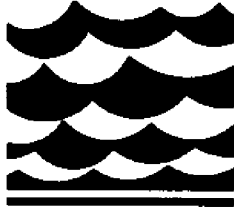


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TEXAS A&M
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MARINE/OFFSHORE INDUSTRY OUTLOOK

COMPILED BY DEWAYNE HOLLIN, BUSINESS MANAGEMENT SPECIALIST
TEXAS MARINE ADVISORY SERVICE

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MARINE/OFFSHORE INDUSTRY OUTLOOK

1985

Compiled by

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The Marine/Offshore Industry Outlook Conference is an annual event sponsored by the Texas A&M University Sea Grant College Program and the Marine Services Association of Texas. Its purpose is to bring industry representatives up to date on developments, trends and problems in marine and offshore industries.

This summary, compiled by Dewayne Hollin, was prepared from speakers' remarks at the 1985 conference in Houston, Texas.

For further information about other conferences and seminars sponsored by Sea Grant for marine-related industries, contact Dewayne Hollin, Sea Grant College Program, Texas A&M University, College Station, Texas 77843-4115; phone 409/845-3854.

MARINE/OFFSHORE INDUSTRY OUTLOOK CONFERENCE

April 18, 1985
Houston Hobby Airport Hilton
Houston, Texas

The State of the Offshore Industry and Its Outlook

G. ALLEN BROOKS, Offshore Data Services, Inc.

The state of the offshore industry is, in a word, TERRIBLE! The near term outlook is dismal. But, with a little luck, the long-term future is bright. Unfortunately, many of us in this room today may not be in this business in the long-term if current trends continue. Many significant trends are at work in this industry - some good and some bad. How you as management respond to them will determine whether you survive this period; a period I personally believe will witness the most significant restructuring of the offshore oil service industry in its 35-year history.

I said that 1983 would be the roughest year in history for the offshore industry, but that a recovery would begin by 1984 and continue into 1985. Many listeners thought the Offshore Data Service study on which I based those comments was way off. When the rig count turned around in August of 1983 and climbed steadily upwards through 1984, many skeptics became believers. I also said that profitability for the offshore industry would not return until equipment utilization rates reached the 90 to 95 percent range, but that these levels would not be attained until sometime in 1985. That level of utilization would also trigger the first new rig construction orders and set the offshore industry off on its next growth cycle.

Up until January of this year, I was beginning to look like a hero; possibly even too conservative in my forecast. The mobile drilling rig fleet was touching the 90 percent level worldwide, while the Gulf of Mexico count exceeded that threshold. Day rates for rigs had begun to improve; however, not to a level of overall fleet profitability. In the floating rig market in the Gulf, day rates had begun to exhibit boom characteristics as contract rates leapfrogged with every new contract signed during the late summer and early fall. New rig orders were being placed in rapid succession, even though contractors were not making profits on their existing fleet.

Today, the worldwide mobile drilling rig fleet utilization rate has dropped to 83.2 percent from 90.3 percent at the start of the year. It is, however, still above the level at this time last year. In the Gulf of Mexico, some 67 rigs are out of work, 52 more than at the start of the year and the utilization rate has plunged more than 20 percentage points. More important though, is that "the will to live" has been beaten out of industry participants. The total absence of optimism about the future for the offshore industry

may be the stage upon which constructive progress can be made to restore this industry to a healthier condition. To accomplish this transition, restructuring of the business is mandatory if the oil service industry is not to become the steel industry of the 1980s.

The overriding consideration for the future is the price of oil. My feeling is that prices have reached a level at which large changes will not occur. Rather, the price will move up or down in small increments. Why? First, the marginal producers within OPEC see that their ability to gain market share by lowering their price is limited. Since a drop in price does not elicit a dramatic increase in demand, a significant decline in total revenues will be the result of a price war, and a price is in no one's best interest. Second, the threat of rising interest rates in the U.S. as a result of our growing deficit is finally weakening the dollar. This means that the price of oil and gas in foreign markets will be going down which should stimulate an increase in demand. Third, the uncertainty about future oil prices is slowing the rate of new field development which means that productive capacity is not expanding as fast as originally assumed. Finally, one can expect to see the U.S. and North Sea countries support the price of oil through either tariffs or production cuts if the price were to move lower rapidly.

We must recognize that volatility and uncertainty regarding oil and gas prices will be the norm for planners and managers in the future. In fact, I believe it has been the inability of oil and gas company managements to adjust to this new, fluid environment that has led to some of the problems of the service industry. Probability calculations along with downside risk analysis will be required for every capital spending decision. Only when managements feel comfortable with the results of this planning will spending be allowed. The net result will be a slower rate of spending, although not necessarily a lower level of spending.

Even with prospects of worldwide energy demand growing at a fraction of its historic rate and surplus oil and gas productive capacity being available for the foreseeable future, the outlook for the offshore industry is not all that negative. The offshore area of the world offers geologically the best hope for finding new oil and gas reserves. Shell Oil expects more than half of its new oil and gas discoveries to the year 2000 will be found offshore. Equally important is that these new discoveries will be found in areas, deepwater and harsh environments, which are more costly to operate in than traditional offshore areas. Worldwide, the offshore represents four-fifths of the world's surface, yet only 30 percent of it is leased and an even smaller percentage has been explored. With governments holding control over offshore acreage, exploration and development will continue since politically and economically this course of action is in their best long-term interest.

Uncertainty about oil and gas prices is not the only thing that has caused the slump in drilling activity this year, although it is probably the major factor. Oil company mergers have produced timing dislocations, and in some cases forced cutbacks in drilling because of increased debt loads. In the international arena, the financial

problems of foreign countries have forced temporary cutbacks in exploration and development activity. These reduced funds have taken their toll on offshore activity during the past two years.

Governments which have been reluctant to share their offshore with the international oil industry are now aggressively offering attractive financial incentives to "come on down." Argentina is the latest country to open its offshore to the international oil industry. At the same time, the U.S. government, the sponsor of the most aggressive offshore leasing program in the world for the past two years, is in the early stages of throttling this program back. Only the United Kingdom and Norway have staunchly continued to offer incentives and rewards to the oil industry to explore and develop their offshore. In fact, the level of drilling activity in the North Sea set a record last year with 268 exploration and appraisal wells. We are looking at the prospect of bettering that number this year. As a result, spot shortages of rigs in the North Sea are a possibility unless idle rigs from other markets migrate there soon.

In the Gulf of Mexico, the oil industry is faced with great opportunity. Over the past two years, the industry has leased more than 10.6 million acres offshore. This acreage represents about 2,000 new blocks to explore. Last year the industry drilled a record 390 wildcat wells, a 30 percent increase over the number drilled in the previous peak year of 1981, and a 50 percent increase over the number drilled in 1983. More importantly, the record 95 discoveries in the Gulf announced in 1984 almost equaled the total number of discoveries from the two previous years. With only about 15 percent of all these newly leased tracts having been drilled so far, the oil industry has a lot of drilling left to do during the remainder of the five-year lease terms.

Discoveries are already impacting the platform fabrication industry along the Gulf Coast. Some 150 structures were installed in the Gulf in 1984, a 25 percent increase over the previous year. Already 125 structures are scheduled for installation this year, a number bound to increase as the year progresses. More importantly, the water depths in which new platforms are being installed are getting deeper which means larger platforms with generally more well slots. The impact of the deepwater drilling that has taken place over the past several years is also beginning to impact the offshore fabrication industry. There were 12 announced discoveries last year in water depths greater than 6,000 feet. Construction contracts are being negotiated for platforms in water depths ranging between 750 feet and 1,350 feet. There are also floating production plans for fields in water depths ranging out to 1,800 feet.

Despite the high level of drilling activity and discoveries offshore last year, a very serious condition exists for the offshore contracting industry. This condition, brought on by the capital structure of the offshore industry, encouraged by the men in blue pinstriped suits and enjoyed by the oil industry, is called "cutthroat pricing." Now into its fourth year, "cutthroat pricing"

is bleeding the offshore industry of its capital which will be sorely needed if the oil industry is to be adequately served in the future. "Cutthroat pricing" has forced numerous companies to the brink of, or into, bankruptcy. Other companies have been forced to cut capital spending to the bone, to lay off essential personnel and to cut corners wherever possible, including safety programs and crew sizes. Inadequate reinvestment in equipment or cutbacks in safety or training programs will do nothing but invite the federal government to increase the regulation of this industry. The cost of more regulation will come on top of higher drilling and development costs associated with increased levels of offshore activity.

Workers who are victims of the squeeze in the marketplace are turning to the one remedy they have available, unionization. The helicopter industry has so far successfully fought off unionization, and the diving industry has successfully defended itself. North Sea observers suggest that the impact of unionization of offshore workers, while initially a problem, has actually contributed to a higher level of skills and more work. They suggest that unions have been good for the offshore business.

Another problem faced by contractors today is rapidly rising insurance costs. The huge losses being reported by the property and casualty underwriters and grossly inadequate loss reserves is shrinking the capacity of this industry to handle offshore risks at the rates prevailing for the past few years. How many offshore contractors can survive with insurance premiums increasing by 40 to 100 percent in the next 12 months? Yet this will be a fact of life in the offshore business.

