



NOAA Technical Memorandum NMFS-SEFSC-590

The Annual Economic Survey of Federal Gulf Shrimp Permit Holders:  
Implementation and Descriptive Results for 2007

By

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This report is formatted for double sided printing (tables spanning two pages).

## **Executive Summary**

This report presents descriptive results of the Annual Economic Survey of Federal Gulf Shrimp Permit Holders (OMB Control # 0648-0476) for the calendar year 2007, and documents the survey's implementation and preparation of data. The data collection was designed by the NOAA Fisheries Southeast Fisheries Science Center Social Science Research Group to track the financial and economic status and performance by vessels holding a federal moratorium permit for harvesting shrimp in the Gulf of Mexico. A two page, self-administered mail survey collects total annual costs broken out into seven categories and auxiliary economic data. Since this was the second year this survey was conducted, a section compares results from 2007 and 2006. The survey is repeated annually, and the first technical memorandum (NMFS-SEFSC-584) is intended as the central report describing the data collection methodology and should be consulted for details about the survey design.

Between March and August 2008, 636 vessels were randomly selected, stratified by state, from a population of 1,915 vessels with federal permits to shrimp in federal waters of the Gulf of Mexico. After many reminder and verification phone calls, 537 surveys were deemed complete, for an ineligibility-adjusted response rate of 87.2%. The linking of each individual vessel's cost data to its revenue data from different data collections was imperfect, and hence the final number of observations used in the analyses is 505. By various measures and tests of validity throughout the report, the quality of the data is high. The results are presented in a standardized table format that links vessel characteristics and operations to simple balance sheet, cash flow, and income statements. In the text, results are discussed for the total fleet, the Gulf shrimp fleet, the active Gulf shrimp fleet, and the inactive Gulf shrimp fleet. Additional results for shrimp vessels grouped by state, by ownership structure, by vessel characteristics, and by landings volume are available in the appendix.

The general conclusion of this report is that the financial and economic situation actually deteriorated in 2007 from the already bleak outlook in 2006 for the average vessels in all of the categories that were evaluated. With few exceptions, cash flow for the average vessel has now turned negative, and the negative net revenue from operations and the "loss" have further increased to clearly non-sustainable levels. Interestingly, the effective economic environment actually improved somewhat from 2006 as shrimp prices increased proportionally more than fuel prices. However, with the liquidity constraint implied by a negative cash flow and following many marginal years, it seems the average vessel simply did not have the ability to exploit this improvement and had to cut its overall effort. In 2007, the average active Gulf shrimp vessel consumed 19% less fuel (in terms of gallons) and caught 30% less shrimp (in terms of pounds). After accounting for the price changes, the vessel spent 6% less on fuel and generated 12% less revenue from shrimp. But since fixed costs remained approximately the same, the overall economic and financial returns significantly deteriorated when compared to 2006. Finally, government payments, which helped the average owner just about break even in 2006, were significantly less in 2007. Overall, the financial situation in 2007 is economically unsustainable for the average established business.



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We appreciate the good work of students, Todd Glodek, Megan Stone, and Diana Pina, who helped with various parts of the survey’s implementation. We would like to thank Paul Baertlein, Mike Judge, and Neil Baertlein for support with the mail survey; Carolyn Sramek for providing the sampling frame; Bichnga (Jay) Boulet for help with Vietnamese speaking shrimpers and translations; Lloyd Muccio for continued support with the database; Rebecca Smith for help with the annual revenue data; and Sarah Brabson for support with the administrative requirements to conduct the survey.

# 1. Introduction

This technical memorandum presents descriptive results of the Annual Economic Survey of Federal Gulf Shrimp Permit Holders (OMB Control # 0648-0476) for the calendar year 2007 and documents the survey's implementation and preparation of data. Since this was the second year this survey was conducted, a section compares results from 2007 and 2006. The survey is repeated annually, and the first technical memorandum (NMFS-SEFSC-584)<sup>1</sup> is intended as the central report describing the data collection methodology and should be consulted for details about the survey design. This technical memorandum concentrates on documenting changes that occurred with the 2007 survey implementation. Nonetheless, we err on the side of including background information to insure proper use and interpretation of the aggregate data and results.<sup>2</sup>

The commercial penaeid shrimp fishery in the Gulf of Mexico is one of the most economically important fisheries in the Southeast Region. The fleet consists of: i) an inshore segment, mostly active in state waters and very diverse; and ii) an offshore segment, largely active in federal waters and almost always using trawl gear. The fishery is managed under the Gulf of Mexico Shrimp Fishery Management Plan, and a moratorium permit is required to harvest shrimp in federal waters.<sup>3</sup> The fishery is facing a range of difficulties that together are threatening the short-term and long-term viability of the industry. Existing regulation, high fuel and other input prices, and competition from foreign and aquacultured shrimp are squeezing the profit margin upon which Gulf shrimpers base their livelihood. Further, the devastating impact of recent hurricane seasons has led to substantial upheaval in all commercial fisheries on the Gulf coast.

This data collection program was designed by NOAA Fisheries (NMFS) Southeast Fisheries Science Center's Social Science Research Group in late 2006 to track the economic condition of the fishery. Because it is impossible to clearly delineate the inshore and offshore segments of the shrimp fishery, the data collection focuses on the federally permitted vessels, i.e. vessels that hold a federal moratorium permit for harvesting Gulf shrimp.<sup>4</sup> The results in this report apply roughly to the offshore segment of the shrimp fleet. Shrimp vessels operating offshore are usually larger, full-time, and more sophisticated from a business perspective, and hence more capable of providing financial data. In 2006 and 2007, the federally permitted vessels accounted for two-thirds of annual Gulf shrimp landings and over three-quarters of total revenue generated by the

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<sup>1</sup> Liese, Christopher, Michael D. Travis, Diana Pina, and James R. Waters. 2009. The Annual Economic Survey of Federal Gulf Shrimp Permit Holders: Report on the Design, Implementation, and Descriptive Results for 2006. NOAA Technical Memorandum NMFS-SEFSC-584, 91 p.

<sup>2</sup> Data for individual respondents are confidential.

<sup>3</sup> Federal waters of the Gulf of Mexico, i.e. the U.S. exclusive economic zone, begin 3 miles off the coast of Alabama, Louisiana, and Mississippi, and 9 miles off the coasts of Florida and Texas. A moratorium on federal permits for catching Gulf shrimp became effective March 26, 2007 (Final rule: 71 Federal Register 186 (26 Sept. 2006), pp.56039).

<sup>4</sup> The distinction between vessels and owners/people is important because the Gulf shrimp moratorium permit is a *vessel* permit and thus vessels, not owners, are the unit of analysis.

fishery (Table 1). Focusing the data collection on vessels with moratorium permits has the added advantage that the population is known and that contact information is available. Also, this group is of most direct interest from a federal fishery management perspective.

The guiding principle for the design of this data collection is to collect the minimum information necessary that still allows meaningful financial and economic analyses, and to collect this information in the least burdensome way for the shrimp industry.<sup>5</sup> We opted for a survey approach, thereby burdening only a fraction of permit owners each year. Further, a self-administered mail survey was deemed to be more convenient, less intrusive, and less time-consuming than one based on in-person interviews. The outcome is a two page survey instrument limited to collecting “bread and butter” economic data, but comprehensive enough to produce a meaningful annual report for the Gulf shrimp harvesting industry.

The survey intends to collect all annual expenditures grouped into less than ten variable and fixed cost categories. When combined with revenue from other data collections, we can calculate various measures of the financial and economic status and performance of the industry. Random sampling, stratified by state, was used to ensure that the results are representative and can be extrapolated to the population of all federal permit holders and any large sub-population, such as active shrimp vessels in Texas. The survey to collect annual data for calendar year 2007 was mostly implemented between March and August, 2008. Follow-up and verification phone calls took place during data entry, mostly between June and August, 2008. Further data cleaning, merging the cost data with revenue data from other databases, the analyses, and the report writing were conducted during the first half of 2009.

