
marine ways in earlier operating years); and (2) a site on the bulkhead
affording access for a specially fitted forklift which will place boats
in the water and lift them out as a means of launching. These boats will
be shorter than normally found in the marina berths; will come from the
dry storage building or from trailers brought into the marina by their
owners; and will be transient in the nature of their facility use.
There will be a walkway beside both the hoist and the forklift launching
site to allow boatmen to control and enter their boats after launching
or upon return to the area for out lifting.
The dry storage building. In order to accommodate smaller boats than
will use the six-meter plus berths in Jeddah marina, a dry storage build-
ing will be provided with capacity to hold 104 boats stacked in stalls four
high by 26 long. These stalls will each be about 2.5 by 5.5 and will house
smaller boats on specially fitted supports. Half of the building will be
built during the first phase and it will be expanded one-quarter in each
of the later phases.

The functional operation of the dry storage facility will consist of re-
moval of the boat from its stall by the specially fitted forklift, trans-
fer to the water site, lowering into the water for use, and then the
subsequent reversal of the sequence of operations.

Room for expansion will provide for doubling of the boat repair build-
ing and the dry storage building in future years, should the demand for
such activities warrant.

Yacht Club and Recreation Areas

The Yacht Club will provide restaurant, lounge, catering, and sports
clothing sales to members of Jeddah marina. There will be a main dining
area and a main lounge, each seating 200 people; a women's area with 40
dining and 40 lounge seating capacity; a special private lounge for Jeddah
marina principals and their guests; a full galley capable of serving the
meals within the facility as well as preparing catered meals for boatmen
desiring such service; and a small, but chic, sports clothing shop
featuring appropriate clothing within the context of the marina operation.
It is recognized that noon meal activity will be relatively light in view
of the Jeddah custom of going home for lunch to be with family. However,
it is anticipated that there will be a modest demand for luncheons and a
reasonably active evening meal activity in the Yacht Club, which will serve
as a private club setting for business discussions, social dining, and entertaining. Accordingly, the functional rooms will be very tastefully decorated and reflect the character of the membership. The women's areas will not be used as much as the others, but will also reflect the good taste and accomplishment of the membership.

In addition to the functional rooms described above, there will be a meeting room capable of seating 50 people in dining or 100 in auditorium configuration. This room will provide space for meetings, small banquets, and private entertaining and receptions.

The seascape aspect of marina operation and the colorful action provided by activities there present a genuine asset for presentation to those using the Yacht Club. Accordingly, this viewing potential of marina activities will be featured through location and arrangement of the Yacht Club with respect to the rest of the marina site.

**Recreational facilities** will be limited in scope because there are other such facilities in Jeddah and it is not thought that extensive or elaborate recreational facilities will be appropriate.

There will be three tennis courts, three squash courts, and two 15 by 30 meter swimming pools, all suitably landscaped, and a small change house with lockers, bathing facilities, and sauna, steamroom, and whirlpool equipment for member's use.

**Shops and Boat Sales Areas**

There are several categories of important support retail operations which complement an integrated marina operation. These supply necessities and luxuries to the boatmen and are clearly identifiable with boating activities. the shops and stores planned for Jeddah marina include a ship's
The sports clothing shop will be located in the yacht club according to the largest number of marina patrons. The shop will be located at the fuel and ice station and will serve as the local fuel and ice station. The centre will be available to departing fishermen, the central fueling area and a small facility at the fuel and ice station where the boat and tackle shop will consist of 400 square meters in area.

Another, the driving equipment shop will be some 350 square meters in area.

Sea’s outstanding surface coating features for driving in one form or another, the driving equipment shop will provide for the sale and servicing of scuba and snorkel driving equipment and for the recharging of spent scuba cylinders with compressed air or other gases needed for such activities.

The driving equipment shop will provide for the sale and servicing.
provide seasonal types of sports clothing enjoyed by boatmen and their guests as well as sports clothing related to the recreational area of the Yacht Club. This shop will contain about 200 square meters of area.

The boat sales center will consist of a 650 square meter building for offices and indoor boat display and a 750 square meter outdoor boat display yard for larger boats. The building ceiling height will be sufficient to clear the superstructure of boats displayed. Within the building will be an office for the manager of new boat sales, and an office for a manager of used boat sales—essentially a brokering activity.

The boat sales center is colorful and adds flavor to the marina atmosphere. Accordingly, it will be located advantageously with respect to the Yacht Club so that it can be viewed from that facility, and so that it can use Yacht Club parking areas as needed.

Other Harbor Structures

There are several other, smaller, structures which will round out the complement of buildings at Jeddah marina. These include a harbormaster's building; the Coast Guard checking station; the fuel, ice, and bait station; an employee's canteen; and public restrooms.

The harbormaster's building will serve as the operational and control center of the berth area and harbor activities at Jeddah marina. Housed in this building will be a harbormaster, his assistants, and it will serve as the focal point for berth attendants, maintenance crews, and attendants serving the fueling, ice, and bait station. The 500 square meter building will have a small tower affording a commanding view of all water areas and the berths themselves. The communications center will be in the harbormaster's building so that boats radioing to Jeddah marina will be in direct
contact with this port authority. Marina maintenance will be centered at
the harbormaster's building with space for maintenance and operating ve-
hicles, and for the small fire truck which will serve the marina. (It is
anticipated that the Jeddah municipal fire department will be the principal
fire fighting facility for Jeddah marina, but the small on-site apparatus
will serve in initial stages of any fire fighting which becomes necessary).