As day rates for all types of offshore equipment fall back from the gains made in the second half of 1984, and operating costs rise, it is not hard to see the capital being drained out of this business. Bankers who cheered on the expansion of companies in this highly capital intensive industry are now making "life and death" decisions about companies. I am not suggesting that all the companies in this offshore industry today should be allowed to survive. In fact, a number of them need to be shut down if the industry is to recover. What we need is a forum for the industry to try to solve its problems. The key problem is that for various reasons, people who have made bad decisions are being allowed to perpetuate them under the guise of "show me a high utilization rate and I'll continue to finance you" mode of operation. Admittedly, lenders have no earthly idea what they can do with drilling rigs or saturation diving equipment, but subsidizing one company that is not making money at the expense of other, healthier companies in their own loan portfolio is insane.

The oil companies are equally to blame for the current condition of the offshore support industry. Oil companies are enjoying the low prices offered by contractors today. Yet only a few years ago these same oil companies were taking service company executives to lunch and encouraging them to build additional equipment to handle the increased future work. When the market demand for equipment dropped, these same oil companies were quick to cut off

the high priced equipment, or even to ask for renegotiated prices. So much for the sanctity of contracts.

The problem is that the oil companies practice job rotation in order to provide broad experience for their managers. Since a person is in a position for only a few years, he has no vested interest in taking a long-term view of his decisions. The rig procurer must only make sure that he does what seems to be the correct thing in the short-term. Calculations show that if an oil company contracted one-fifth of its equipment needs for five years every year rather than play the spot market each year for all its equipment needs, it would save money over almost every five-year period. If the oil companies really do practice long-term planning, they know pretty well how many wells they plan to drill each year and generally where. Therefore, they should be able to contract long-term a certain portion of their equipment needs and use the spot market to adjust for variations from this base level demand.

Not all the blame lies outside the management of the service companies. Investing huge capital sums in new equipment without considering the potential demand for equipment and what everyone else was doing was foolish. But they did it and now they must live with their decisions.

What is the solution to the current condition in the offshore industry? First, consolidation of equipment and companies must take place. Overhead costs need to be reduced. Second, equipment that is technologically obsolete must be retired. Third, the oil companies must recognize that four years of below breakeven pricing must end. If the contractors are dumb enough to not stop it, then the oil companies must offer higher rates to keep the industry healthy. Any increase in rates could probably be conditioned with a requirement that it be reinvested in the equipment and people to make sure they are adequate for the challenges of the future. Unless something changes in the near future, the oil industry must be prepared to get back into the ownership and operation of drilling and support equipment just as they did in the 1930s, 1940s and 1950s.

Now let us talk about the future. For the drilling rig business, the next two years are going to be dominated by the level of drilling in the Gulf of Mexico and the North Sea. These two markets contain 356 rigs, or almost half the mobile rigs in the worldwide fleet. With respect to activity, these two markets contain 50 percent of the rigs actually drilling. In the North Sea, the changed tax structure in the U.K. is encouraging development of a number of marginal fields. A possible 80 new fields for the U.K. sector alone are forecast between now and the year 2000. The Dutch sector of the North Sea recently has been opened up to the oil industry for exploration, and drilling there was successful last year also. Shell Oil announced that it anticipates drilling 450 exploratory wells in the North Sea over the next 10 years at an average annual cost of \$427 million.

In the Gulf of Mexico, only 187 of 254 rigs in the fleet are drilling. While the utilization rate is down to 73.6 percent, the number of rigs out of work, 67, only slightly exceeds the total of 58 rigs that migrated here during the past two years. With the oil industry faced with a substantial backlog of drilling prospects and three areawide lease sales this year, the activity rate should begin to increase. The rig count should bottom out its decline by the end of May and start increasing steadily throughout the remainder of 1985. By the end of the year we believe the Gulf of Mexico rig count will be approaching the 90 percent level, or where it was at December 1984. This means about 40 more rigs will be working by year's end.

As befits the increased activity in deeper waters, the large cantilever jackups and deepwater semis and drillships will have the highest utilization rates. Shallow water jackups will remain in an oversupply situation for the next few years, since large jackups will still be available to move back into shallow water to drill. The key to the amount of oversupply in this segment of the market will depend upon retirements of older rigs, something that needs to occur. Day rates in the Gulf will show little improvement from current levels by the end of the year, except in the deepwater floater market. The platform rig market should show signs of recovery this year as the number of new platform installations increase and as these larger platform rigs become more competitive with the cantilever jackup drilling rigs.

In foreign markets outside of the North Sea, activity will start increasing which could create spot rig shortages as a result of the all the rigs which migrated to the stronger markets during the past two years. Much of the increase in activity in these foreign markets may be garnered by foreign contractors and national owned rigs. The shrinking of the American owned fleet is a phenomenon which has been underway for about 10 years, but which is accelerating with the advent of contractor sales such as Sedco to Schlumberger, Santa Fe to Kuwait and now Keydril to Santa Fe. More importantly, except for the major new rig orders of Sonat and Odeco, most of the new rig construction underway is for non-American fleets.

Offshore support companies must come to grips with the rising power of nationalism. Pressure to develop local industries, country-to-country barter deals, and cross-barter arrangements are forces that American contractors cannot deal with easily. As more and more foreign markets become effectively closed to U.S. contractors, new business strategies need to be employed. This is a problem for all offshore support companies.

The near-term outlook for the diving and work boat industries is not much better than for the drillers. Utilization rates for boats will track the mobile drilling rig industry. Thus, it will not be until the end of this year that boat utilization will match the level of activity experienced in the fall of 1984. Thus, boat day rates face little chance of near-term improvement. Specially equipped vessels for deepwater work here and in the North Sea should command premium rates as the year progresses.

The diving industry has a unique set of problems besides the slowdown in offshore activity. The growing influence of remotely operated vehicles (ROVs) has forced companies to make expensive capital investments to handle technology needs of the oil industry in the future, but rates are so bad that some of these companies cannot survive this year. Overcapacity of ROVs, coupled with a lack of standardization, has created spare part inventory problems adding to the financial problems of diving companies. The manned diver segment of the industry is also under pressure because of oil company efforts to keep costs down. Today, because of the low level of activity, divers often are bidding against each other for work already won by their employers. All of these problems spell shake-out before pricing gets better.

With consolidation of the offshore support industry a real time condition, what will the business look like a year from today? It is safe to say that there will be fewer companies in business. In the drilling industry there will be more large contractors. Limited partnership entities will either convert into true corporations or they will be out of business. Other limited partnership companies will be acquired, general partners will retire, or the limited partners will want out once their tax exposure is over. The ability to create another Zapata Gulf Marine company will be difficult because everyone left in the boat business has a lot of debt that needs to be dealt with in any restructuring effort. The helicopter transportation business along the Gulf Coast is in worse condition. From 37 companies in 1980, the industry has shrunk to seven today. Without price relief soon, the number of helicopter companies serving the offshore may fall to five.

The platform fabrication business has the capacity to build structures at about 60 percent of what it was four short years ago. As the giant platforms for deepwater in the Gulf are ordered, the price for each subsequent order goes up a notch. This situation has all the major oil companies scurrying to find fabricators to work with on these large units before all the yard space is committed.

The longer term outlook for the offshore industry looks bright. A key to this brighter future lies with the development work being done in the Gulf of Mexico. With the emergence of the North Sea in the 1970s, its deeper waters and more harsh operating conditions forced the development of new technologies. These technological advancements are now being tried out in the new frontier market of deep water in the Gulf. In contrast to the 1970s when technological developments could be accepted despite huge costs, declining to flat oil and gas prices in the 1980s preclude cost overruns on projects. No longer can one count on rising oil prices to bail out project economics. Today, wells must be drilled and fields developed on budget, or under budget. This generally means more time and money must be spent up front in engineering and testing to ascertain the probable success of the technology. But, if successful, economic deepwater drilling and field development technology will once again be exported worldwide from the Gulf of Mexico and new opportunities will be created for American companies. This is the challenge and opportunity of the future.

Outlook for Marine and Offshore Equipment Operators

Panelists:

WILLIAM E. CHILES, Chiles Drilling Company
DR. PHILIP OXLEY, Tenneco Oil Exploration and Production
JOSEPH H. PYNE, Dixie Carriers, Inc.
KENNETH W. WALDORF, Zapata Gulf Marine Corporation

WILLIAM E. CHILES, Chiles Drilling Company

The four major factors affecting exploration and development expenditures are price uncertainty, energy demand, oil company takeovers and the U.S. Treasury Department's new tax proposal. We are all aware of the drastic drop in the offshore rig count, particularly in the Gulf of Mexico, in the first quarter of 1985. We were all happy with improvements in the utilization rate up to December of 1984. We felt that 1985 was going to be a year in which we could all breath easier and possibly get back to a breakeven position on a cash basis. As we now see the first quarter and reflecting on what we expect the rest of the year, I do not think this is going to happen.

The first factor affecting expenditures is the uncertainty of crude prices and what might happen in the near future. The oil and gas industry's perception of crude prices is a major determining factor in its planning process. If the industry feels crude prices are going to drop further from the present level of the mid-20s, it is going to hold back on expenditures. This is a function of demand, and we have seen demand remain fairly flat over the last several years. One of the problems that has affected demand is a strong dollar. We are now in a position where the dollar is stabilizing against other world currencies, where most European countries are paying the equivalent of \$55 to \$60 per barrel based on 1979 exchange rates. The strong dollar is now one of the major factors that has helped reduce demand over the last several years.