The results are basic descriptive statistics---arithmetic means---of the financial and non-financial data.<sup>6</sup> They are presented in a standardized table format that links vessel characteristics and operations to simple balance sheet, cash flow, and income statements. Besides reporting the averages for the total fleet of all permitted vessels, results are presented for the *Gulf shrimp* fleet by excluding permitted vessels engaged primarily in other fisheries, for the *active* Gulf shrimp fleet by further excluding idle, broken, or otherwise inactive vessels, and for the *inactive* Gulf shrimp fleet. More results are reported in an appendix for various categories of shrimp vessels, including those grouped by state, by vessel characteristics, by landings volume, and by ownership structure. When the results are interpreted as applying to the (sub-) population, they must be thought of as approximations of the activities and values associated with the average or representative vessel of that (sub-) population. In statistical terms, the results are mid-points of a

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<sup>5</sup> Given NMFS’ experiences with in-person interviews of Gulf shrimpers, a low burden approach was thought necessary to get shrimpers’ cooperation. Compliance with this data collection is a requirement for permit renewal. A large sample size and high levels of unbiased participation increase the validity and representativeness of the results.

<sup>6</sup> Extrapolation of the results to the population and a look at the distributional results will follow in a future report.

confidence interval, within which the true, but unknown, population mean can be found 95% of the time.

The rest of this introduction briefly describes the purpose of economic data collections in the Gulf of Mexico shrimp fishery. Chapter 2 describes the accounting framework used to guide the overall survey design, and describes the survey instrument, the population and sampling frame, and the sampling design, focusing on changes made to the 2007 version. Chapter 3 documents the implementation of the survey for 2007, focusing on the response rate, the validity of the data, and preparation of data. Chapter 4 starts with an in-depth explanation and discussion of the variables in the standardized tables used to present the results. The rest of the chapter discusses the 2007 results. Chapter 5 briefly compares results for 2007 and 2006.

## **Purpose**

Previous attempts to collect economic data in the Gulf shrimp fishery, in particular cost data, have been plagued by their limited duration, small geographic scope, and the industry's resistance to being surveyed. The size and relevance of the Gulf shrimp fishery and associated industry make the systematic and continuous collection of economic data critical and long overdue. Such data can serve many purposes. Foremost it is necessary to inform the fishery management process. The central goal of this survey is to collect up-to-date cost data for the commercial shrimp fishery in federal waters of the Gulf of Mexico in support of management by the Gulf of Mexico Fisheries Management Council and NOAA Fisheries (NMFS). A collection of economic information from fishermen affected by federal management is needed to ensure that national goals, objectives, and requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other laws are met. By collecting such data annually, economic changes and trends through time can be identified and tracked.

Amendment 13 to the Fishery Management Plan for the Shrimp Fishery in the Gulf of Mexico, which was approved on February 21, 2006, introduced a moratorium on permits for shrimping in federal waters and provided for improved information collection programs.<sup>7</sup> In the past, NOAA Fisheries has collected catch and (limited) effort data on a continuous basis in this fishery through port agents, dealer reports, and more recently through the various Gulf States' trip ticket systems. With the move to more active management implied by the introduction of the moratorium permits, more and timelier data collections have become necessary. Further, the tough economic conditions faced by the industry since 2000 have changed the industry to the point of making earlier economic data obsolete. It became imperative that new data be collected to accurately assess the economic and social conditions in the fishery and to predict the impacts of changes to the shrimp fishery management plans and regulations on individual shrimp

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<sup>7</sup> The fishery management amendment was approved February 21, 2006. A moratorium permit was required as of March 26, 2007 in order to harvest penaeid shrimp from federal waters, though shrimpers had until October 26, 2007 to apply for the permit.

fishing entities. The start-up of other complementary data collections in this fishery further increases the value of the economic data.<sup>8</sup>

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<sup>8</sup> See the SE Fishery Bulletin in Appendix 3 for a listing of these data collections.

## 2. Design

In late 2006, the Social Science Research Group at the NMFS Southeast Fisheries Science Center in Miami, Florida, in close cooperation with the Fisheries Social Science Branch at the NMFS Southeast Regional Office in St. Petersburg, Florida, began designing a program to collect annual socio-economic data for the Gulf shrimp fishery.<sup>9</sup> The first technical memorandum based on this data collection (NMFS-SEFSC-584)<sup>10</sup> is intended as the central report describing the data collection methodology and should be consulted for the details and background on the survey design. After a brief section covering the basics of financial statements, this chapter of this memorandum concentrates on documenting the changes that were made to the 2007 survey instrument and documenting the 2007 sampling frame and sample design.

### Financial Statements

The central approach taken by this data collection was to minimize the number of variables collected from each respondent, while maintaining the ability to answer meaningful economic questions. To guarantee comparability across a diverse set of operations, we focused on collecting data about the harvesting component only, i.e. data on the financial flows directly associated with owning and operating a fishing vessel. Thus the basic unit is a shrimp vessel, ignoring any processing, wholesale, or retail components. Shrimp operations are commercial, for-profit businesses, and as such, we decided to collect only economic data, forsaking any demographic or social data tied more closely to the vessel operators and owners.

The type of economic data to be collected was based on an accounting framework of money flows and values associated with the productive activity of commercial shrimping---the “bread and butter” of economic data. With these data, three financial statements, the balance sheet, the cash flow statement, and the income statement, are prepared to give a comprehensive overview of the financial and economic situation of the offshore shrimp fishery. To keep the survey short and simple, only broad cost categories are collected; their delineation guided by reporting requirements on tax forms to minimize the reporting burden for fishermen. By collecting data about revenue flows, cost flows, and asset values, statistically valid financial statements can be developed for a representative or “average” shrimp vessel and for the industry as a whole.<sup>11</sup> The next paragraphs briefly illustrate the basic accounting framework used to identify the data that needed to be collected. More details about the financial statements specific to the data

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<sup>9</sup> The focus on annual data precluded the collection of trip level economic data.

<sup>10</sup> Liese, Christopher, Michael D. Travis, Diana Pina, and James R. Waters. 2009. The Annual Economic Survey of Federal Gulf Shrimp Permit Holders: Report on the Design, Implementation, and Descriptive Results for 2006. NOAA Technical Memorandum NMFS-SEFSC-584, 91 p.

<sup>11</sup> The Results for 2007 chapter provides the average results for the year 2007. Results extrapolated to the population will follow in a future report.

and to the shrimp fishery context are presented in the Results for 2007 chapter of this report.

A balance sheet is a snapshot of a company's financial condition. A company's balance sheet has three parts: assets, liabilities, and the owner's equity. The asset side of a balance sheet lists all assets of a company and their value at a given point in time. The liability side lists the various sources of money invested to acquire these assets (the financial capital). Beyond investing their own capital (money), most company owners borrow financial capital from other sources, such as banks. The current equity, the net worth of the company to the owner, always equals the difference between the value of all assets and what is owed. Figure 1 illustrates this "balance." By collecting data about the value of the assets (market value of vessel and gear in our case) and the outstanding loans, the vessel owner's equity stake can be calculated.

<b>Balance Sheet (point in time)</b>	
<b>Assets</b>	<b>Liabilities</b>
<b>Vessel and gear</b> (market value)	<b>Loans</b> (amount owed)
	<i>Equity</i>

Figure 1: Balance Sheet "Balance"

The balance sheet summarizes the financial condition at a single point in time. In contrast, the cash flow statement and the income statement summarize a company's financial transactions over an interval of time. In an annual report, these two financial statements present slightly different perspectives of the revenues earned during one accounting year and the expenses made in order to generate these revenues.