The Coast Guard checking station, some 250 square meters in total
area, will be built in keeping with the overall Jeddah marina design
criteria and will be located at the harbor entrance to afford the best
access to all incoming and outgoing boats as may be required by the Coast
Guard. Access to the station will be along the paved tops of jetty and
breakwater embankments.

The fuel, icing, and bait station will consist of a wharfing area
some 60 meters long for boats to come alongside to obtain fuel, ice, and
(as required) live or dead bait as they leave the marina confines. There
will be a small building housing the attendants and a refrigerated area
for ice and dead bait (total area, 50 square meters).

The fuel/ice/bait station will be advantageously located with respect to
the harbor entrance in order to facilitate a stop as the last step before
departure. It will be located so that boats coming alongside will be
facing into the prevailing breeze (from the northwest) in order to facili-
tate handling with a maximum of 10° to 15° angle away from the wind pro-
viding slight force into the fuel/ice/bait wharf. Access to the facility
will afford delivery trucks the opportunity to deliver ice and/or bait
directly to the station. Fuel lines will connect the station to storage
tanks in the boat repair area where tank truck delivery of gasoline and
diesel fuels will be received. Typically, if a boat has not been fueled
prior to departure, a boat will pull alongside the fueling wharf, tie up,
and receive fuel. At the same time, whatever supply of ice needed will be
put aboard as will such bait as has been arranged for at the bait and tackle
shop.
An employee's canteen, some 100 square meters in area and planned to seat 30 people, will provide meals for employees and visiting workers in Jeddah marina. The canteen will be located to take into account the two major concentrations of employees in the Yacht Club and the boat repair and launching area.

Public restrooms will consist of 20 30-square meter buildings placed on 75 square meters of landscaped area. These facilities, 80 percent men's area and 20 percent women's, will be distributed among the finger pier ends to afford such facilities to boatmen and their guests.

Parking Facilities

Parking facilities will include three general categories of parking: those provided for boatmen at or on the finger piers, those provided for Yacht Club patrons and for employees, and those provided in small areas for other functions in Jeddah marina.

Boatmen's parking will be provided in two areas: at pier ends for the shorter berths (6 through 11 meters), and on the piers at boatside for the longer boats (13 meters and longer).

There are 540 berths for boats in 6 through 11 meter lengths. Provision of 1.5 spaces for 50 percent of these berths (the expected peak activity in Jeddah marina) will result in 400 parking spaces distributed among the ends of these finger piers for shorter boats.

Parking for the remaining 254 berths on finger piers will be provided on the pier at boatside, each berth having space for at least one automobile. Thus the boatmen's parking will include space for 654 or more cars. Parking for the long boats will be at boatside along the breakwater.
Yacht Club parking will provide 200 parking spaces for use of the Yacht Club clientele, and, nearby, 50 spaces for employees. A generous allowance of 25 percent additional space for landscaping will assure that this focal area will be attractive and pleasant to view.

Other parking will include 20 spaces distributed among the harbormaster's building, the Coast Guard station, and the shops and stores.

CONSTRUCTION PHASES

As noted earlier, the construction of Jeddah marina will be phased to start with 400 berths and related support facilities, expanding to 600 in the fourth operating year, and to 800 in the sixth operating year.

All dredging, filling, site preparation, harbormaster and Coast Guard structures, the fuel/ice/bait station, recreational facilities, marine ways and launching facilities, and streets and ways will be part of the first phase. In addition, the full galley and half of other Yacht Club facilities, 75 percent of the boat repair building, half of the dry storage building, half of the public restrooms, and sufficient finger piers for 400 boats (including five long boats along the breakwater) will be constructed as part of Phase I.

Phase II will add sufficient finger piers for another 200 berths together with 25 percent of the total Yacht Club dining and lounge areas, 25 percent of the dry storage total capacity as well as public restrooms, and related parking.

Phase III will add the same as Phase II plus the remaining 25 percent of the boat repair building and the transfer table at the boat repair facility. These are summarized in Table 4 on the following pages.
Table 4
SUMMARY OF PLANNING GUIDELINES
JEDDAH MARINA

HARBOR AND BERTHING FACILITIES

<table>
<thead>
<tr>
<th>Berth Size, m</th>
<th>Number of Berths</th>
<th>Length</th>
<th>Free Width</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>40</td>
<td>13</td>
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<tr>
<td>9</td>
<td>226</td>
<td>18</td>
<td>7.0</td>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>140</td>
<td>21</td>
<td>7.6</td>
<td>32</td>
<td>4</td>
</tr>
</tbody>
</table>

Plus six berths for 36+ meter boats on inside of breakwater.

Free width means actual beam plus maneuvering room.

Linear meters of finger piers: 1622 floating, 4-meters wide
997 concrete, 10 meters wide.

Total area of finger piers: 6,488 m² floating, 9,970 m² concrete.
Number of finger piers, 11 floating, 7 concrete, total, 18.
Average finger pier length, floating - 147.4m, concrete - 142.4m.

Linear meters of bulkheaded shoreline required for berthing area (minimum)
and inter-berth maneuvering area, 1,095 meters.