Another problem is the consolidation of some of the major oil companies and the takeovers that are precipitated by primarily T. Boone Pickens with Mesa Petroleum. These activities are draining substantial amounts of capital out of the budgets of the major oil companies that could otherwise be spent for exploration and production. Something has to be done to curtail the potential for takeovers. Basically, we need to stop T. Boone Pickens and the activity he is promoting.

The fourth factor affecting our perception of the future is the Treasury Department's new tax proposal released in January. No one at this point knows what the federal government is going to do in

1985 or 1986. Most people feel that the tax proposal does not have a chance in Congress, and we will continue with a tax situation similar to 1983 and 1984. We will probably lose the write-off of intangible drilling costs, which most people expected. We may also see the windfall profits tax disappear which would have a positive impact on the economics in the industry. The loss of the write-off of intangible drilling costs takes a great amount of money away from primarily the independents who have a lot of capital in the offshore drilling business.

What can we do about these problems? Currently, exploration and development costs are running about \$10 to \$13 per barrel, some as high as \$17 per barrel. The service industries have been squeezed to just about their limit. We are all operating below breakeven on a cash or book basis and have been doing so for several years. We can not continue to do this much longer. Most of the majors need to look within their own organization and try to establish themselves as a more profitable operation. We are finding business's needs to be in the hands of people who can react to the market very quickly. They are operating in a true commodity market.

The U.S. government needs to firm up its tax proposal. It needs to let us know what is going to happen. What can we expect? What is the position of Congress? We need to see some certainty in the tax situation for 1985 and 1986 to provide confidence for exploration and production expenditures. Excessive government spending is another major culprit. It is holding interest rates up and in effect contributing to the strong dollar. As long as interest rates are high, there is not a high demand for borrowing and investing in this country. We have to stop this excessive government spending to bring the interest rates down and the dollar down. Otherwise, there is no reason for the demand for oil and gas to rise. The resulting price is the major driving force in the long run behind our industry. If money is not available, existing leases are not going to be drilled.

One thing we as a service industry are going to have to do is maintain the quality of our operations, and spend money in the area of safety. We have had several major accidents offshore in the last few years. The Second International Conference on Offshore Safety is to be held in March 1986, in Miami, and the cosponsor with the IADC is the Rosenstiel School of Marine and Atmospheric Science at the University of Miami. The major focus of this conference is to stress prevention of major marine accidents like the ALEXANDER L. KIELLAND, the OCEAN RANGER and others. We are under a lot of pressure from our customers and our operators to improve our safety record. The industry can not stand any more major marine accidents of that type. The problem is we can not operate below breakeven much longer and maintain the quality and safety of operations that we have had in the past.

If this industry's economic condition persists, the oil and gas companies will be back in the service business in a big way, particularly the drilling industry. Continued operation below breakeven on a cash basis is not possible. Our bankers have been somewhat

understanding, but they really do not have an alternative except to continue backing us.

I do not see any substantial improvements for the rest of 1985. We continue to hear from customers that their budgets are still strong and that they are generally planning to spend about what they spent in 1984. We have not seen this happen yet. If this is true then maybe we will see a surge of activity in the last half of this year. However, if the economics are not right, the money just will not be spent.

DR. PHILIP OXLEY, Tenneco Oil Exploration and Production

A key to determining the level of future industry activity will be the cash flows available for reinvestment. A recent "Oil & Gas Journal" article revealed total earnings from a sampling of 24 oil companies have declined significantly in the past few years. This decline is the result of a depressed demand for petroleum products and the accompanying softening of product prices. Also the recent merger activity, involving some key players in the Gulf of Mexico, has resulted in several combinations with considerable more debt to service. Such factors indicate that the amount of capital available for exploration and production activities may be limited. Since future activity must be financed by current income, let me first concentrate on the production sector. Any discussion of production in the Gulf of Mexico must focus on the current excess of gas deliverability. Gulf of Mexico production supplies approximately 25 percent of this country's natural gas needs and only about 6 percent of its oil consumption. The "gas bubble" is of particular significance to operators in the Gulf.

Tenneco is well aware of the current turmoil in the natural gas markets. With a deliverability in excess of one billion cubic feet per day, we are among the top natural gas producers in the Gulf of Mexico. Approximately 70 percent of our production from that region is in the form of natural gas. Tenneco knows the gas business and from our viewpoint, while the worst may be over, very little improvement is anticipated for the next several years.

Total U.S. demand for natural gas is projected to remain flat at 18 to 18.5 trillion cubic feet (TCF) annually until well into the next decade. While the economic recovery experienced in 1984 caused some slight rebound from the 17 TCF annual demand in 1983, continued conservation and competition from other fuels will just maintain the current level of demand. Supplies to meet this demand will be readily available for at least the next five years. While the current deliverability sur-plus may dissipate in the next few years, bringing supply and demand into equilibrium, there will be a backlog of curtailed production (conservatively estimated at 3-4 TCF/year) to be worked off. Additionally, imports from Canada could add 1 to 2 TCF to supply, and natural gas drilling and reserve additions will be fairly strong.

The Gulf of Mexico supplies approximately 25 percent of total U.S. natural gas demand. This figure should not change appreciably in the next few years. Demand of 4.5 TCF annually from the Gulf with excess deliverability is projected through 1989. Since deliverability in the Gulf will drop off faster than in most areas due to the relatively short-lived reservoirs, we may see a loss in market share from the region by 1990, the slack being taken up by the continuation of the "bubble" to some extent in other areas and also by increased imports. Reserve additions of natural gas will more than replace production for the next three years in response to an acceleration of wildcat drilling. Not until the latter part of the decade will we begin to feed off our reserve base, currently estimated at 36 TCF.

Approximately 70 percent of Tenneco's production from the Gulf of Mexico on a net equivalent barrel basis is natural gas. This holds true for the industry as a whole with total crude production from the Gulf currently at 300 MMBO/year versus the 4.5 TCF/year of natural gas production. Oil production from the Gulf peaked at just over 400 MMBO/year back in the early 1970s and has been declining steadily until the past few years. This recent revival is due, in part, to an additional 10 MMBO/year coming from Offshore Texas as more development has occurred in that area. We expect this upswing to be short-lived and project that Gulf of Mexico crude production will again begin to decline.

Current new discoveries for the Gulf are less than half of current production. Much of the recent additions to reserves and increase in production appears to be the result of operators going back and reworking old oil fields and coaxing more production from existing wells. No significant turnaround in oil fortunes is seen until the mid-90s when the deepwater structures or the Eastern Gulf of Mexico, including Mississippi, Alabama and Florida (MAFLA) with the potential for large reserves begin to be developed.

Pricing will play a big part in this or any scenario of future supply and demand. We are projecting oil prices to remain stable for four or five years. Gas prices will have to remain flat or may even decline in real terms to stay competitive with other fuels. We currently see no increase in either gas or oil prices for at least three years and then only with inflation for several more years. Not until the mid-90s is any real growth in product prices expected to occur.

Despite the current oversupply and reduced value of its resources, Gulf of Mexico activity is projected to remain at all-time highs. This is due in part to the fact that drilling and service costs have fallen considerably since the boom of the early 1980s. It is estimated that such costs are currently 50 percent to 60 percent less, providing an incentive for operators to do their exploring and developing now even though production may not occur for some time.

More significant is the huge inventory of leases yet to be drilled. In the past five years active leases in the Gulf of Mexico have more than doubled (from 1,700 to 4,000). More than 2,600 new tracts have been leased, mostly as a result of the Gulf-wide sales that began in May of 1983. As of January 1985, more than 2,000 of these leases remained to be drilled. Except for some very deepwater tracts, the primary terms for all these leases will expire by at least 1989. To test each tract with one well would require an average of 400 wells per year. Considering both exploration and development drilling, there are a lot of wells to be drilled in the Gulf by the end of 1989; however, this level of activity will be possible only if adequate cash flows are available.

Rig utilization in the Gulf has rebounded from a low point of approximately 55 percent during the fall of 1983 to up over 80 percent. Of the approximately 260 rigs available, some 200 are currently working or have contracts. We project overall utilization to remain at this level but expect to see a wide disparity by rig type. Semisubmersibles will have near 100 percent utilization during 1985 and 1986 due to current deepwater activity. This activity should slacken somewhat by 1987 and several new rigs will be entering the market so demand will soften for semisubmersibles. Jackup utilization will approach 100 percent by 1986, due in part, to the increasing number of development wells being drilled with these rigs. Demand will continue to be near supply for several years, especially for the 250-foot-plus cantilever type.

Fewer development wells are being drilled by platform rigs than in the past, a trend that is expected to continue as a greater proportion of smaller reserve size fields are being discovered and minimal platform structures being set. Utilization is projected to remain at approximately 50 percent at least until some of the larger deepwater structures develop. Accordingly, day-rate ranges will track utilization with semisubmersible and jackup rates going as high as \$45,000 per day and \$30,000 per day, respectively. Platform rig rates, on the other hand, will remain in the \$12,000 per day range.

It appears things have turned around and we continue to experience recovery from the downturn of the past few years; however, we cannot expect to return to the boom times of the early 1980s. Prices for both oil and natural gas will remain soft for the foreseeable future, and there will be a more than adequate supply of gas to meet demand. Our industry will continue to experience some fundamental changes in the way we do business, such as the current special gas marketing programs and the emerging gas spot market. Although the Gulf of Mexico is a maturing province, given adequate capital, the next few years will see a record pace in the number of wells drilled, platforms set and reserves developed.