The cash flow statement is a financial statement that shows a company's flow of money (Figure 2). Money accruing to the company is called cash inflow. In this study, the most important cash inflow is revenue generated through the sale of shrimp harvested by the sampled vessel. Money leaving the company is called cash outflow, which includes the various costs of owning and operating the shrimp vessel. Transactions that do not directly create cash receipts and payments are excluded. The difference between inflow and outflow---the net cash flow---reflects the vessel owner's liquidity or solvency and is useful in determining the short-term viability of a company. For the Gulf shrimp industry, we decided that three inflows (shrimp revenue, other fishing revenue, and government payments) and six cost categories (fuel, other supplies, crew (hired) costs, vessel/gear related fixed costs, overhead costs, and loan payments) would suffice in detail.



<b>Cash flow statement (period of time)</b>	
<b><u>Inflow/Receipts</u></b>	<b><u>Outflow/Payments</u></b>
<p><b><u>From operations</u></b></p> <ul style="list-style-type: none"> <li>- Shrimp revenue</li> <li>- Other commercial fishing revenue</li> </ul> <p><b><u>Non-operating</u></b></p> <ul style="list-style-type: none"> <li>- Government payments</li> </ul>	<p><b><u>Variable costs</u></b></p> <ul style="list-style-type: none"> <li>- Fuel</li> <li>- Other supplies</li> <li>- Crew (hired)</li> </ul> <p><b><u>Fixed costs</u></b></p> <ul style="list-style-type: none"> <li>- Vessel and gear</li> <li>- Overhead</li> <li>- Loan payments (interest and principal)</li> </ul> <p style="color: red;"><b><i>Net cash flow (+)</i></b></p>

Figure 2: Cash Flow “Balance”

An income statement is intended to help owners and investors determine the true economic performance of a company over a specified period of time. The income statement is sometimes called the profit and loss statement. The income statement begins with the revenue generated from operations (sale of product or service) and subtracts all operating costs, including non-cash costs such as the value of owner’s labor and depreciation (Figure 3). The result is the net revenue from operations. This is a measure of the true economic return to a productive activity. More relevant to the owners of a company is the net revenue before taxes, i.e. their actual profit or loss. This "bottom line" is calculated by subtracting financing costs (such as interest payments) and adding non-operating revenue, income, and costs to net revenue from operations.

Many variables are the same in the cash flow and income statements. The not-bold elements in Figure 3 indicate variables that are the same in the income statement and the cash flow statement. Text in bold signifies an element specific to the income statement. For the Gulf shrimp industry, revenue generated from operations includes revenue from the sale of shrimp and other fishing revenue, and excludes government payments. Operating costs include non-cash transactions such as depreciation and the value of the owner’s labor used to generate the year’s revenues.<sup>12</sup> Depreciation and the value of the

<sup>12</sup> In contrast to the cash flow statement, the income statement excludes cash payments that are not operating costs directly associated with generating *that year’s* revenues. This includes payments for new

owner's labor are not explicit costs (in contrast to variables in the cash flow statement) and thus need to be estimated.

<b>Income statement (period of time)</b>	
<b>Revenue</b>	<b>Expenditures</b>
<u>From operations</u> - Shrimp revenue  - Other commercial fishing revenue	<u>From operations</u> - Fuel - Other supplies - Crew (hired) <b>- Owner's labor</b> - Vessel and gear <b>(minus new invest)</b> - Overhead <b>- Depreciation</b>
	<i>Net revenue from operations</i>
<u>Non-operating</u> - Government paym.	<u>Non-operating</u> <b>- Interest payments</b>
	<i>Net revenue (before taxes)</i> <i>("Profit")</i>

Figure 3: Income Statement “Balance”

### Survey Instrument

This survey started in 2007 collecting annual economic data for the calendar year 2006. As can be expected, lessons were learned that required and enabled us to clarify and simplify the survey instrument and streamline the overall survey process. The 2007 survey instrument and the detailed instructions are attached as Appendices 1 and 2. Below, we will discuss the changes that were made from the 2006 survey. Details on all the questions and their intent can be found in the first memorandum.

Based on experiences with the 2006 survey, some changes in content were made to the 2007 survey instrument:

- Ice was dropped as a separate cost category: Because the average ice expense was less than 1% of total vessel expenses in 2006, we decided to stop asking for ice

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investments and principal repayments which both impact the balance sheet (assets and liabilities) but do not constitute economic income or costs.

expenses separately on the 2007 survey, and now they are part of other trip expenses.

- Vessel expense categories were reduced to three: We reduced the number of check boxes available to specify the type of vessel expenses to: i) regular maintenance; ii) major repair and haul-out; and iii) new purchases or upgrades. The additional categories on the 2006 survey instrument were rarely checked and not necessary for the financial statements.
- The question about vessel replacement value was dropped: On the 2006 survey, too many respondents skipped this question or answered inconsistently by giving a vessel replacement value that was lower than the current market value that was provided in another question. Since this category is not necessary for the financial statements, we decided to drop it.
- Questions about the vessel's market value with the permit and without the permit were added: The 2006 survey simply asked for the market value of the vessel without specifying (on the survey instrument itself at least) if this included fishing permits or not.
- The question about the number of shrimping days lost due to a lack of crew was dropped: The quality of these data was questionable as quite a few respondents answered 365 days a year. We could not find a way to clearly ask for fishing days lost *solely* due to a lack of crew. Since this category is not necessary for the financial statements we decided to drop it.
- A question on the type of activities engaged in by the vessel was added: For the 2006 report, sorting fishermen into sub-fleets and fisheries turned out to be a labor intensive effort when based entirely on other data sources. Sometimes categorization of vessels into sub-fleets based on other data sources conflicted with the activity levels implicit in the economic survey and its comments. To simplify this process in the future, we added a new question directly asking about the activity of the vessel. Four check boxes were added to indicate activity in 2007: i) any shrimp fishery, ii) any other commercial fishery, iii) any non-fishing income generating activity, and iv) no activity. Respondents were asked to check as many boxes as appropriate to their situation.
- A voluntary question was added in order to gauge the interest among respondents for completing the survey online.
- The Spanish version of the survey instrument was dropped: Since no Spanish survey instruments were returned in 2006, we decided that the effort to update the translations was not warranted.

In addition to the changes described above, efforts were also made to clarify and simplify the survey instrument's layout and language. We evaluated the number and type of

incoming calls and outgoing clarification calls and mail to determine which questions were the source of most problems. The resulting changes include:

- We added, at the top of the survey instrument, the phrase “Even if this vessel was inactive in 2007 please complete this survey.” This was one of the most frequent reasons for incoming calls.
- A major problem for the processing and analysis of an accounting based survey are unanswered questions. It is critical for the results to differentiate between an answer of \$0 and an item non-response. As a result, blank “entries” force us to call back the respondent, make assumptions about the true intent, and/or exclude the entire survey from the analysis. On the 2007 survey instruments, we prominently added the statement “Enter ‘0’ if you did not have any expenses in a category. Do not leave blank!” and repeated the latter part of this phrase on questions 15 and 16 (which were very frequently left blank on the 2006 survey).
- The sequence, skip pattern, and layout of the questions pertaining to owner operators, crew compensation, and captain’s compensation on the 2006 survey were confusing to a number of respondents. We attempted to clarify these questions. Given the different share-systems used for compensation, devising questions that cover every contingency is impossible.
- Crew share-systems can be based on gross or net revenue numbers. On the 2006 survey a footnote on page 1 of the survey instrument tried to clarify that we were interested in final “bottom-line” compensation of crew. We found our approach too convoluted and confusing for the respondents and hence counterproductive, and the 2007 survey instrument was simplified in this regard.
- It became obvious that few respondents take the time to read the instructions. This emphasized the importance of conveying the intent of each question on the survey instrument itself. In light of this, we decided to add examples of the major expenses to the survey instrument to some questions (crew compensation, other supplies, overhead).
- On the 2006 survey, the question about insurance mistakenly asked for the coverage level without specifying hull insurance explicitly, although “coverage level of vessel” was usually understood as such. This was clarified on the 2007 survey. More problematic was the fact that many respondents entered insurance payments rather than coverage levels (easily identified due to the different magnitudes). This required many follow-up calls to obtain the correct levels of coverage. On the 2007 survey instrument the phrase “Insurance coverage level NOT premium” was prominently added. Finally, the “Other” insurance check box was dropped.