Berth and maneuvering areas, including finger piers 159,190 m²
Harbor, mooring, and access area (minimum) 118,562 m²
TOTAL WATER AREAS 277,752 m²

(Table 4 continued on following page)
SUMMARY OF PLANNING GUIDELINES
JEDDAH MARINA

SHORE FACILITIES

<table>
<thead>
<tr>
<th>Marina Element</th>
<th>Total Area, Square Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Building (or paved) Area</td>
</tr>
<tr>
<td></td>
<td>Phase I</td>
</tr>
<tr>
<td>Yacht Club, sports clothing</td>
<td>1,913</td>
</tr>
<tr>
<td>Recreation facilities</td>
<td>2,782</td>
</tr>
<tr>
<td>Boat repair building, yard</td>
<td>1,875</td>
</tr>
<tr>
<td>Dry storage building</td>
<td>210</td>
</tr>
<tr>
<td>Marine ways dry access</td>
<td>[900]³</td>
</tr>
<tr>
<td>Transfer table area</td>
<td>[2,000]</td>
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<tr>
<td>Marine hoist/launch area</td>
<td>[300]</td>
</tr>
<tr>
<td>Retail shops and stores</td>
<td>2,000</td>
</tr>
<tr>
<td>Public restrooms</td>
<td>300</td>
</tr>
<tr>
<td>Other harbor structures</td>
<td>900</td>
</tr>
<tr>
<td>Parking - pier ends (400)</td>
<td>6,600</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>-Yacht Club (200 + 50)</td>
<td>4,125</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>-other (20)</td>
<td></td>
</tr>
<tr>
<td>Streets and Ways</td>
<td>14,400</td>
</tr>
<tr>
<td>Total Land Area</td>
<td></td>
</tr>
</tbody>
</table>

²Land areas include buildings, yards (e.g., at boat repair), and landscaping.
³Bracketed figures are not buildings, they indicate phase of construction.

ORGANIZATIONAL AND OPERATING GUIDELINES

Organization

The Saudi Marina Company has full capability for overseeing and monitoring the operations of Jeddah marina provided that certain key management positions...
are filled with highly qualified professionals. Most important of these is the general manager who will be in technical charge of the entire Jeddah marina operation. Next in importance is the harbormaster who will direct the berth area efforts, followed by the manager of boat repair operations who will be in charge of that activity. It is suggested that experienced Europeans or North Americans be secured for these three key positions, staffing all other positions with Jeddah residents, both Saudi and non-Saudi, depending on position.

There are international firms who are in a position to provide training, some overseeing, and consulting in organization and procedures for marina operation (for example, Gray MacKenzie & Company, Limited [one of the Inchcape Group] in London -- this company operates the port in Bahrain under contract). It is reported, but not checked out, that there are several large marina operators in Greece and the south of France who have acted as setting up consultants in other areas who will be in a position to come to Jeddah periodically to check on progress, answer procedural questions, and ascertain problem solutions from time to time.

The Saudi Marina Company, as proprietors and operators of the Jeddah marina, will serve as the board of directors. The general manager, probably officed in the Yacht Club where he will have maximum exposure to the membership, will be in total charge of all operations in the marina, delegating the harbor operation to the harbormaster, and the boat repair activities to the manager of boat repair. Shop operations, each with its own internal manager, will report directly to the general manager. Harbor support activities such as the fuel/ice/bait operation, will report to the harbormaster.

The full complement of employees (after the sixth operating year and 800 berths are in place) will number 65 broken down by activity as follows.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>General management</td>
<td>4</td>
</tr>
<tr>
<td>Yacht Club</td>
<td>24</td>
</tr>
<tr>
<td>Harbor</td>
<td>15</td>
</tr>
<tr>
<td>Boat repair</td>
<td>11</td>
</tr>
<tr>
<td>Shops and stores</td>
<td>11</td>
</tr>
</tbody>
</table>
Staff buildup will start with 36 employees at opening, increasing with each phase of expansion to 48 in the fourth year of operations (Phase II construction), and 65 in the sixth year.

**Operations**

Membership will consist of 800 (potential) boating members and 1,600 (potential) social members. Each will pay the same initiation fee upon joining the Jeddah marina, and each will pay the same membership dues for the privileges of membership. Users of the dry storage facility will be social members (or, technically, they will be required to pay initiation and membership dues, but will not be berth leasers). Non-members who desire to launch their small boats in the launch area will not have Yacht Club access, but will be afforded the privilege, after paying the launching fees, of access to the boating stores and to the fuel/ice/bait dock.

Preference will be given to Jeddah marina boating members at the boat repair facility, but every effort will be made to accommodate outsiders such as the boatmen whose craft are found at Sharm Abhur. The boat repair area staff will include some launching attendants who will provide access through the marine hoist or forklift truck to the water for those who want to put boats in or take them out of the water.

The harbor staff will include berth area attendants who will assist the boatmen in departure and in securing boats upon return. Normally, it is expected that the boatmen will notify the harbormaster of their plans and the harbormaster will provide personnel to fuel boats, order and deliver catered meals, provide bait or other gear where requested, and generally see to it that the boat is ready when required. The harbormaster will also provide personnel for washing down and securing returned boats (fees will be charged for all of these services).