JOSEPH H. PYNE, Dixie Carriers, Inc.

The inland and offshore barging outlook in 1985 is not materially better than this same time last year. Although demand has increased for barging services, the over capacity of barges in domestic fleets continues to depress rates. 1982 and 1983 mark the worst years in the recent history of our industry. An Arthur Andersen study of 15 of the largest inland barge companies in 1980 showed an aggregate before-tax profit of \$139 million. In 1982, these same 15 companies showed an aggregate before-tax loss of \$30 million. By 1983 the loss increased to \$40 million and the preliminary analysis suggests 1984 may be worse.

Early this year there was optimism among barge operators based on a projected increase in grain and coal shipments and chemical movements; however, in the past several months this optimism has begun to dwindle. A recent wall street journal article titled "The Sudden Worsening of the Nation's \$37 Billion Farm Export Market May Postpone Recovery in the Troubled Agricultural Economy" partially explained the problem. Last February on the same day that Soviet purchases of U.S. grain set a record, grain future prices were rumbling on the Chicago Board of Trade. The future's market was focused on new bearish developments. In early February Turkey had withdrawn an offer to buy \$70 million of U.S. wheat; India, a major importer of U.S. vegetable oil had just placed its 1985 requirements with Brazil; and Moscow had just delayed a major grain purchase for the third week in a row.

There are many reasons for our farm problems and almost all the reasons are beyond the control of a barge operator. The strong dollar, the weather in Latin America, the aggressiveness of the Soviets in the Middle East, or U.S. payment in kind programs can be reasons for the barge operator who specializes in grain shipments to be concerned. It is estimated that U.S. grain merchandising and the associated transportation industry is operating in 1985 at 50 percent of its capacity. Barging grain rates in some cases are one-half of early 1980 levels. It was anticipated that U.S. grain exports would be up in 1985 along with barging, but prospects for this are declining quickly.

Foreign pressure on U.S. markets is also prevalent in the petrochemical industry. Although 1984 saw an improvement in this industry, the improvement did not match the upward movement in our economy primarily because the strength of the dollar is stifling exports while encouraging imports of not only finished products but also petrochemicals. The U.S. trade deficit has nearly tripled within the last two years and exports as a percentage of U.S. chemical shipments dropped from 13 percent in 1980 to less than 11 percent last year.

I am not optimistic about the short-term future. Barging rates will essentially remain flat. However, there will probably be anomalies which will create spot shortages of equipment that could allow rates to temporarily improve. A worst case scenario would

have our economy back in a recession; foreign imports significantly changing the transportation patterns which decrease the overall demand for barge transportation; railroads acquiring additional barge lines and practicing predatory pricing strategies; functional changes occurring in transportation networks; and a dramatic increase in user fees which will make the barge business less competitive with other modes of transportation. This worst case scenario will not occur, but three events will probably happen within the next three years: railroads will acquire additional barge lines; the Transgulf Pipeline will be converted to clean products and increased user fees will be imposed on waterway interests.

The Transgulf Pipeline proposes to convert an existing 24-inch gas pipeline which runs between Baton Rouge, Louisiana, and Port Everglades, Florida, to liquid petroleum products. This has the potential of transporting almost 70 percent of Florida's 350,000 barrel per day requirement. Approximately 25 shipping companies compete in the Florida market transporting 95 percent of the petroleum products used in the Florida market. If the pipeline is converted, at a minimum offshore tank barge rates in the Gulf will be frozen at current levels and additional equipment will be forced into the open market, potentially suppressing rates further.

Railroad ownership of barge companies is both an emotional and a complicated issue. Railroads prior to 1912 could and did own barge lines. They used their barge lines to force independent barge companies out of business. Barge lines on many routes both then and now are the only real competition railroads have. Recognizing this, Congress passed the Panama Canal Act in 1912 prohibiting railroads from owning barge lines which trade on competing routes. Barge companies were not celebrating when the CSX Railroad acquired Texas Gas Pipeline in 1983, which just happened to own a barge line. The ICC unanimously approved CSX's application for permission to acquire American Commercial Barge Line, which at that time was the country's second largest barge line. Industry groups have filed an appeal with the U.S. Court of Appeals protesting this decision. Until this case is settled, railroads will not be purchasing additional barge lines. However, once the ownership issue is settled, I think railroads will find barge line ownership very attractive.

In the 1985 Congress, several new waterway and port user fee bills have been proposed. These proposals suggest that a system-wide ton mile charge be assessed on waterborne commerce to pay 70 percent of the operation and maintenance costs plus segment specific surcharges to recover a like amount of construction costs. If a bill such as this is passed by Congress, in some instances, transportation costs could increase by 20 percent. The barge industry does not object to the concept of user fees, but we cannot afford to pay more than our share. Additional user fees at this time will delay future profits and perhaps if they are not assessed fairly among all modes of transportation, make us uncompetitive with rail, further reducing our market share and contributing to the excess barge problem.

There are two technical developments which should be implemented by most carriers within the next three years: better communications systems between vessel and shore, and the implementation of fuel monitoring systems. A new communications systems called Watercom is being constructed to provide coverage for the most active sections of the inland waterways system. This system will eliminate most marine operator VHS and single-side band systems and will allow vessels and shore staffs to communicate privately through commercial phone systems. This system will further offer computer controlled monitoring options which can send vital monitoring information to shore automatically. Individual companies are proceeding with the development of more sophisticated single-side band systems and satellite systems which will enable them to send and receive hard data from position reports to engine temperatures.

Because fuel represents approximately 20 to 30 percent of most carriers' operating costs, the majority of carriers will install fuel monitoring systems. This will allow them to gain maximum fuel efficiency for their vessels which is essentially the greatest speed that can be achieved with the least amount of fuel being consumed. By carefully monitoring fuel consumption, companies can reduce their fuel requirements by 10 percent.

The next three years in the barge industry will be extremely challenging. As an industry we carry 13 percent of this nation's freight for two percent of the nation's freight bill. We are the lowest cost, most efficient, least environmentally damaging and safest mode of transportation in the United States. The barge industry can accept natural events. If all modes of transportation are treated equally, taxed fairly and provided equal subsidies, we accept losing business to more efficient modes of transportation. We cannot accept nor will we accept unfair taxation, or unfair pricing as the direct outcome of railroad ownership of barge lines. Our federal policy makers must adopt policy which is fair, which is simple and which encourages economic growth.

Companies which can control their costs and operate efficiently should survive. When business returns, providing Congress does not dramatically change the rules of our game, the companies which survive should be in a very good position to do very well. I am not very optimistic about the short-term future of our business. I am optimistic long-term.

KENNETH W. WALDORF, Zapata Gulf Marine Corporation

Last fall we created a bit of a stir in the offshore marine service industry when we announced the formation of Zapata Gulf Marine Corporation. Overnight, three independent and highly competitive marine service companies were consolidated into what is now the largest oilfield service vessel operator in the world. We did not do this for the title "Largest in the World," but for reasons of pure economics, and in recognition of what we see as the future of

our industry. Zapata Gulf's opening year is expected to be profitable because of the economies and efficiencies we have already achieved through this merger. And we are not finished. Among other things, you can expect to see some of our vessels retired as we cull through the combined fleet. We plan to keep only those vessels we believe can work competitively in today's market, those that offer the best chance of profitability in the future.

The Zapata Gulf story is very germane to the outlook for the marine service industry. We believe we have stepped out in a new direction, one that our industry will follow into the future. Our merger is another step in the ongoing shakeout in the marine service industry. When the transition is complete there will be fewer boat operators, but the ones that remain will have larger, more cost-effective and more technologically advanced fleets. The realities of the offshore industry are that we either slim down, or we drop out of the race. Drilling contractors are also going through a very similar shakeout.

How did we get into this fix? We can blame the boom of 1980-1982 and our industry's overreaction to it. Those years represented a time of high expectations. People were seriously talking about \$60 per barrel oil. These predictions created a perceived shortage of rigs, as well as marine service vessels. The result was a flood of new companies and new buildings, based upon the questionable assumption that the pace of exploration would continue to climb at an uninterrupted pace, and that day rates would follow close behind.

In 1979, before the boom hit, there were 1,600 significant vessels in the competitive free world marine service fleet. A typical vessel in the North Sea commanded a day rate of about \$3,000, while a boat working in the Gulf of Mexico went for about \$2,500 a day. By 1982, the number of boats in the world fleet had grown to 2,100. Average North Sea day rates had risen to \$5,000, and average day rates in the Gulf were on the order of \$3,500. We need to keep in mind the technical disparity between the "typical" boat in each area. Now there are 2,400 boats in the world fleet, and a typical service vessel in the North Sea can get only about \$2,500 a day. In the Gulf of Mexico that figure is well below \$2,000.

In 1979, approximately 83 percent of the world fleet was working. By 1982, that percentage had grown to 95 percent. But today, only 70 percent of the free world's oilfield supply boats are working, which means that roughly 700 boats are idle. The irony is that the number of rigs working has continued a slow climb throughout this period. In the Gulf of Mexico until recently at least, the pace of drilling has been faster than ever. But it is not enough to offset the chronic oversupply of boats.