As in the previous year, detailed instructions were prepared. The three pages of instructions spell out the exact intention behind each question. The instructions can be

found in Appendix 2. Beyond cover letters, an information page clearly, concisely, and in large letters spelled out the intent, justification, and confidential nature of the survey.<sup>13</sup> The survey instrument, instructions, and information material were translated into Vietnamese.

## **Population and Sampling Frame**

The population of interest is all vessels potentially or actually fishing for penaeid shrimp during the 2007 calendar year in *federal waters* of the Gulf of Mexico, i.e. in federal waters off the States of Texas, Louisiana, Mississippi, Alabama, and Florida. This population is approximated by ownership of a federal shrimp permit for vessels fishing in the Exclusive Economic Zone of the Gulf of Mexico.

As of December 5, 2002, vessels were required to possess a federal permit in order to fish for penaeid shrimp in federal waters of the Gulf of Mexico. This permit was available to all, i.e. the federal Gulf shrimp fishery was open access. A fishery management amendment, approved February 21, 2006, limited entry to the fishery, and a moratorium permit was introduced. A moratorium permit was required as of March 26, 2007 in order to harvest penaeid shrimp from federal waters, though shrimpers did have until October 26, 2007 to apply for the permit. As a result, and in contrast to the 2006 survey, the 2007 survey was conducted starting March 2008 based on a complete sampling frame of the population.

The complete sampling frame, including 1,932 permits on 1,915 vessels, was provided by the permit office of the NMFS Southeast Regional Office. The sampling frame contains most of the information provided on the permit application, including vessel registration number, vessel characteristics, and permit and contact information.

The Gulf shrimp fishery can be roughly divided into an inshore and offshore fishery. While the inshore fleet is comprised of a diverse set of vessels and operators,<sup>14</sup> the offshore fleet is (somewhat) more homogeneous. The offshore fleet consists of larger, otter-trawl vessels operated more frequently in federal waters on a full-time basis. Given the scale of these operations, a large majority maintain accounting records.

Based on 2007 shrimp landings and revenue data from the Gulf Shrimp System data collection (GSS),<sup>15</sup> which by definition includes only vessels active in this fishery, Table 1 compares vessels with and without a federal Gulf shrimp moratorium permit (columns 2 and 3). Over 70% of all 4,678 active Gulf shrimp vessels do not have federal permits (restricting them to shrimping in state waters), yet these vessels account for only about

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<sup>13</sup> Appendix 3 contains the 2007 cover letter and a SE fishery bulletin announcing the data collection. The information material did not change from the previous year and can be found in the previous technical memorandum.

<sup>14</sup> The inshore segment consists of recreational, artisanal, and commercial shrimpers using different gears to catch food shrimp, bait shrimp, and other species.

<sup>15</sup> More information on this data collection is provided in Additional Data: Revenue section of the Implementation chapter.

34% of total shrimp landings and only about 23% of the total shrimp revenue.<sup>16</sup> At the vessel level, non-federally permitted boats generate average annual revenue from Gulf shrimp of just \$22,429. This contrasts with an average of \$199,111 for federally permitted vessels. The higher revenue is due not only to more landings (on average, federally permitted vessels landed more than five times as much as vessels without federal permits), but also to a higher price per pound of shrimp. In offshore waters the shrimp are usually larger and hence command a higher price per pound.<sup>17</sup> Clearly the permitted vessels substantially differ from the non-permitted vessels.

Columns 3 and 4 compare all active federally permitted vessels and all active vessels with a completed 2007 survey used in the analyses.<sup>18</sup> The reason the randomly sampled, in-analyses active vessels have higher average landings and revenue than all active federally permitted vessels is explained in the next chapter in the context of Table 2. The fact that the price per pound of shrimp is similar is more meaningful in this case.

Table 1: Average and Total Gulf Shrimp Landings, Revenue, and Price for Active Inshore Boats, Active Federally Permitted Vessels, and Active Vessels in Analyses (2007)

(in USD)	Total	No Federal Permit	Federal Permit	Surveys in Analyses (active vessels)
# of Vessels	4,678	3,290	1,388	388
Average revenue per vessel (\$)	74,847	22,429	199,111	211,695
Average landings per vessel (lbs)	29,247	13,160	67,386	70,903
Average price per pound (lbs basis)	2.56	1.70	2.95	2.99
Average price per pound (vessel basis)	2.07	1.73	2.87	2.94
Total revenue (\$)	358 million	82 million	276 million	81 million
Total landings (lbs)	141 million	47 million	94 million	27 million
% of Total revenue	100%	22.9%	77.1%	22.6%
% of Total landings	100%	33.7%	66.3%	19.3%

**Note:** All values are for Gulf shrimp only, i.e. excluding South Atlantic shrimp. Gulf shrimp landings and prices are reported on a heads off basis. Vessels that were inactive are excluded.

<sup>16</sup> Actually, 4,678 vessels is an underestimate of the total population due to problems with the GSS. Some dealers report minor landings from multiple boats consolidated into a single record. In these cases, the landings cannot be assigned to a specific boat.

<sup>17</sup> Two measures of average price per pound of shrimp are provided in Table 1. The first is the price the *average pound* of shrimp was sold for. The second is the price per pound of shrimp received by the *average vessel*, i.e. averaging across all vessels the average price each vessel receives.

<sup>18</sup> These surveys or vessels are referred to throughout the rest of this document and the tables as “in-analyses” surveys or vessels.

## Sampling Design

For the 2007 survey and beyond, we have slightly changed---simplified---the sampling design. The sampling design for the 2007 survey was random sampling within strata defined by state. Feedback from respondents about the 2006 survey (mailed late May 2007) indicated that mailing the survey earlier in the year, prior to the major shrimp season and during tax time, would be better. In order for the surveys to be mailed by mid-March, the active/inactive strata from the 2006 survey had to be dropped since the prior year's landings data on which the strata are based is not consistently available by then. Given that the response rate in the inactive stratum was quite high, no oversampling is necessary, and hence dropping the strata does not create a problem.

In tune with our promise not to sample a vessel two years in a row, we created our sampling frame for 2007 by eliminating vessels sampled in 2006. We continued to stratify the frame based on the state of the mailing address associated with each vessel due to the management and political importance attributed to delineation by state. Within each state stratum, we randomly sampled vessels in proportion to each stratum's weight in the population. Since the 2006 sample was a random sample itself, the resulting 2007 sampling design is statistically equivalent to simple random sampling.<sup>19</sup> A total of 636 vessels were sampled out of the 1,915 vessels in the population.<sup>20</sup>

The first two columns in Table 2 provide average numbers about operations, vessel characteristics, and state of residence for the vessels in the population and the sample. It should be noted that the average revenue numbers in Table 1 for vessels with federal permits differs from the averages in Table 2 for the full population because Table 2 includes inactive vessels. As should be expected, the averages for the random sample are very close to those of the population. The only exception is the average revenue from non-shrimp fisheries. Given that these average values are driven by a few vessels active outside the Gulf shrimp fishery, the discrepancy is not a problem. We conclude that the sample is representative of the population. The discussion of the comparison of the population with the vessels actually used in the analyses (column 3 in Table 1) will follow in the Response Rate and Data Validity section in the next chapter.