Running rules within the harbor will be set by the harbormaster and will be in keeping with safe operations within the marina confines. The berth
attendants will operate the golf cart carriers for transportation of boatmen, their guests, and their gear from pier-end parking areas to boatside. No golf cart carriers will be provided for the longer boat piers (the concrete finger piers) as they will be unnecessary there.

Essentially all of the operating rules and regulations will be set by the board of directors and general manager in accordance with the board's wishes and practical application of such factors in the Jeddah context.
FINANCIAL ANALYSIS OF THE JEDDAH MARINA

The need for a marina in Jeddah has been established. The extent of support for the proposed Jeddah marina has been derived, and planning guidelines for construction and operation of the facility presented. Assuming the sizes and scope of operations already discussed, it is appropriate to examine the probable financial performance of such an undertaking.

This Section presents a discussion of preliminary estimates of construction and capital costs, the cash flow assumptions used to derive the pro forma financial statement, sources of revenue, expected operating expenses, and, finally, the pro forma financial statement of Jeddah Marina operations.

CONSTRUCTION AND CAPITAL COSTS

Several estimates have been made of the probable construction cost which will be incurred at Jeddah marina based on different configurations and different approaches to overall design. For example, concrete piers on concrete piling were evaluated versus floating piers with respect to overall costs. The estimate extant at this writing amounts to SR223,503,000, based on a $65 million U.S. estimate provided by Rogers, Burgun, Shahine and Deschler (the 223.5 million Saudi Riyals figure is based on an exchange rate of 3.4385 Saudi Riyals per U. S. dollar as quoted 20 August 1982). This is the construction cost figure used for the financial analysis.

While a number of debt interest rates on both interim and long term financing were examined as well as several equity positions and terms of the
sentative of those which will be available to Saudi Martan Company.

Assumptions summarized above are used in this analysis are felt to be representative of the

financial position, the financial

while the exact financial performance will depend on the final terms selected:

- Annual debt service addition
- Estimated third phase
- Estimated second phase

Interest incurred, costs and debt service are as follows:

Costs notes on a 100 percent basis (no additional equity) with no interest
costs (six months) and will also be financed with additional 8-year, 12 per-
cost is further assumed that construction in Phases II and II will be short.

- Estimated first phase
- Estimated second phase
- Estimated third phase
- Total debt
- Equity position (30 percent)
- Total cost
- Interest charge amount
- Estimated first phase

Sauds of 1985 S.A.A.

Accordingly, the following factors are taken into account for financing the project:

It has been assumed that interest on interterm financing during a two-year

20 percent
8 years
12 percent

Equity position
Term on long-term debt
Interest rate on debt

presented later in this section of the report.

- Annual debt service addition
- Estimated third phase
- Estimated second phase

Sauds of 1985 S.A.A.
CASH FLOW ASSUMPTIONS

In order to arrive at a reasonable estimate of the revenue and expense line items which will make up the financial performance of Jeddah marina, all line items have been analyzed with respect to performance experience elsewhere as adapted to the Jeddah circumstances. Each of these line items, first for revenue and then for expense, are presented separately below.

Sources of Revenue

The following descriptions of line revenue items hold for the equilibrium years from the eight operating year and thereafter when the operation is completed its growing phase (in constant Saudi Riyals). It is assumed that the occupancy or participation rate in Jeddah marina will be 95 percent during these equilibrium years.

Other general assumptions include the following aspects of the buildup and equilibrium years.

Presale of memberships will start the first operating year with 320 boating members. At the end of the year, there will also be 600 social members (average 300 for the year).

Boating membership will grow to 380 in year 2, 401 in year 3, 500 in year 4, 600 in year 5, 700 in year 6, and 760 in years 7 and later (95 percent occupancy of berths). Social memberships will grow to 700 in year 2, 780 in year 3, 950 in year 4, 1,150 in year 5, 1,350 in year 6, and 1,520 in years 7 and later. Beginning and ending year's memberships are averaged in order to calculate per member revenues.
Turnover will amount to zero the first year, 5 percent the second and third, \(7\frac{1}{2}\) percent the fourth, and 10 percent for the fifth and later operating years. Initiation fees will be charged to all incoming members, and it is assumed that new membership will take the place of old in the seventh and following years with regard to membership dues generation.

**Initiation fees** are fixed at SR 40 thousand per new member and entitle the member (with proper payment of membership dues and incurred charges) to all privileges within the Jeddah marina complex.

**Membership dues** are fixed at SR 10 thousand per year per member, with the assumption that half of the total new members in any one beginning year will be the average upon which new membership dues are calculated.

**Yacht Club operation.** The Yacht Club will have 200 dining seats for the regular dining room and 40 for the women's area. There will be three separate sources of income -- noon meals, evening meals, and catered meals to boatmen.

Noon meals are assumed to be priced at SR 50 average each, with one serving to 60 percent of the tables in the main dining room (120 diners) on a six-day week basis and one serving to 25 percent of the tables in the women's area. This amounts to 40,560 luncheon meals per year.

Evening meals are assumed to be priced at SR 100 average each, with one serving to 90 percent of the tables in the main dining area and 40 percent of the tables in the women's area for a total of 61,152 evening meals per year. When these two amounts are prorated over a 2,400 membership, the average is SR 3,933 per member per year.
In order to estimate the demand for catered meals (as well as for fuel and ice), an assumption has been made that 25 percent of the boats will be used during any one week and that the average party requiring catered meals will number four. Figured on an 800-berth capacity, this will amount to 800 catered meals per week, or 41,600 catered meals per year. At an average charge of SR 50 per meal, this is equivalent to an annual expenditure of SR 2,600 per boat.