How did vessel supply and demand get so out of balance? The price of oil did not reach \$60 a barrel. In fact, it did not get any further than the \$30s before falling back to the mid-20s today. For another reason, operators, faced with the resultant cash flow problems, have streamlined their operations, and have significantly

lowered traditional boat-to-rig ratios. But there was another more troublesome factor at play in the service vessel equation. Many of the "build" orders that inundated worldwide shipyards during the boom years were from newcomers to our industry, who wanted to get rich in the offshore industry. Boat building provided attractive short-term tax benefits. Financing was comparatively easy because of government programs like Title XI guarantees, similar subsidies overseas, and lenient naive attitudes on the part of lending institutions.

So we have a flood of new building pouring into the world fleet. But there is a stopper at the other end of the keg -- no old boats were being retired. For a while there was such demand for oilfield boats that just about anything that could float could find work. The result was a rapid increase in the worldwide supply of vessels and virtually no retirements. It was during these boom years that the vessels built in the mid- to late-60s should have been removed from service by planned retirement. But when return on asset percentages runs into three figures, how do you scrap or sell your most profitable equipment to your competition? In 1983, when the demand for the offshore drilling services we support sagged badly, the world marine service fleet fell from a high of 95 percent utilization in 1982 to 60 percent.

We have been climbing out of that hole slowly and painfully ever since. But we are never going to make it back unless we are prepared to face the fact that our industry is finally coming of age. For the first time in our history, we need to deal with the issues of a mature industry. The industry needs a retirement program to handle fleet obsolescence and we need to plan for the future instead of simply reacting to the present. I am talking about all the companies in our industry, not just Zapata Gulf and Tidewater.

We have got to retire the dinosaurs once and for all. By one estimate there are 450 boats in the world fleet that are no longer competitive. That is 20 percent of the world's fleet. Only a few companies began trimming deadwood last year, a job they are continuing in 1985. There is little choice. You can either do it yourself and maintain control over the future of your business, or you can let market economics do it for you. Either way, the move toward consolidation is going to go forward. Consolidation has not been an easy process for us. We have had to make a lot of hard decisions in a very short-time and we are still unscrambling some of the details. But I think we all agree that the exercise was both necessary and well worthwhile.

Today, Zapata Gulf is operating in virtually every major offshore market in the world. One of the things that encouraged the merger to begin with was the clean fit of the three fleets, both geographically and in terms of equipment type. In addition to global coverage, we immediately saw economies of scale, and substantial cost savings through the elimination of duplicate operations. We estimated that this alone would save \$3 million in the first year and \$9 million in the second. We were wrong: the savings are going to turn out to be more like \$6 million in the first year and \$15 million in the second.

Most of the acreage leased in the Gulf during the past two years has a lease term of only five years. As of the end of 1984, only 294 of the 2,000, or 15 percent of the leases awarded under the areawide leasing program had been drilled. The remaining leases must be drilled within the next three to four years or they will revert to the federal government. There is a substantial backlog of acreage waiting to be drilled, and time is running short. During the next few years, as oil companies hurry to evaluate their new properties before the leases expire, there has to be an upsurge in drilling activity which means demand for our equipment.

Another encouraging development is the improvement the British Government made in its petroleum tax laws in 1983 which made drilling in the U.K. sector of the North Sea more attractive to oil companies, particularly those that have existing production or undeveloped, marginal fields. Also, in the North Sea, we are seeing increased interest in drilling north of the 62nd parallel.

The emerging markets in the North Sea and the Gulf of Mexico are particularly favorable to operators who have vessels that can support drilling operations in deeper water and harsher environments. Only 10 percent of the new leases in the Gulf of Mexico in 350 to 1,500 feet of water have been drilled, and in water depths of more than 1,500 feet, that percentage falls to four. These deepwater tracts represent one-half of the bonus money paid in the last five areawide lease sales. That virtually guarantees that the oil companies will drill them.

For the U.S. there is already a slight shortage of equipment with high horsepower, chain lockers, high bollard pull and improved winch capacity. This shortage will increase with the demand for deepwater floating rigs.

The last couple of years have been difficult for our industry and we have struggled under the triple burdens of decreased demand, aging vessels and a seriously overbuilt world fleet. The situation has become so acute that we are seeing the beginning of a major shakeout in our business. When this is over, there may well be more companies like Zapata Gulf Marine Corporation, with a larger market share, more efficient operations and lower overhead. We think this is a healthy development for the industry and we expect the backlog of undrilled leases in the Gulf of Mexico and heightened activity in the North Sea to spur an increase in demand for marine support services as we approach the last few years of this decade.

International Ocean Drilling Program, Current and Future Plans

DR. ROBERT B. KIDD, Ocean Drilling Program, Texas A&M University

The Ocean Drilling Program (ODP) is an international partnership of scientists and governments who have joined together to explore the structure and history of the earth revealed beneath the oceans'

basins. ODP brings together scientists from around the world who participate in a continuous series of scientific cruises, each approximately eight weeks long. Crucial to each cruise is the retrieval of core samples from beneath the ocean floor. These cores help scientists better understand the ages of ocean basins and their processes of development, the rearrangement of continents, the structure of the earth's interior, the evolution of life in the oceans and the history of worldwide climatic changes. This knowledge, in turn, gives us a more complete understanding of the planet Earth -- her past, her present and her future.

The program provides the opportunity for representatives from many branches of science to join in a cooperative effort to advance the knowledge of earth's history and structure. Paleontologists, for example, examine fossils preserved in the oceans' sediments to better describe the nature and causes of evolutionary changes. Geochemists and sedimentologists analyze the records of ocean temperatures and currents revealed in the rocks to reconstruct ancient climates and depositional environments. Downhole electronic measurements help geophysicists better understand the temperatures, structure and composition of the deep interior that lies beyond the depths reached by drilling.

Texas A&M University serves as science operator for the program. As science operator the university operates and staffs the drillship, retrieves cores from strategic sites around the world, analyzes the cores and disseminates the results. Core samples are stored for archival purposes at three curatorial sites: Scripps Institute of Oceanography (the University of California, San Diego), Lamont-Doherty Geological Observatory (Columbia University) and Texas A&M University. These repositories allow scientists to obtain core samples to facilitate their research in specific areas of interest.

The U.S. National Science Foundation (NSF), an independent federal agency, funds the ODP with contributions from non-U.S. countries through the Joint Oceanographic Institutions, Inc. (JOI, Inc.), which manages the program. JOI, Inc. is a non-profit consortium of 10 U.S. Oceanographic Institutions that comprise JOIDES. Institutions making up JOIDES are: University of California, Columbia University, University of Hawaii, University of Miami, Oregon State University, University of Rhode Island, Texas A&M University, University of Texas, University of Washington, Woods Hole Oceanographic Institution, Department of Energy (Canada), Bundesanstalt fur Geowissen-schafen und Rohstoffe (Federal Republic of Germany), Institut Francais pour L'Exploration des Mers (France), and the University of Tokyo (Japan).

The JOIDES Resolution is a one-of-a-kind drillship with laboratory facilities unmatched on land or sea. The ship, whose registered name is SEDCO/BP 471, is 470 feet long, 70 feet wide and has a displacement of 16,596 long tons. Her derrick towers 200 feet above the waterline. A computer-controlled dynamic positioning system stabilizes the ship over a specific location while drilling in water

depths up to 27,000 feet. The drilling system retrieves cores from beneath the seafloor with a rig that can handle 30,000 feet of drill pipe.

The heart of this floating scientific research center is a seven-story laboratory stack which occupies 12,000 square feet. The lab stack provides space and equipment for the shipboard scientific crew. Onboard facilities include laboratories for sedimentology, paleontology, petrology, paleomagnetism and physical properties. Computer, electronics, word processing and photographic facilities lend technical support. A marine geophysics laboratory produces digital, single-channel seismic reflection profiles while the ship is under way.

ODP's first year of exploration includes many drilling sites and scientific objectives -- off the coast of Spain to investigate the transition from oceanic to continental crust and the processes of early rifting and separation of the continents; the Norwegian Sea to study early seafloor spreading processes and to better understand fluctuation of currents, glacial cycles and subsidence; the Labrador Sea to record the climatic and paleontological history of the sea, to calibrate the age of the magnetic anomalies found here and to learn more about the opening of the Labrador Sea and Baffin Bay; and the Mid-Atlantic Ridge to investigate slow-spreading ridge processes and changes in the ocean crust along the rift valley. To retrieve samples during this leg, the first drilling into newly formed bare rock is required. New drilling technology and a special re-entry guide base will be used here for the first time.

Outlook for Offshore/Marine Equipment Builders, Repairers and Support Service Industries

Panelists:

- CARL A. WENDENBURG, Marathon LeTourneau Offshore Company
- BRUCE GILMAN, Sonat Subsea Service, Inc.
- JOHN DANE, III, Moss Point Marine, Inc.
- A. B. CROSSMAN, Brown & Root International, Inc.

CARL A. WENDENBURG, Marathon LeTourneau Offshore Company

The outlook for the drilling rig construction and repair market, in a word, is "confused." Today we are paying the price for overindulgence of the industry during the last boom. Utilization has taken a nose dive in the Gulf of Mexico. Day rates are a reflection of utilization. Until utilization and day rates improve, it is hard to imagine any significant improvement in the rig construction market. Unlike the builders for the shipping industry, which has had to endure an 11-year plus slump due to a surplus of vessel tonnage, we should see improvements within a shorter term.