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<sup>19</sup> A slight, ex post irrelevant, bias was introduced by the fact that the 2006 sampling frame was incomplete at the time of sampling. Vessels that received a permit after the 2006 sample was drawn, slightly over 200, can only be sampled for the 2007 or 2008 surveys.

<sup>20</sup> The sampling design for the 2008 survey simply includes all remaining vessels (permits) not previously sampled. That way, each permit in the population will have been sampled once in three years.

Table 2: Average Vessel Operations, Characteristics, and State for the Population, Sample, and Surveys in Analyses (2007)

	Population	Sample	Surveys in Analyses
# of Vessels	1,915 <sup>1</sup>	636	505
Actively Gulf shrimping (%) <sup>2</sup>	73.0%	73.4%	77.6%
Gulf shrimp revenue (\$)	144,873	144,182	162,650
Gulf shrimp landed (lbs) <sup>3</sup>	49,020	48,359	54,447
Gulf shrimp price per pound (lbs basis) <sup>3</sup>	2.96	2.98	2.99
Gulf shrimp price per pound (vessel basis) <sup>3</sup>	2.87	2.92	2.94
Other shrimp revenue (\$) <sup>4</sup>	8,631	7,853	8,975
Non-shrimp fishing revenue (\$) <sup>5</sup>	17,696	14,276	17,432
Length	68	67	68
Gross tons	102	102	103
Horse power	507	505	502
Year built	1985	1985	1986
Hull material - Steel (%)	73.4%	71.2%	72.1%
Refrigeration - Freezer (%)	53.8%	51.3%	52.3%
State - Florida (%)	16.2%	16.4%	16.0%
State - Alabama (%)	7.3%	7.4%	7.9%
State - Mississippi (%)	7.7%	8.0%	8.5%
State - Louisiana (%)	24.9%	25.0%	26.5%
State - Texas (%)	39.4%	39.0%	37.2%
State - Other (%)	4.5%	4.2%	3.8%

<sup>1</sup> The total permit number was 1,932 but not every permit was linked to a vessel.

<sup>2</sup> Activity in the S. Atlantic shrimp or the W. Florida bait shrimp fisheries is excluded.

<sup>3</sup> Gulf shrimp landings and prices are reported on a heads off basis.

<sup>4</sup> Other shrimp landings and prices are not reported since the weight measures for different species and regions are not always standardized.

<sup>5</sup> These averages are due to a few vessels with very high non-shrimp revenue.



### 3. Implementation

Table 3 gives the timeline for implementation of the 2007 survey. Numbers following a ‘#’ sign are the number of surveys in the category described. We timed the mail-out of the survey to coincide with the low shrimp season and around tax time when business records are being consulted and financial concerns are “top of mind.” The “deadline” for completing the survey was April 30, though extensions were always granted or exceptions made if selected individuals called us and explained their situation.

To achieve as much consistency over time as possible, we developed an internal manual to describe the basic administration and processing of the surveys during and after the implementation of the 2006 survey (the first time this data collection was conducted). During the 2007 survey, we followed and refined these processes and protocols. One major addition was that we started scanning the original surveys to create a library of digital images.

Table 3: Timeline: 2007 Survey Implementation

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February, 2008	Sample (#636) drawn from population (#1,915)
February, 2008	SE Fishery Bulletin: Notice of federal shrimp data collections in 2008
March, 2008	Sent out selection letters and first full survey package (#636)
April 30, 2008	Deadline for returning survey
May, 2008	Sent out second full survey package (#189)
May, 2008	Calls to attempt to contact non-responders started
June, 2008	Data entry started, including final processing and call-backs to clarify
June, 2008	Sent out third and final survey package (#97)
August, 2008	Send-backs of incomprehensible surveys (#39)
August, 2008	Check on data quality (preliminary analysis with #376)
September, 2008	Stopped actively pursuing problem cases
March, 2009	Final processing and entry of late arriving surveys
March-April, 2009	2007 revenue data acquired (from external databases)
April-June, 2009	Data cleaning and descriptive analysis (#505)

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### Outreach

Given the number of data collections being conducted in the Gulf shrimp fishery in 2008, we decided that a notice providing an overview might be helpful to Gulf shrimp permit holders. In February 2008, a Southeast Fishery Bulletin was sent to all federal Gulf shrimp moratorium permit holders notifying them of and describing all the federal data

collections in the Gulf shrimp fishery.<sup>21</sup> Further, and similar to the previous year, we set up a help telephone line dedicated specifically to this survey. Throughout the survey's implementation, we answered well over one hundred inquiries from shrimpers.<sup>22</sup>

## **Implementation Process**

The full survey implementation, including mail handling and processing, was conducted at and by the staff of the NMFS Southeast Fisheries Science Center. A local graduate student was hired to help with the mail handling and data processing and entry. The main phase of the survey was implemented between March and August 2008, including follow-up calls and all mailings. The owner of each selected vessel was contacted at least twice by mail (excluding the Bulletin mentioned above) and, if not responding, up to four times by mail and many attempts by telephone.

The first letter was a single page selection letter notifying the respondents that they had been randomly selected to participate in the 2007 survey. It was quickly followed by the full survey package containing a cover letter, the information material, the instructions, the two page survey instrument, and a prepaid, return envelope. In cases where the owner (or any officer in the case of a company) had a Vietnamese language-based name, we included, in addition to the English version, a full translation. Respondents were asked to return the completed survey in the enclosed, prepaid envelope by April 30, 2008. A second and third round of survey packages were mailed to non-responding permit owners in mid-May and at the end of June, respectively. At around the time of the second mailing, we also attempted to contact all non-responders by telephone and urged them to return the survey. These calls had the further advantage of being a different mode of contact and, as a result, errors in the address information were discovered.

We followed our 2006 survey protocol to track and process returned surveys and to manage and document telephone contact with respondents. After being scanned, surveys were entered into an MS Access database on a form that resembles the survey instrument. Unlike the prior year, we built validation routines into the data entry program which significantly helped to simplify things since processing and data entry could occur at the same time.<sup>23</sup> If needed, clarification phone calls were attempted immediately and, if unsuccessful, the record was marked as (temporarily) incomplete. A further advantage was that the data processing and entry occurred much closer in time to the survey submission than the year before.

The improvements to the survey instrument and implementation process<sup>24</sup> significantly reduced the number of incoming calls and outgoing, verification calls and mail, and

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<sup>21</sup> The bulletin and other survey material are attached as Appendix 3.

<sup>22</sup> For details about the outreach conducted during the design and first implementation of this data collection please see the earlier technical memorandum.

<sup>23</sup> In 2006, incoming surveys were checked for completeness and internal consistency prior and independently of data entry. As a result, the each survey, and especially problem cases, created more instances where they were handled.

<sup>24</sup> See the Design chapter for the details.

increased the number of surveys arriving “complete,” i.e. requiring no or minimal processing. Nonetheless, given the detailed, technical nature of the economic survey questions, and this being a new data collection for all vessels sampled in the second year the survey, and in spite of the prominently displayed statement “Enter ‘0’ if you did not have any expenses in a category. Do not leave blank!”, a large number of surveys still had some type of missing entry, inconsistency, or other problem. Given the limited number of follow-up calls that we could reasonably conduct, we continued to make some basic assumptions that allowed us to solve more trivial problems without calling the respondent. The most prominent example of this is the occurrence of empty fields in otherwise good surveys. Respondents often did not differentiate between a response of zero dollars (i.e. no expenses in this category) and an item non-response (i.e. not applicable, refuse, or don’t know). Following our protocols, we interpreted blank fields as zeros if: i) a respondent did not enter zeros in any fields throughout the entire survey; ii) the number of blank fields was limited; and iii) overall the survey was carefully filled out.<sup>25</sup> This assumption, and some others like it, allowed us to concentrate our manpower on incomplete surveys with more serious problems. Another check involved verifying activity status or magnitude of activities by comparing the fuel and cost numbers with revenue numbers from the GSS database. For example, a vessel claiming to use only 1,000 gallons of fuel on our survey but reporting \$300,000 worth of shrimp landings was a prime candidate for a call-back.