Sports clothing sales are assumed to average SR 1,500 per member per year, allowing for sales to others in the member's family and to guests who may purchase merchandise in the sports clothing shop.

The ship's chandler will average sales of SR 5,000 per year per boating member, figured on berth rental boatmen only. There will certainly be sales to dry storage lessees and to visiting boatmen, but it is felt that the SR 5,000 per year per large boat owner is conservative and a reasonable estimate of potential sales.

The diving equipment shop will probably appeal to about half of the boating members who will spend an average of SR 8,000 per year on equipment, maintenance and repair, tank refills, and the like. This averages out at SR 4,000 per member on a full membership basis.

The bait and tackle shop is also expected to appeal to half of the boating members who will spend an average of SR 5,000 per year each for an overall membership average of SR 2,500 each.

Boat berth rentals will be SR 100 per meter of berth length per month, corresponding to $8.86 per foot per month (the new Long Beach, California, marina rental rates have just been posted at $4.50 per foot per month).
With an average berth length of 11.11 meters (the weighted average of all Jeddah marina berths), the SR 100 per meter per month lease rate corresponds to SR 13,333 per year per boat, average.

Fuel and ice sales are estimated on the basis of 500 liters of fuel per boat at SR 0.50 per liter and 50 kilograms of ice at SR 4 per kilogram, these per trip assuming that 25 percent of the boats in the marina go out each week. These needs correspond to a full boating membership average of SR 2,340 per boat per year.

Boat repair fees are based on typical expenditures at marinas in the United States adjusted to Saudi prices. It is estimated that each boatman in Jeddah marina will average boat repair and maintenance expenditures of SR 10,000 per year (not including the first year of operation which is estimated at half that average).

Dry storage fees will be incurred by "social" members who do not own larger boats or who prefer to keep smaller craft in the dry storage building. The fees per stall are assumed to be SR 300 per month, or SR 3,600 per year each. There will be 104 stalls and 100 percent occupancy is assumed for this facility. Any boating member who has a berth and desires dry storage for an auxiliary or additional boat will have the same opportunity to lease dry storage space.

Launching fees cover the service of forklift truck removal and replacement of boats from the dry storage building (for Jeddah marina members) and from trailers brought in by non-members who desire to launch boats in the harbor. Members with dry storage leases will be charged SR 25 per in-and-out, assuming that 25 percent of the stalls will desire such service each week. Non-members will be charged SR 200 per in-and-out assuming a demand of 50 launchings per week. These amount to a level income of SR 554,000 per year during the equilibrium years.
New boat sales are conservatively estimated to be made to half of the new members who come into the Jeddah marina each year (the new boating members). While there are brokers and factory representatives in Jeddah for Hatteras and other major craft manufacturers, the display capabilities and attractiveness of the overall nautical atmosphere at Jeddah marina are expected to render it the key yacht sales point in the area and, perhaps, in Saudi Arabia. In addition to sales to half of the incoming new boating members, it is estimated that new boats will be sold to 15 percent of the old members who will be upgrading, changing boating style, and the like.

In order to arrive at a reasonably conservative amount to assume for per-boat average sales prices, a study was made of factory prices for new Hatteras yachts between 32 and 77 feet in overall length (9.8 to 23.5 meters), and for some 300 used Hatteras and Bertram boats as listed in trade publications. The United States price of these boats was adjusted for shipping costs on the basis of +15 percent for 25 to 40 foot length (7.6 to 12.2 meters), +14 percent for 45 to 50 foot length (13.7 to 15.2 meters), +13 percent for 55 to 60 foot length (16.8 to 18.3 meters), +12 percent for 65-foot, +11 percent for 70-foot, and +10 percent for 75-foot and larger boats (19.8, 21.3, and 22.9 meters). The relationships between boat length and price, in Saudi Riyals versus meters, are shown on the following page in Figure 2, Boat Length/Price Relationship.

The weighted average new boat price for Jeddah marina will be SR 851,000. For purposes of estimating the average boat price for new boat sales to Jeddah marina members it has been assumed that new boat sales will average SR 700,000 each.

Used boat sales will be made to 20 percent of new boating members and 15 percent of old boating members each year. These sales, handled on a brokering basis, will start in the second year, with no used boat sales during the initial operating year. The weighted average used boat price in Jeddah marina (derived from the data shown in Figure 2) will be SR 460,000. Average used boat prices have been assumed to be SR 400,000.
Figure 2

YACHT LENGTH/PRICE RELATIONSHIP
JEDDAH MARINA

Source: HARRISON PRICE COMPANY
Summary of revenue sources. Revenue sources are summarized by line item for the eighth and ensuing operating years (the equilibrium years) in Table 5, below.