One of the speakers at the April 1984 annual American Petroleum Institute (API) production meeting in New Orleans made a very valid observation -- we tend to forecast in a level of fashion. When times are good, they will be good forever. Likewise, bad times are forever. The rig construction market is a perfect example. In the mid-1970s, we hit a slump with no end in sight. In 1978, thanks to the Iranian crisis, we started a boom that many people predicted would go on forever. Now we are in a slump that few people are brave enough to predict an end to. If we look at the normal cycles in our business, the 1978 crisis cut short a "normal" downturn, so we are paying some extra dues today for the mid-70s slump not running its full course.

The industry outlook is confused by our inability to predict the factors that strongly influence our business. What will be the outcome of the proposed changes in the tax laws? How long will the dollar remain strong? Will nationalistic tendencies strengthen, putting more negative pressures on the international drilling contractors, and therefore, fabricators? Has the price of oil stabilized, or are we on a temporary plateau that will be followed by further declines? There is one question of more importance to us on the Gulf Coast -- how do we best compete with the Far East yards today?

At the recent API meeting in Dallas, Ron Tappmeyer, with Reading & Bates Drilling Company, discussed the plight of the drilling contractors. In a nutshell, day rates are not sufficient to support the level of service expected much less modernization through upgrades and/or replacements. Several contractors have declared bankruptcy and several others are barely hanging on. Strength through consolidation into a few super contractors has been touted as a key to survival. Considering this and the other unknowns, it would be easy to develop a reasonable scenario for business to remain at this precarious level through 1986, or even into 1990. Under these conditions, our outlook changes from "confused" to "gloomy." If I had to pick a turnaround point, I'd split the difference and say mid-1987.

There are positive signs. Reported domestic demand for petroleum increased in 1984 reversing a five-year decline. As the world economies strengthen, demand will continue to increase. Statistics for the Gulf of Mexico presented by Ron Lassiter with Zapata Corporation revealed that only 294 of the 2,000-plus blocks leased in the Gulf of Mexico (or 14.7 percent) had been drilled by the end of 1984. With the five-year limit on most of these leases, Lassiter, as well as many others, are predicting a strong semisubmersible market by 1986. If some of the other predictions about retirement of first generation semis come true, this market may remain strong for a long time.

The outlook for the jackup market is less favorable but there are some encouraging signs. Tom McIntosh, with Zapata, says he sees all deepwater semis and all deepwater jackups working sometime in 1986. Unfortunately, I do not know whether he sees sufficient

demand for deepwater jackups to encourage additional construction. I am further encouraged by comments by Peter Everett, managing director of Shell U.K. Exploration and Production. "Shell thinks there will be a growing market for large jackups if they can operate year-round. As long as jackups can be built more cheaply than semisubmersibles, there is a preference among operators for a fixed platform over a moving one." There is a market for new, harsh environment deepwater jackups. The question is for how many.

Unfortunately, while there are positive signs in the market place, there remains the problem of competing with the Japanese and Korean shipyards. By comparison with the Gulf of Mexico yards, their labor rates and raw materials are extremely cheap. This is nothing new except that until the last boom, there were considerably fewer yards and designs competing for a piece of the action. Today's construction costs in both Japan and Korea are reported to be 60 to 65 percent of the 1980-81 costs. The prices offered by these yards undercut our position; in addition, the yards sweeten the pot with very lucrative long-term financing -- something totally beyond our reach in this country. It is not hard to understand why there are no rigs under construction in U.S. yards today.

There has been a bright spot. This is the "repair" market into which we include modifications, upgrades and general refurbishments. With the increases number of rigs returning to the Gulf of Mexico, we anticipate a reasonable level of activity in this area. Many semisubmersibles have entered U.S. yards for modifications to increase their water depth capabilities, upgrade of pollution controls, etc. Several owners of accommodation floaters are exploring the possibility of conversion back to the drilling mode. Still other semi owners are investigating conversion to floating production. W. T. Adams, with Reading & Bates, recently discussed the technological limitations of older semis, the implication being new construction is the only viable alternative around these technological constraints. The same does not hold true across the board for most jackups, especially in the Gulf of Mexico-type environment. However, it is reasonable to expect that a 10- to 12-year-old jackup will spend time in a yard for general refurbishment, equipment changes, etc. As day rates increase beyond breakeven, we anticipate an increased level of activity in this area. Even without a significant improvement of day rates, a lesser amount of this work will be done.

In many aspects, my outlook tends toward the pessimistic side. With the problems facing us today and the uncertainties of the future, it is hard to generate a great deal of enthusiasm or feel comfortable with my answers. However, we all recognize we are in a cyclical business. Nothing is forever, including the bad times. We know it will get better, which is why we are all still in the business -- a business that will continue to be fun, challenging and very rewarding.

BRUCE GILMAN, Sonat Subsea Service, Inc.

We differentiate the underwater services industry from the diving industry because most of the larger contractors not only provide diving, but also remotely operated vehicles (ROVs) which require both engineering and construction skills. The total market for underwater services in 1984 was about \$750 million, down from a high of approximately \$1 billion in 1982. We hope the market will remain level until 1987 when it should regain its earlier billion dollar volume. We see a recovery in 1985 of about 4 to 5 percent. We forecast an annual growth rate between 1985 and 1988 of about 11 percent and 6 percent real growth. The major industry segments supported by underwater services are exploration, construction and production, including inspection, maintenance and repair.

Exploration is relatively stable and represents about 14-15 percent of the 1984 market. Our whole business is dependent on the number of rigs working, especially the floater (semisubmersibles and drill slips). Jackup support is short-term, the low technology, low priced end of the market. We are looking toward the higher technology end of the market. We see a 10-11 percent growth per year in the number of floaters with the best opportunity for floaters in the Gulf of Mexico and newly opened areas of Australia and Canada. The North Sea also looks good and there is an increase in the amount of work in Australia, southeast Asia and the Pacific regions as well. Exploration leads the upturn in the industry cycle, and we will see the increase in exploration. The other phases will follow then if anything is found.

Construction support which represented about 40 percent of the 1984 market covers basically platform installation and pipeline support, and the construction of offshore structures. The current market is fairly flat, but we see a slight upturn, as exploration activity increases. In this segment of the industry we see larger platforms and more sophisticated types of structures being installed including early production systems, floating production systems and subsea completions, which represent solutions to deeper water production trends.

Finally, the inspection, maintenance and repair market represented about 45 percent of the 1984 market. It is an area of almost certain growth, on a worldwide basis, which keeps us in business. In this market you have aging structures and pipelines that require regular and periodic inspections. Some countries mandate and even regulate these inspections. Some companies do it just for economic reasons and to get every extra year out of their structures and pipelines. We periodically inspect and maintain platforms in the Gulf of Mexico which is not regulated. We think this part of our business should return to the 1982 level this year or next, and we see this market progressing one year earlier than the overall market. Our company has secured some long-term, two- and three-year contracts for inspection, maintenance and repair services in areas where regulations are strictly enforced.

Looking at industry trends, there are four significant trends that can be discerned: consolidation, increasing rate of technology, evolution of specialized remotely operated vehicles (ROVs) and continuing inroads of ROVs into previously "diver dominated" markets. Many large operators have merged with other operators, and many small operators/contractors have sold out or folded because they were unable to ride out cyclical downturns or afford sophisticated equipment necessary to compete. We predict there will be only a few fairly large international companies that will survive if this trend continues. As a result, we see businesses becoming more competitive with fewer but stronger players. Also, less well-heeled companies will stay away from the "high tech" areas and operate only in such shallow water areas as the Gulf of Mexico and the Middle East.

Due to the increasing rate of technology, clients demand more sophisticated equipment and capabilities. There is a tremendous amount of capital required to keep abreast of technology in the underwater services business, including equipment and maintaining and training technical/development staff. The trend is toward remotely operated systems. We see a decline in the growth of manned diving and an increase in the demand for ROVs; however, there will always be a major share of underwater services performed by divers.

ROVs are becoming very reliable and sophisticated pieces of equipment that allow intervention support in deep water without divers. They have become acceptable in deep water and are also being used in much shallower water because they are much cheaper, safer and more efficient on a long-term basis. The biggest inroads of ROVs have been made in the rig support (exploration) market and there is a continuing expansion of ROVs outside of the North Sea, especially in frontier areas. With these trends, especially technology trends, there are opportunities. Exploration support demands more sophisticated equipment because of deeper water and a more hostile environment. The ROVs that provide intervention support for these drilling rigs have to be "work capable." They now possess sophisticated sensory systems and manipulator systems to get a tactile feel of the bottom from the surface.

Construction support is also getting into deeper water where we are seeing the installation of massive fixed and floating production facilities and "early production" systems. This creates a need for more cost-effective means to support this construction which calls for improved manned diving technology, including one atmosphere welding, dry hyperbaric welding and mechanical connectors. The production support, in the long run, has more sophisticated requirements also. Increased inspection regulations in the North Sea and Australia have created more work for underwater services contractors which calls for more expensive equipment and more highly trained personnel.