Given the accounting framework of the survey, the hurdle for a returned questionnaire to be called complete is very high. No single blank field could be accepted on page 1 or on most questions on page 2. We did accept some non-response for individual questions deemed possibly too difficult to answer (such as vessel market values and depreciation). But all other fields had to either be a positive number or a zero for the application of the accounting framework to make any sense. As a result, about a hundred telephone follow-up calls were necessary to clarify and collect additional data to complete the returned surveys. In addition, another 39 surveys were deemed too problematic to solve over the phone and were sent back to the respondents for clarification.

Once entered, all numbers in the database were verified by the authors to the closest \$1,000. Further processing of the entire data set is described below in the section Data Cleaning. Finally, vessels that did not return a survey to us and did not offer any reason for not responding were deemed not compliant with the survey effort, and their registration numbers were reported to the permit office. Vessels with incomplete surveys or with an excuse for not sending in the survey were deemed compliant.

## **Response Rate and Data Validity**

Response rates can be calculated in a variety of ways. In order to allow readers to calculate their preferred measure, Table 4 presents the absolute numbers in each response and non-response category. The population at the time of the sample draw included 1,915

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<sup>25</sup> This was a trivial assumption on page 1 of the questionnaire, where all costs had to add up to the total in question 9. If the total added up correctly, the respondent had implicitly assumed a zero value for any blank fields he might have left. On page 2 the assumption was somewhat less trivial.

vessels with federal Gulf shrimp moratorium permits. The number of moratorium permit holders was 1,932, though 17 permits were not linked to vessels at the time the data were obtained, bringing the number of permitted vessels to 1,915. We sampled 636 vessels for the 2007 survey. 50 vessels could not be contacted at all, while 10 vessels never responded after we had telephone contact, i.e. they implicitly refused to participate. As we would expect for a survey that is a requirement for permit renewal, no sampled individual explicitly said they refused to participate, and only a handful of respondents were openly annoyed about having to complete the survey. If a permit was sold or transferred, or a vessel destroyed or repossessed in late 2007 or in 2008, as was the case for 20 sampled vessels, we labeled the vessel as ineligible to participate in the survey. The old owner has no incentive to participate in the survey (and might vehemently object having just left the industry), and the new owner is unlikely to have the necessary 2007 financial records. Further, despite our best efforts, we were unable to complete 19 surveys through call-backs or send-backs. These were labeled permanently incomplete.<sup>26</sup>

Table 4: Counts for Response Rate Calculations and Reasons for Non-Response (2007)

	Count	Comments
Permits	1,932	Only 1,915 vessels (a few permits are not linked to vessels)
Sample	636	
No Contact	50	No response. Contact information often incorrect and disconnected
"Refused"	10	Telephone contact established, but survey never received
Ineligible	20	Vessels repossessed or transferred during late 2007 or in 2008
Incomplete	19	Call-back/send-back unsuccessful; including oil sector vessels, recreational craft, vessels leased out, research work, etc.
Complete	537	Raw response rate: 84.4%
Dropped	-32	Inconsistent or implausible numbers (across databases)
In Analyses	505	

The category of ‘No contact’ was significantly higher in 2007 than in 2006, both in absolute terms (50 vs. 16) and in relative terms (7.9% vs. 2.8%). Caution is warranted interpreting this difference, since there are at least three reasons that might explain it. First, the contact information in the sampling frame had “aged” by the time the 2007 sample was drawn compared to the 2006 draw. Second, given our experience with the very last of the 2006 surveys we acquired---which were generally of a low quality and needed much additional effort to clean up (if it was possible at all)---we exerted less effort toward the very end of the 2007 survey and stopped actively pursuing non-respondents much sooner than the year before. Finally, the Gulf shrimp industry was

<sup>26</sup> Two of these vessels were active in the oil services industry and were not fishing vessels, and it might be more appropriate to label these surveys as not applicable or ineligible.

already suffering in 2006 and continued to suffer in 2007 (and into 2008 when the 2007 survey was conducted). Hence it is likely that some shrimpers had given up on the industry for good. Given the prior two confounding factors, it is not clear if and how much of our increased non-response might be due to the last reason.<sup>27</sup>

The remaining 537 surveys were deemed complete, leading to a raw response rate of 84.4%.<sup>28</sup> Sixty vessels, 9.3%, were uncooperative, and up to 50 of those possibly never received the survey due to bad contact information. For the purpose of the financial analyses reported in the next chapter, another 32 complete surveys had to be dropped from the analyses.<sup>29</sup> The final number of surveys used in the analyses is 505.

Among the 505 surveys used in the analyses,<sup>30</sup> 388 are from vessels active in the Gulf shrimp fishery in 2007. Turning back to column 4 of Table 1, we can see that these 388 vessels accounted for 22.6% of the *total* 2007 Gulf shrimp revenues, and just over 29% of the revenue generated by all federally permitted boats. This indicates that while the data are a sample, they do account for a very substantial fraction of the total industry, which in turn should reflect well on the validity of the results. The reason the in-analyses vessels have somewhat higher average landings and revenue than all federally permitted vessels is explained below in the context of Table 2. The fact that the price per pound of shrimp is similar is more meaningful in this case.

Next, we look at how representative the surveys used in the analyses are of the sample and, in turn, how representative the sample is of the population of permit holders. Based on the most up-to-date numbers of revenue (May 2008), the three columns in Table 2 present vessel averages and a break-up by state of: i) the vessels in the actual population of moratorium permit holders (1,915); ii) the vessels in the sample (636); and iii) the vessels in the analyses (505).

Overall, we can state that the in-analyses vessels are representative of the sample and of the population. The average vessel characteristics are all very similar, as is the average price of shrimp received. The distributions across the state strata show very minor variation, with Alabama and Mississippi vessels being very slightly overrepresented at the cost of Texas and non-Gulf state vessels (label: State - Other). In percentage terms, the non-Gulf state vessels are underrepresented by 16%. But because many of these vessels are not engaged in Gulf shrimping, or any shrimping for that matter, this bias is deemed inconsequential for current purposes.

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<sup>27</sup> A better source of information on shrimpers leaving the industry (that will soon be available) is the number of permits that are allowed to permanently terminate, which occurs one year after the expiration date of the permit.

<sup>28</sup> Many other survey efforts would have counted the incomplete surveys as well, given that most but not all of their fields are filled. In this case, the raw response rate would be 87.4%. The authors' preferred measure of response, the number of completed surveys (537) divided by the eligible sample (616), is 87.2%.

<sup>29</sup> This issue is discussed further in the Data Cleaning section.

<sup>30</sup> These surveys or vessels are referred to throughout the rest of this document and the tables as "in-analyses" surveys or vessels.

Yet in Table 2, the average shrimp revenues and landings do not match particularly well for vessels in the analyses and the sample. While the average Gulf shrimp revenue is \$144,182 per vessel for the sample and nearly the same for the full population, it rises to \$162,650 among the vessels in the analyses. Landings behave similarly. One explanation is that active vessels are overrepresented among the in-analyses vessels, comprising 77.6% of that group while only accounting for 73% of the vessels in the sample and population. Adjusting for the activity difference accounts for about half of the difference in Gulf shrimp revenue, lowering the excessive revenue among in-analyses vessels from 13% to 7%.