Table 5

SUMMARY OF REVENUE SOURCES
TYPICAL EQUILIBRIUM YEAR
JEDDAH MARINA
(thousands of 1983 Saudi Riyals)

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation fees</td>
<td>9,520</td>
</tr>
<tr>
<td>Membership dues</td>
<td>22,800</td>
</tr>
<tr>
<td>Yacht Club operation</td>
<td>9,712</td>
</tr>
<tr>
<td>Sports clothing shop</td>
<td>3,420</td>
</tr>
<tr>
<td>Ship's chandler</td>
<td>3,800</td>
</tr>
<tr>
<td>Diving equipment shop</td>
<td>3,040</td>
</tr>
<tr>
<td>Bait and tackle shop</td>
<td>1,900</td>
</tr>
<tr>
<td>Boat berth rental</td>
<td>10,130</td>
</tr>
<tr>
<td>Fuel and ice sales</td>
<td>1,778</td>
</tr>
<tr>
<td>Boat repair fees</td>
<td>7,220</td>
</tr>
<tr>
<td>Dry storage fees</td>
<td>374</td>
</tr>
<tr>
<td>Launching fees</td>
<td>554</td>
</tr>
<tr>
<td>New boat sales</td>
<td>98,000</td>
</tr>
<tr>
<td>Used boat sales</td>
<td>46,800</td>
</tr>
</tbody>
</table>

TOTAL OPERATING REVENUE       237,096

Source: HARRISON PRICE COMPANY

OPERATING EXPENSES

Operating expense line items have been calculated on the same assumptions used for estimating revenues from the various sources to Jeddah marina.
Salaries are based on the staffing schedule summarized below which shows salary amounts and the number in each department in each phase of the Jeddah marina construction and development.

**STAFF ALLOCATION SUMMARY**

(Thousands of 1983 Saudi Riyals)

<table>
<thead>
<tr>
<th></th>
<th>Annual Salary</th>
<th>Number in each Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td><strong>General management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General marina manager</td>
<td>275</td>
<td>1</td>
</tr>
<tr>
<td>Secretary</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td>Bookkeeper</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td><strong>Harbor operation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harbormaster</td>
<td>240</td>
<td>1</td>
</tr>
<tr>
<td>Assistant harbormaster</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>Berth attendants</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>Maintenance men</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>Fuel/ice/bait attendants</td>
<td>60/40</td>
<td>2</td>
</tr>
<tr>
<td><strong>Yacht Club operation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head chef</td>
<td>150</td>
<td>1</td>
</tr>
<tr>
<td>Assistant chef</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>Head waiter/maître d’</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>Waiters</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>Recreation attendants</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td><strong>Boat repair area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chief of boat repair</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>Assistant repair men</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>Yard attendants</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td><strong>Shops and stores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store manager</td>
<td>75</td>
<td>6</td>
</tr>
<tr>
<td>Assistants</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Helpers</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total staff</strong></td>
<td>36</td>
<td>48</td>
</tr>
</tbody>
</table>

These salaries are given for opening year, 1985, and are assumed to increase by three percent per year throughout the operating term of Jeddah marina.
**Burden.** In keeping with the customs in Saudi Arabia, it is expected that each worker will be provided with allowance for room and board on the basis of twice the salary amount. Thus burden = $2 \times \text{salary}$.

**Supplies.** Supplies include all materials bought for use on the premises (office and administrative supplies), food supplies for the Yacht Club operation, merchandise purchased for resale, equipment and supplies for the boat repair operation.

*Office and administrative supplies* are assumed to average SR 500,000 per year of operation from the initial year of operation.

*Food and beverage supplies* for Yacht Club operations are assumed to be 25 percent of food and beverage sales each year.

*Merchandise*—*clothing* is assumed to be 40 percent of total sales in the sports clothing shop each year, reflecting a 150 percent markup.

*Merchandise*—*ship's chandler and bait and tackle shop* is assumed to be two thirds of total sales each year in these two shops, reflecting a 50 percent markup on items.

*Merchandise*—*diving equipment* is assumed to be 60 percent of total revenue from that shop each year reflecting the emphasis on service as an important part of sales as compared to merchandise.

*Merchandise*—*boat repair area* reflects an even higher emphasis on service in the boat repair area with an estimated 40 percent expense of total sales or billings at that facility each year.

*Fuel and ice costs* are estimated to be half of total sales for these commodities, reflecting a 100 percent markup.
New and used boat costs. New boats will be purchased from manufacturers outside of Saudi Arabia, shipped to Jeddah, and placed at the boat sales center or directly in the water. Used boats will probably be largely part of Jeddah marina at the time of sale and may be in or out of the water, depending on circumstances.

New boat costs reflect a 15 percent markup standard in the industry, equivalent to 86.96 percent of total new boat sales as expense.

Used boats are assumed to be sold on a ten percent commission basis. Accordingly, the cost of the boat is 90 percent of the sales income.

Maintenance includes materials and contract services used in maintaining Jeddah marina. Maintenance is assumed to cost three percent of the marina investment, building as phases add value to the facility.

Promotion and printing include services and materials necessary to inform the public of Jeddah marina, attracting new members as needed, as well as printing and distribution of internal communications material for member or employee information. Promotion and printing are assumed to average SR 500,000 per year from the first operating year.

Utilities are not as expensive in Saudi Arabia as most other countries and are assumed to be a level SR 500,000 each year of operation.