Technology trends are also creating more use of computer data base systems designed for inspection data collection and retrieval for appliance and inspection authorities. We also see the use of large diving support vessels (DSVs) for field inspection, mainten-

ance and repair which have been common in the North Sea, but are now moving into other areas. Major operators have become mobile underwater service contractors, providing diving services, ROVs, photo labs and 200-300 diving personnel on larger vessels.

Another area not mentioned earlier, that is not a large factor now but is growing, is the termination support. We cannot just leave structures at the end of their useful lives. The risk involved in dismantling these structures can be reduced by good project management techniques. A certain amount of construction skill is needed in developing new approaches to "deconstruction," such as the use of computer modeling for faster and more organized termination support work. The ROV growth rate is about 20 percent, compared to 11 percent for the total diving market. It is only a small part of the industry, representing approximately \$200 million of the \$1 billion of the entire industry market. However, this is high compared to the 5 percent it constituted in 1981. It is a growing, important part of the business because you have to provide this service as a part of your total service package if you are to survive.

Personnel is another vital factor in the underwater services industry because the business is operated by people, and we are only as good as the people we employ. It is still very difficult to get good, well-trained people. ROVs have a strong current need for trained people. One of the underwater services companies, International Underwater Contractors (IUC), has opened an ROV school. Training facilities are needed either inhouse or through outside schools, and technical skills are fairly sophisticated, including electrical/electronics, hydraulics and computer technology. This includes retraining and entry-level training. Competitive salaries are required to keep people employed and to get new people. There is also a need to get people with good offshore industry experience and desire.

We predict stable to declining requirements for manned diving personnel. Currently, there is an adequate supply, even more than adequate in some areas, but some people have to be retrained and new people need training. This new technology training covers inspection and testing requirements, welding and construction techniques. Again, competitive salaries and offshore experience are required.

Regarding financial constraints and their impact, some recent events which have impacted profitability are: the decline in oil prices and consumption; and, most detrimental to our business, the lowest price bid philosophy, which states that the lowest price usually gets the job, with quality a secondary requirement; and price cutting by major diving companies. Another constraint is the strong U.S. dollar which has hurt us in the international market.

Future capabilities are restrained because of reduced or negative profits. There is minimal or no research and development by diving companies and no applied engineering or new developments by most underwater service companies. Another impact is the "aging" of current technology and equipment. Technology is not moving

forward and equipment is not being replaced because companies cannot afford it. Loss of talent, including technical, operations and management, is resulting because of the lack of competitive salaries and inability of underwater services contractors to retain these people.

Why did Sonat get into this business? We see a need in this business for an up-market, high technology-oriented company in the future. We are willing to ride out this slump. We have grown very slowly, but we are now operating all over the world. We want to put ourselves in the position where we will be designing and building new equipment to meet high technology requirements. We are willing to make a commitment for the future, but we expect some rough times ahead in the next year or two.

JOHN DANE, III, Moss Point Marine, Inc.

My analysis of what is going on in domestic oil- and gas-related shipbuilding can be summed up in one word -- lousy. As to the immediate future the same word applies -- lousy. Not that I qualified my analysis by using the term "domestic." Moss Point Marine concentrates on the U.S. market only, simply because as an American steel shipbuilder we can not compete against nationalized or subsidized shipyards. In some cases we are paying three times the hourly rate of foreign competition on labor alone. Those same shipyards can purchase steel and other materials from nationalized companies further compounding the matter. The strength of the American dollar vis-a-vis foreign currencies is the coup de grace. I need not go further on this, as our huge international trade deficit speaks eloquently for itself.

All my comments and outlook are based on no tampering with, or liberalization of, the Jones Act. Any such move would be a serious threat to what remains of the U.S. shipbuilding industry. The shakeout over the last two years of shipbuilders that followed the oil and gas downturn would look like a mild breeze compared to the hurricane such changes could produce. Some may call the Jones Act trade barriers or protectionism but how does this sound? Moss Point Marine of Escatawpa, Mississippi, versus Japan, or Moss Point Marine versus South Korea. I am an advocate of free trade on a competitive basis. However, until we can find a way for capitalism to compete on an international trade basis with some of the other "isms," I will embrace and fight for legislation that is designed to keep Americans working.

I do not share the optimism of others because until the surplus supply boats and tug/supply boats go back to work, the need for new construction of these types of boats will be small indeed. You can reduce the numbers of boats in any category by saying many are too old or not properly equipped to be profitable. You can add other qualifiers until you have reduced the surplus to where it does not look so bad after all. However, as a shipbuilder, I have developed

my own theory on forecasting. My forecast theory could be called the "Supply Boat, Tug/Supply Boat Shipbuilding Curve." These figures are based on data provided by the Marine Management Letter. Basically I have categorized the number of supply vessels built since 1970 into three classes: Class 1 - LOA 166-180 feet and less than 3,000 HP; Class 2 - LOA 180-194 feet and 3,000-5,600 HP; Class 3 - LOA Greater than 194 feet and greater than 5,600 HP.

Class 1 vessels definitely dominated construction over the last 15 years. In fact this group had the largest number of vessels built annually except in 1974, 1975, 1983 and 1985. The boom year in shipbuilding with 109 vessels delivered was 1982. It appears that 1980 represents a fairly average year with 51 vessels being delivered. Assuming an average annual production of 51 vessels, then six to 10 shipyards would have a nice business sharing this annual volume.

Class 1 has the most vessels available and, in my opinion, seems to be the class with the largest oversupply. Since drilling activities are going further offshore, larger boats are the most likely ones to be needed in the future. My most optimistic forecast of new boats required in the next few years assumes that the present number of vessels in Classes 2 and 3 are exactly the right number of boats needed to service all the rigs and platforms working today. Again assuming vessels are retired every 15 years, eight Class 2 vessels and two Class 3 vessels will be put to pasture next year; therefore, the industry will require 10 new vessels to be built. The most optimistic "guestimate" of the new buildings required would match the construction numbers of 15 years ago. This would mean 10 new boats in 1986; five in 1987; nine in 1988; on an average of eight vessels per year. You can see that it would be difficult for the few remaining supply boat shipyards to keep their doors open with so little work to spread around. Add the captive shipyards such as Zapata Gulf Fleet and Chouest to this picture and the pickings are indeed slim for the remaining independents.

Even if I am right about the maximum number of new vessels being put to work over the next few years, this will only match the number of vessels retired. This does not mean the shipbuilders will build them. A major part of the demise of the offshore operating companies and, in turn, the supply boat shipbuilding industry is being caused by the U.S. government through the Maritime Administration (MARAD). In my opinion my greatest competitor is MARAD.

MARAD policies and procedures are hurting the Marine Oil Field Builders and Operators in two ways. First, they are destroying the strong vessel operators by allowing weaker companies to continue operating after companies which are in default on loans have quit paying interest or principal. Without the requirement to pay interest and principal, these weak companies are offering to rent their vessels way below true "breakeven" rates. This forces strong companies to match the low rates, but since they still are paying their mortgages it causes a large cash drain and thereby weakens their financial condition. By MARAD not repossessing vessels which are

delinquent on their payments, they are slowly, but surely, causing all operators to suffer. The solution is simply the immediate repossession and storage of all vessels in default.

Secondly, MARAD is hurting the shipyard by using poor judgment as to what to do with the vessels they do repossess. Instead of storing them, they are selling these vessels at 40 percent of replacement cost, making it nearly impossible for a shipyard to sell a new boat. As an example, MARAD just sold three 180 foot vessels owned by an operator in Morgan City, Louisiana for approximately \$1,300,000 each. These vessels would cost Moss Point Marine \$3,000,000 to duplicate today and the operator probably paid more than that four years ago when he purchased them. Eighteen months ago these vessels would have sold used for \$2.6 million. The point is, no shipyard can compete when these give-away prices are available. I feel MARAD is needed to help support U.S. shipbuilding and ship owners; however, I feel they need to modify their policies somewhat to suit our desperate times.

So what can we do to survive as a supply boat builder? First, we can see if there really is anything to those phantom deepwater, high horsepower, multi-purpose tug supply boats. In late 1984, when drilling activity was high in the Gulf, and an upswing appeared imminent, many prices were requested by operators and given on these bigger boats, but to date I know of no contracts signed. Of the 20 shipyards which were building supply boats in 1982, only one is currently building a vessel of this type and this one is a captive shipyard that needed work or else would likely shut down. Another quote which disputes the idea that larger boats are needed came in the November/December 1984 Marine Management Letter:

Not a single tug/supply larger than 200 feet was delivered to U.S. fleets during 1984. This marks only the second time that has happened since 1972. During 1983, a total of 11 vessels were built larger than this -- up to and including the 220 foot class. Likewise, with smaller hulls come lower horsepower requirements. During 1984, the maximum was the 6,000 HP class compared to the 12,000 HP class in 1983.

Operators must have brought in surplus big boats from other parts of the world, or they have "jumbo-ized" or converted existing equipment. Also, since operators can no longer get prior long-term commitments for vessel charters, they seem very reluctant to order these higher horsepower-higher cost vessels on speculation. This lack of financial commitment for new construction produces one of the few bright spots for domestic shipbuilders. The aging of some fleets and the need to expand the capabilities of some vessels for deeper water work have created new demands for ship repair, modification, modernization and transformation. Moss Point Marine as well as most of our competitors have been emphasizing this repair market this year.