The difference in average revenue between the sample and the in-analyses vessels in Table 2 can be further explained by looking at Table 5. We can see that 61.6% of the 97 sampled vessels for which we do not have a survey (labeled Non-Response in Table 5) were active. We found this to be unexpectedly high, since we thought inactive vessels would dominate our non-response categories. Yet these vessels averaged \$90,470 from Gulf shrimping whereas vessels in the analyses averaged \$162,650. On a final note, non-response was significantly higher among vessels from states outside the Gulf and Texas.

We note, that by dropping the 34 surveys with questionable revenue or cost data, we seem to be introducing even more bias toward larger operations with higher Gulf shrimp revenues. The average is only \$18,898 for these dropped vessels versus \$162,650 among those included in the analyses. Even accounting for the different level of activity, the large discrepancy does not disappear. This further explains the upward bias on revenue for in-analyses vessels in Table 2.<sup>31</sup>

Overall, we believe the data to be representative of the population of interest and proceed with the analyses without any adjustments or weighting of the observations. In other words, we maintain the assumption that each vessel in the population had the same probability of being included in the survey and, at the next step, to have the same probability of being included in the analyses.<sup>32</sup>

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<sup>31</sup> A further reason for the higher revenue numbers among the in-analyses vessels is discussed in the Additional Data: Revenue section later in this chapter.

<sup>32</sup> Only for extrapolations to the full population (across active and inactive boats) do we recommend taking account of the slight differences in activity levels between the final population of federal Gulf shrimp moratorium permit holders and the results from the analyses.

Table 5: Average Vessel Operations, Characteristics, and State for Non-Response Vessels, Dropped Surveys (due to incomplete or questionable responses), and Surveys in Analyses (2007)

	Non-Response	Dropped Surveys	Surveys in Analyses
# of Vessels	97	34	505
Actively Gulf shrimping (%) <sup>1</sup>	61.6%	43.8%	77.6%
Gulf shrimp revenue (\$)	90,470	18,898	162,650
Gulf shrimp landed (lbs) <sup>2</sup>	30,940	6,174	54,447
Gulf shrimp price per pound (lbs basis) <sup>2</sup>	2.92	3.06	2.99
Gulf shrimp price per pound (vessel basis) <sup>2</sup>	2.79	3.01	2.94
Other shrimp revenue (\$) <sup>3</sup>	4,667	0	8,975
Non-shrimp fishing revenue (\$) <sup>4</sup>	1,566	3,788	17,432
Length	67	63	68
Gross tons	101	89	103
Horse power	520	511	502
Year built	1,983	1,983	1,986
Hull material - Steel (%)	69.7%	62.5%	72.1%
Refrigeration - Freezer (%)	46.5%	50.0%	52.3%
State - Florida (%)	14.1%	28.1%	16.0%
State - Alabama (%)	3.0%	12.5%	7.9%
State - Mississippi (%)	5.1%	9.4%	8.5%
State - Louisiana (%)	21.2%	12.5%	26.5%
State - Texas (%)	49.5%	34.4%	37.2%
State - Other (%)	7.1%	3.1%	3.8%

<sup>1</sup> Activity in the S. Atlantic shrimp or the W. Florida bait shrimp fisheries is excluded.

<sup>2</sup> Gulf shrimp landings and prices are reported on a heads off basis.

<sup>3</sup> Other shrimp landings and prices are not reported since the weight measures for different species and regions are not always standardized.

<sup>4</sup> These averages are due to a few vessels with very high non-shrimp revenue.

## Data Cleaning

After data entry and entry verification, the data set was tested in Excel and SAS for internal consistency and for consistency with external databases. Inconsistent records were given a closer look, including calling the respondent if necessary. If it was not possible to resolve the problem (or have reasonable faith that there was no problem) the record was dropped from the data set used for the analyses. As mentioned in the last section, 34 completed surveys were dropped in this manner. The primary reason was major inconsistency between the cost numbers collected by the survey and the revenue

numbers reported by the GSS, an issue more fully explored in the next section. In terms of shrimp revenue, the dropped vessels were on average not representative of the sample (Table 5). The rest of this section discusses the estimation of some missing values within the otherwise complete records.

Since financial statements must “add up” or “balance,” missing values could not be tolerated in any observation used in the analyses. If acquiring the missing value from the respondent was not possible, the record was not used in the financial analyses. Exceptions were made for the vessel market value and depreciation variables. In the absence of a vessel sales transaction, the former value is a theoretical estimate by the respondent, and as such, a non-response is a valid response (unlike, for instance, purchase price which is an existing fact, but for the rare occasion when a vessel is given as a gift). As for the latter, after repeated attempts, it was decided that depreciation is too technical a concept to explain over the phone. In both cases, the missing values were estimated with the help of regression analysis on the rest of the data set.<sup>33</sup> A vessel’s market value with permit was regressed on its purchase price, vessel characteristics (including age), and a “dummy” variable to differentiate vessels in the state of Texas from vessels in other states.<sup>34</sup> The 54 missing market values (among 537 otherwise complete records) were then predicted using the regression results. An equivalent approach was used to predict the 85 missing values for depreciation.<sup>35</sup>

During the survey design it was decided to ask a single simple question summing all dollar expenditures on vessel and gear maintenance, repair, replacement, and new investment. A follow-up question consisting of check-all-that-apply check boxes asked about the occurrence of particular categories of these activities, particularly maintenance or regular repairs, major repair or haul-out, and new purchase or upgrade. By regressing the total dollar expenditures of each vessel on three dummy variables for maintenance, major repair, and new investment, we were able to estimate the average percentage breakup of these costs across the three categories.<sup>36</sup>

Finally, in order to compare vessels owned by owner-operators and those owned by absentee owners who hire captains to run their vessels, the value of the owner-operator’s labor as captain must be estimated and added as an additional crew expense. Otherwise, owner-operated vessels will seem too profitable since a substantial input into the production process, the captain’s labor time, would not be counted.<sup>37</sup> Since a substantial part of the owner-operated vessels reported paying their owner an explicit captain’s share, a regression approach could again be used to estimate the captain’s share for those

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<sup>33</sup> To maintain consistency with the analyses on the 2006 data, the same models with the same variables were used for the current analyses. Only the parameters were re-estimated based on the 2007 data.

<sup>34</sup> OLS;  $n=483$ ;  $R^2=0.59$ . More details on this and other regressions can be found in Appendix 4.

<sup>35</sup> OLS;  $n=452$ ;  $R^2=0.54$ . More details on this and other regressions can be found in Appendix 4.

<sup>36</sup> OLS,  $n=402$  (we limited ourselves to active Gulf shrimp vessels with non-zero repair expenses to avoid some counterintuitive results generated by all observations);  $R^2=0.058$ . More details on this and other regressions can be found in Appendix 4. Once the parameters are estimated, a bit of math is needed to derive the average breakup of the cost.