Equipment fund. Jeddah marina will require a number of pieces of equipment for proper operation including at least one harbor patrol boat, a small yard fire truck, 40 golf cart type utility trucks, three pickup trucks, and two staff automobiles. Costs for these are estimated at SR 700,000 for the boat; SR 250,000 for the fire truck; SR 800,000 for the 40 golf carts; SR 105,000 for the pickup trucks; and SR 185,000 for the staff automobiles. The total for this equipment is SR 2,040,000. The equipment fund provides for replacement of all equipment on an average of every four years with an annual cost of SR 500,000.
Insurance is assumed to be 0.8 percent of the value of the marina, building up in cost as the phases increase the value.

Professional services include legal and accounting fees and such other professional services as will be needed during normal operations. These fees are assumed to be SR 250,000 per year from the first operating year.

Summary of operating expenses. Expense line items are shown in Table 6, below, for the eighth operating year of Jeddah marina.

Table 6
SUMMARY OF OPERATING EXPENSES
TYPICAL EQUILIBRIUM YEAR
JEDDAH MARINA
(thousands of 1983 Saudi Riyals)

<table>
<thead>
<tr>
<th>Expense Element</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries(^1)</td>
<td>4,858</td>
</tr>
<tr>
<td>Burden(^1)</td>
<td>9,716</td>
</tr>
<tr>
<td>Supplies - office and administrative</td>
<td></td>
</tr>
<tr>
<td>-food and beverage</td>
<td>2,428</td>
</tr>
<tr>
<td>-merchandise, clothing</td>
<td>1,368</td>
</tr>
<tr>
<td>-merchandise, chandlery, bait and tackle</td>
<td>3,800</td>
</tr>
<tr>
<td>-merchandise, diving equipment</td>
<td>1,216</td>
</tr>
<tr>
<td>-boat repair center</td>
<td>2,527</td>
</tr>
<tr>
<td>Fuel and ice costs</td>
<td>889</td>
</tr>
<tr>
<td>New and used boat costs</td>
<td>127,337</td>
</tr>
<tr>
<td>Maintenance</td>
<td>6,705</td>
</tr>
<tr>
<td>Promotion and printing</td>
<td>500</td>
</tr>
<tr>
<td>Utilities</td>
<td>500</td>
</tr>
<tr>
<td>Equipment fund</td>
<td>500</td>
</tr>
<tr>
<td>Insurance</td>
<td>1,788</td>
</tr>
<tr>
<td>Professional services</td>
<td>250</td>
</tr>
<tr>
<td>TOTAL OPERATING EXPENSE</td>
<td>164,882</td>
</tr>
</tbody>
</table>

\(^1\) Salaries and burden are for eighth operating year.
Source: HARRISON PRICE COMPANY.
PRO FORMA FINANCIAL STATEMENT OF OPERATIONS

Pro Forma Statement

The pro forma statement of expected financial performance of Jeddah marina is presented in Table 7 on the following page for the first ten years of operations. This statement is based on assumptions and rationale already explained and discussed. Debt service is based on a 30 percent equity position, 12 percent interest rate and an 8-year term on debt.

Payout and Return on Invested Capital

The data in Table 7 show that the payout on the equity investment of SR 62,598,000 will occur in about 7½ years.

In order to provide a reasonable simulation of future earning worth for purposes of calculating rate of return on invested capital for the ten-year operating period shown, a "salvage value" has been assigned to the marina and added to the net operating profit for the tenth year. The salvage value assumes that the marina could be sold at that time for at least 50 percent of the cost.

The rate of return on invested capital, calculated using the discounted cash flow method is:

Rate of return 23.0 percent.
## Table 7

**PRO FORMA FINANCIAL STATEMENT**

**JEDDAH MARINA OPERATIONS**

(Thousands of 1985 Saudi Riyals)