Our recent experience has shown that oil companies no longer give operators the long lead times and long-term contracts they used to give prior to this supply boat glut. When a need for a special-

ized boat does arise, it is relatively quick, and the four supply boats we have in various stages of construction in our yard will help us respond quicker to the operator's requirements, which in turn, will help the operators win a contract. Admittedly, this is a gamble, but if you are not creative in this marketplace, I feel you will not survive.

The next field of opportunity for shipbuilders is in the specialty areas. In the oil field market this recently has meant seismic boats. In fact, there are four of these vessels currently being completed now. However, it must be pointed out that three of these are being built using partially completed hulls at a probable loss to the shipyards, and the fourth is being built in a captive shipyard. Due to such little new interest in specialty work in the oil business, Moss Point Marine has searched for other specialty work and were successful in finding work in the specialty area outside the oil business.

Additionally, in the specialty area Moss Point Marine recently delivered a 219-foot freezer/processor stern trawler which is the largest U.S. build fishing boat to fish the East Coast. The fishing boat market, however, went to pieces at about the same time the supply boat market did, so we are not overly optimistic about an abundance of business here. The most obvious area where supply boat shipyards are looking to for survival is military construction. We will seek additional military or government work on a selective basis to produce a desirable mix of civilian and military projects in our yard. Others in our business are doing the same and, in fact, one of our competitors, Halter Marine, has just committed itself until 1988 to build six, 224-foot anti-submarine vessels for the Navy. At one time Halter was the leading builder of supply boats. In 1984, Moss Point Marine was the nation's leader in supply boat construction with five delivered, and Halter was tied for third with two delivered. It is easy to see why our competitors have swung heavily into the military sphere. Everyone's lack of commercial backlog made them look elsewhere for work. In the foreseeable future, it appears many will be committing a great deal of their available man-hours and resources to government work.

The last area of hope for survival is in futurist-type vessels. There is talk of submerged wide angle twin hull vessels (SWATH) vessels for the armed forces, and we have already done some preliminary research on pricing for the U.S. Navy. They will be expensive, but with their sea-keeping abilities, they could revolutionize certain segments of the offshore energy industry as well. In fact, one of the first commercial SWATH vessels, the TWIN DRILL, is in Sabine Pass getting ready to start commercial activity in the Gulf. These futuristic ideas we hope might be similar to the new offshore drilling technologies that caused much added shipbuilding in the last four years. The need for liquid mud tankage spurred the majority of the recent buildings and conversions.

While I do not share the optimism of some about the future of the domestic supply boatbuilder, I believe that through repair, conversion, replacement and government work, the few of us left in

business might survive; however, it will probably be at an even smaller size. I also believe that certain operators with long-range foresight will realize that today's prices will never again be duplicated by suppliers or builders, and a few will take advantage of this so as to provide for the long-term success of their companies. Their long-range success also requires some small shipbuilders to remain open.

A. B. CROSSMAN, Brown & Root International, Inc.

We are projecting between 372 and 402 platform installations worldwide in 1985, an increase over the 366 platforms installed in 1984. Although even this is somewhat below the peak year of 1982, it will be the second largest year ever and continues the general historical upward trend. Of course, this increasing number of platforms has attracted increasing numbers of competitors, particularly overseas, where this competitive factor is compounded by nationalistic and protective attitudes.

	<u>1983</u>	<u>1984</u>	<u>1985 (estimated)</u>
Gulf of Mexico	131	159	150-180
Other North American	1	1	4
Latin American	27	10	18
North Sea	22	23	21
Mediterranean	5	2	8
Africa	38	25	15
Middle East/Egypt	84	91	95
Southeast Asia/India	95	55	61
Total World	<u>403</u>	<u>366</u>	<u>372-402</u>

Closer to home, here in the Gulf of Mexico we would forecast a steady increase in the number of platforms fabricated over the next several years. The forecast total awards include 144 for 1985, 156 for 1986, 163 for 1987, 167 for 1988 and 161 for 1989. However, the overall increase in numbers is not as significant as the increase in numbers of structures which will be required in water depths of over 600 feet. The steel tonnage to be fabricated goes up dramatically with increasing water depth. These deepwater projections are based upon specific projects that can be identified and could grow in number as new discoveries and new developments occur.

The potential for an increase in numbers of deepwater platforms has risen with the increase in deepwater acreage leased in the last three lease sales. The sales in 1983 and 1984 have made a fivefold increase in the total acreage leased in the Gulf with a large proportion of this being deepwater acreage. A lot of acreage has not been explored yet, but there have been some good finds and indications. It seems possible that more discoveries will occur with consequent platform development. The profound effect of the deeper water platform on the fabrication business is apparent when you examine the proportion of cost of an installed platform that is due

to engineering, installation, fabrication, facilities, etc. in various water depths. For structures in 1,000 feet of water and beyond, fabrication costs of \$100 million and up will be the order of the day.

Relating this generic project cost back to the Gulf of Mexico market or numbers of platforms projected earlier, we project the following revenue to be generated over the next five years for the jacket and pile fabrication market:

1984 -	\$200 million
1985 -	\$280 million
1986 -	\$460 million
1987 -	\$600 million
1988 -	\$620 million
1989 -	\$650 million

This would indicate a tripling of revenues in the Gulf in the next five years from \$200 million to more than \$600 million.

It is projected that the deck fabrication and outfitting revenues should increase by about a factor of two in the next three or four years. Although this increase is not in the same proportion as for the jacket and piles, it is somewhat more than would be expected from just the increase in numbers of platforms. Adding these two costs together and including engineering, transportation and installation costs, the total market is projected to increase over the next five years from a \$700 million revenue in 1985 to a \$1,700 million revenue in 1989. This would be an increase of about \$1 billion.

While the number of structures in the West Coast market is not great, they are large and use a lot of steel tonnage. The jacket, deck, and pile fabrication market is expected to be more than \$400 million this year and almost \$700 million in 1986. Thereafter it may stay in the \$400 million range for several years. These values are arrived at by spreading the costs of these large structures over the years they are being fabricated rather than concentrating them in the year they are installed. Much of this market is currently going to non-U.S. fabricators.

The improvement in the future of the Gulf Coast fabrication market is somewhat dependent on the success of the deepwater platforms. As we move into deeper water, we also move into an area of new technology. Some of the developments there could actually change some of these projections, perhaps decreasing the tonnage by utilizing lighter structures or by making them light enough so that more fields are developed. Obviously, the less expensive the structure the smaller the field that could be developed economically using it. There are also numerous new designs that are on the drawing board that might reduce these costs. In addition, there are other approaches rather than the fixed platforms as we move in deeper water.

The three primary alternates to the pile-supported fixed platform are the guyed tower concept already used by Exxon, the tension leg platform concept such as that used by Conoco, and the subsea well completions and floating production systems of some sort as have already been used in various places throughout the world. The guyed tower could be fabricated in a conventional yard such as was done in the Brown & Root yard at Harbor Island for the Lena Tower. The requirement here then is for a site with sufficient waterfront space so that the structure can be skidded laterally onto the launch barge. The tension leg platform is less work for a fabrication yard in that Conoco is contemplating a smaller floating platform which would basically be a wellhead platform with storage and production systems being on a captive vessel nearby. This could probably be fabricated in a number of ways in a number of yards. The floating production system would probably produce the least work for our conventional jacket fabricating yards.

Technology advances within the fabrication yard itself presently cover four areas which are under intense application today: direct design/manufacturing interface, automated material handling, automated manufacturing, and applied welding technology. Many fabricators use some of the potential of modern computer-based information systems in direct design/manufacturing interface, but few use them to their fullest. A complete system would begin in the design office. It would end in the fabrication yard, handling many of the field operations from scheduling, purchasing and inventory control to commands for automated work stations and final documentation. Automated material handling is another improvement that needs to be made to increase productivity and competitiveness.

Completely automated manufacturing in this industry is certainly not here yet, but there is progress in this area. The first use is in the precision and complex cutting operations, including beam and pipe contouring and beveling. These are being used to some degree by many fabricators. The next logical step in this process would be to use robots to weld these components together. The fourth area would be applied welding technology since our industry depends on the maximum use of high deposition rate welding processes. Major improvements can be made by improved joint design to decrease amounts of weld metal required. There are many new techniques such as electron beam welding, laser welding, friction welding, flash butt welding, forge welding, plasma arc welding, and many others which are being technically as well as economically constrained. Their use on the shop floor will generally be several years away.

Regulatory developments and trade relationships might become more important as the Far Eastern fabricators have taken over an increasingly larger share of the West Coast market with their ability to produce and transport structures to that area more cheaply than the U.S. fabricators can generally build them. While these Far Eastern fabricators have not been such a large factor in the Gulf Coast until now, the larger structures with longer lead times will certainly present U.S. contractors with opportunities to use special members and prefabricated component sections for the Far East. We

must all be very cognizant of the trade situation between the United States and the Far East and any laws that might come into effect that would affect this relationship. .

In the financial arena these last years have been extremely difficult for fabricators; the competition has been extremely tough and profit margins have been low, none, or even negative in some cases. This situation has driven some of the smaller fabricators out of the market already, yet at the same time new faces are appearing and trying to secure a part of the market. Most fabricators are predicting better times over the next three or four years as the total tonnage fabricated becomes higher. Although this could be affected by the foreign competitor situation and other market factors such as the price of oil, exploratory success, and the general economic situation, we look forward to a healthier market in the next several years.