<table>
<thead>
<tr>
<th></th>
<th>Operating Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPERATING REVENUE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiation fees</td>
<td></td>
<td>36,800</td>
<td>7,600</td>
<td>6,200</td>
<td>13,880</td>
<td>17,320</td>
<td>19,000</td>
<td>17,400</td>
<td>9,520</td>
<td>9,520</td>
<td>9,520</td>
</tr>
<tr>
<td>Membership dues</td>
<td></td>
<td>6,200</td>
<td>9,850</td>
<td>11,540</td>
<td>12,770</td>
<td>15,340</td>
<td>18,130</td>
<td>20,630</td>
<td>22,800</td>
<td>22,800</td>
<td>22,800</td>
</tr>
<tr>
<td>Yacht Club operation</td>
<td></td>
<td>2,936</td>
<td>4,252</td>
<td>4,906</td>
<td>5,480</td>
<td>6,586</td>
<td>7,764</td>
<td>8,807</td>
<td>9,712</td>
<td>9,712</td>
<td>9,712</td>
</tr>
<tr>
<td>Sports clothing shop</td>
<td></td>
<td>930</td>
<td>1,478</td>
<td>1,731</td>
<td>1,916</td>
<td>2,301</td>
<td>2,720</td>
<td>3,095</td>
<td>3,420</td>
<td>3,420</td>
<td>3,420</td>
</tr>
<tr>
<td>Ship's chandler</td>
<td></td>
<td>1,600</td>
<td>1,750</td>
<td>1,905</td>
<td>2,205</td>
<td>2,655</td>
<td>3,100</td>
<td>3,475</td>
<td>3,800</td>
<td>3,800</td>
<td>3,800</td>
</tr>
<tr>
<td>Diving equipment shop</td>
<td></td>
<td>1,280</td>
<td>1,400</td>
<td>1,524</td>
<td>1,764</td>
<td>2,124</td>
<td>2,480</td>
<td>2,780</td>
<td>3,040</td>
<td>3,040</td>
<td>3,040</td>
</tr>
<tr>
<td>Bait and tackle shop</td>
<td></td>
<td>800</td>
<td>875</td>
<td>953</td>
<td>1,103</td>
<td>1,328</td>
<td>1,550</td>
<td>1,738</td>
<td>1,900</td>
<td>1,900</td>
<td>1,900</td>
</tr>
<tr>
<td>Boat berth rentals</td>
<td></td>
<td>4,267</td>
<td>4,667</td>
<td>5,080</td>
<td>5,880</td>
<td>7,080</td>
<td>8,267</td>
<td>9,267</td>
<td>10,133</td>
<td>10,133</td>
<td>10,133</td>
</tr>
<tr>
<td>Fuel and ice sales</td>
<td></td>
<td>749</td>
<td>819</td>
<td>892</td>
<td>1,032</td>
<td>1,243</td>
<td>1,451</td>
<td>1,626</td>
<td>1,778</td>
<td>1,778</td>
<td>1,778</td>
</tr>
<tr>
<td>Boat repair fees</td>
<td></td>
<td>1,600</td>
<td>3,500</td>
<td>3,810</td>
<td>4,410</td>
<td>5,310</td>
<td>6,200</td>
<td>6,950</td>
<td>7,220</td>
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<tr>
<td>Dry storage fees</td>
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<td>187</td>
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<td>234</td>
<td>374</td>
<td>374</td>
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<tr>
<td>Launching fees</td>
<td></td>
<td>537</td>
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<td>537</td>
<td>545</td>
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<td>554</td>
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<tr>
<td>New boat sales</td>
<td></td>
<td>112,000</td>
<td>54,600</td>
<td>51,800</td>
<td>81,900</td>
<td>96,600</td>
<td>112,700</td>
<td>112,000</td>
<td>98,000</td>
<td>98,000</td>
<td>98,000</td>
</tr>
<tr>
<td>Used boat sales</td>
<td></td>
<td>24,000</td>
<td>24,800</td>
<td>32,400</td>
<td>38,800</td>
<td>45,200</td>
<td>48,400</td>
<td>48,400</td>
<td>48,400</td>
<td>48,400</td>
<td>48,400</td>
</tr>
<tr>
<td><strong>TOTAL OPERATING REVENUE</strong></td>
<td></td>
<td>169,886</td>
<td>115,515</td>
<td>115,865</td>
<td>165,519</td>
<td>197,466</td>
<td>229,490</td>
<td>237,096</td>
<td>219,051</td>
<td>219,051</td>
<td>219,051</td>
</tr>
</tbody>
</table>

|                  |                  |     |     |     |     |     |     |     |     |     |     |
| **OPERATING EXPENSE** |                  |     |     |     |     |     |     |     |     |     |     |
| Salaries         |                | 2,480 | 2,554 | 2,631 | 3,377 | 3,478 | 4,579 | 4,717 | 4,858 | 5,004 | 5,154 |
| Burden           |                | 4,960 | 5,108 | 5,262 | 6,754 | 6,956 | 9,150 | 9,434 | 9,716 | 10,008 | 10,308 |
| Supplies         |                | 4,278 | 5,689 | 6,268 | 7,091 | 8,431 | 9,791 | 10,960 | 11,839 | 11,839 | 11,839 |
| Fuel and ice supplies |            | 375 | 410 | 446 | 516 | 622 | 725 | 813 | 889 | 889 | 889 |
| New and used boats |              | 97,391 | 69,078 | 67,363 | 100,377 | 118,920 | 138,680 | 140,951 | 127,337 | 127,337 | 127,337 |
| Maintenance       |                | 5,564 | 5,564 | 5,564 | 6,131 | 6,131 | 6,705 | 6,705 | 6,705 | 6,705 | 6,705 |
| Promotion and printing |            | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Utilities         |                | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Equipment fund    |                | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Insurance         |                | 1,488 | 1,484 | 1,484 | 1,635 | 1,635 | 1,700 | 1,788 | 1,788 | 1,788 | 1,788 |
| Professional services |            | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| **TOTAL OPERATING EXPENSE** |            | 118,282 | 91,637 | 90,768 | 127,631 | 147,923 | 173,176 | 177,118 | 164,882 | 165,320 | 165,770 |

|                  |                  |     |     |     |     |     |     |     |     |     |     |
| **NET OPERATING SURPLUS** |                  |     |     |     |     |     |     |     |     |     |     |
|                  |                  | 51,604 | 23,878 | 25,097 | 37,888 | 49,543 | 56,314 | 59,978 | 54,169 | 53,731 | 53,281 |
| Less debt service |                | 29,403 | 29,403 | 29,403 | 31,305 | 33,206 | 35,132 | 37,058 | 37,058 | 7,655 | 7,655 |
| **NET PROFIT ON OPERATIONS** |              | 22,201 | (5,525) | (4,306) | 6,583 | 16,337 | 21,182 | 22,920 | 17,111 | 46,076 | 45,626 |

Source: HARRISON PRICE COMPANY