<sup>37</sup> A similar problem occurs and cannot be corrected for the few, mostly Vietnamese-American owned vessels, where the wife (or other family member) works as unpaid crew.



owner-operated vessels that did not report this value. Given that labor compensation is usually tied closely to the time spent working, it is not surprising that the best predictor of the captain's share is the crew share, i.e. the amount paid to crew plus a constant.<sup>38</sup>

### **Additional Data: Revenue**

In general, the survey focused on the collection of annual cost data and did not collect shrimp revenue. As a result, the commercial fishing revenue data used in the analyses comes from a variety of other data collection efforts. Gulf shrimp revenues and pounds are from the Gulf Shrimp System (GSS) database as maintained by the Southeast Fisheries Science Center's laboratory in Galveston, Texas. The GSS database is a compilation of dealer reported data that comes from State trip tickets and dealer reports collected by port agents. It attempts to collect comprehensive trip level data on Gulf of Mexico shrimp landings and prices, by shrimp size and species. Most landings in this database, especially for the larger offshore vessels covered by this report, can be assigned to an individual vessel based on the vessel's U.S. Coast Guard or state registration number.<sup>39</sup>

These vessel identifiers were also used to query other commercial fishery databases throughout the southeast to find as many other revenue sources for these vessels as possible. Other databases include: i) the southeast fishery logbook system, which covers the majority of federally managed species in the southeast other than shrimp, including South Atlantic snapper-grouper, Gulf of Mexico reef fish, southeast coastal migratory pelagics (mackerels), Atlantic dolphin/wahoo, and sharks; ii) the trip ticket programs of the various Gulf and Atlantic States<sup>40</sup>; and iii) the data collections by the NMFS Northeast Fisheries Science Center.<sup>41</sup> Question 15 on the survey also elicited the total revenue from commercial fishing other than shrimp, and simply adding the revenue from the other databases would probably lead to double counting. We decided to always keep the higher value of revenue reported in question 15 or the sum of revenue in non-shrimp databases for each vessel.

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<sup>38</sup> OLS;  $n=55$ ;  $R^2=0.55$ . More details on this and other regressions can be found in Appendix 4. The small sample size and limited  $R^2$  raise questions about using these estimates. Various consistency checks indicate that the general range of the estimates, especially averaged across a large number of vessels, appeared to be reasonable in 2006. Applying the same processes to 2007 data generated less convincing results, but for comparability reasons, we maintained this approach for now. Estimating the "opportunity cost of time," which this exercise amounts to, is a complex and much discussed topic in the economic literature and goes well beyond this simple descriptive analysis.

<sup>39</sup> The exceptions are "consolidated records" within the GSS. Some dealers report minor landings from multiple boats consolidated into a single record. In these cases, the landings cannot be assigned to a specific boat.

<sup>40</sup> Florida state trip tickets for food shrimp on the east coast (i.e., S. Atlantic) as well as bait shrimp and non-shrimp species on both coasts; and State trip tickets for Georgia, South Carolina, and North Carolina (as maintained by the Atlantic Coastal Cooperative Statistics Program (ACCSP)). The biggest known gap is revenue from the Texas bait shrimp fishery.

<sup>41</sup> As consolidated by ACCSP databases for the New England and Mid-Atlantic States (which contain State trip ticket data for States with such programs in those regions). Of particular importance is the Atlantic scallop fishery, where some vessels with federal Gulf shrimp permits are active.

In the course of the survey implementation, due to a misunderstanding of question 15, a substantial minority of respondents revealed their total shrimp revenues to us. The respondent-supplied numbers were usually greater than the “equivalent” revenue numbers generated with the help of the GSS database. It was decided that the respondent’s numbers probably were a better reflection of reality. As a result, shrimp revenues (and landings on a proportional basis) were adjusted upward for a group of vessels in the analyses, thereby introducing an upward bias in the average revenue numbers. This selective upward adjustment to the revenue and landing of some vessels *in the analyses* can at least partly explain the differences in these variables observed in Table 1 and Table 2 between averages for in-analyses vessels and all federally permitted vessels and for in-analyses vessels and sampled vessels, respectively.

## 4. Results for 2007

Financial information for individual respondents is confidential. Hence, data collected by the survey can be released only as summary statistics. There are many different ways of summarizing data and reporting it for different groups. In light of this, the report must strike a balance between reporting low level summary statistics, such as the means of the answers to the survey questions, and more advanced statistics derived from the raw data, such as a mean rate of return. With the hope of satisfying as many audiences as possible, this technical memorandum will concentrate on the former and report only a limited number of derived statistics. The detail provided in the appendices, together with the documentation throughout this report, should enable the readers to answer many questions by constructing the necessary measures themselves.

The results are basic descriptive statistics---mostly arithmetic means---of the financial and non-financial data. They are presented in a standardized table format that links vessel characteristics and operations to simple balance sheet, cash flow, and income statements. Basic summary statistics are provided and discussed in the text for the total fleet (i.e. all permitted vessels), the *Gulf shrimp* fleet (i.e. excluding permitted vessels engaged solely in other fisheries), for the *active* Gulf shrimp fleet (i.e. further excluding idle, broken, or otherwise inactive vessels), and for the inactive Gulf shrimp fleet (i.e. those idle, broken, or otherwise inactive vessels). Further results (limited to means) are reported in an appendix for various categories of shrimp vessels, including those grouped by state, by vessel characteristics, by landings volume, by survey quality, and by ownership structure. The next chapter provides a comparison of results for 2007 and 2006.

### Standardized Data Presentation

This report standardizes the presentation of the financial and economic results, guided by the annual report format. The trio of financial statements discussed in the Design chapter gives a comprehensive overview of the financial and economic situation of a productive enterprise such as owning and operating a shrimp vessel. Here the basic design of the result-tables is explained, and quality, caveats, and idiosyncrasies associated with each data field are discussed. The general explanations and caveats discussed here apply to all equivalent data fields and variables throughout the report. They will not be repeated in the discussion of each table, unless especially and specifically relevant to the conclusion(s) drawn.

Due to the concerns about confidentiality mentioned above, this report generates financial statements based on the arithmetic mean (henceforth referred to simply as “average”) of the sampled vessels or a large specific subset thereof; e.g. Texas vessels. When these numbers are interpreted as applying to the representative “average vessel” of the population (or a large specific subset thereof) the numbers must be interpreted as being statistical in nature. They are estimates of the true (sub-) population average. In this case,

the numbers are mid-points of a confidence interval which includes the true population mean with a given probability defined by the confidence level.

For example, the average fuel expenditure of the 505 sampled vessels included in the analyses is \$83,658 (to the extent that the survey question was correctly answered and the data correctly processed). When this number is used in the context of the average fuel expenditure for all federally permitted vessels, *it is an approximation or estimate* of the unknown true average for the full population of vessels. In particular, we estimate with 95% certainty that the true average fuel expenditure of all vessels lies somewhere between \$76,231 and \$91,085, with \$83,658 being the mid-point of this confidence interval (e.g. Table 8).

As mentioned, each result-table reports survey results for a particular category or categories of sampled vessels. The number of observations in each category is given at the top of each column and below its identifying label.<sup>42</sup> The number of observations is an important indicator of the validity of the averages reported in that a larger sample size tightens the confidence interval around the estimated average, while small sample sizes often lead to large confidence intervals that reflect more uncertainty about the true value of the estimated average. When the sample size is less than 50 observations, the authors advise caution when using the numbers. For example, when reporting by state, the responses for Alabama and Mississippi have been collapsed into a single group to maintain a reasonable sample size that is in the same ball-park as the sample sizes for the other states. Beyond this validity aspect, the number of observations is useful as an orientation point across tables throughout this report.

Most types of costs appear in both the cash flow and income statements. To avoid redundant reporting and provide further useful information, we report the average dollar value for each type of cost in the cash flow statement, and we report the percentage contribution of each type of cost to the total expenses in the income statement. The most appropriate “point in time” that the reported balance sheets reflect is probably the “end of calendar year 2007.” In contrast to the balance sheet, the cash flow statement and income statement summarize financial transactions over the whole calendar year 2007.

### Vessel Characteristics

The first section of each result-table reports the average vessel characteristics and the distribution of the vessels across the states. The data underlying these numbers are collected on the permit application and were part of the initial sampling frame data set. They are reported as context for the financial statements. The first block of numbers reports average vessel length in feet, gross tons, horsepower of the engine(s), and the average year the vessels were built (from which the average age of the vessels can be calculated). The second block lists the percentage of vessels with steel hulls (as opposed to fiberglass or wood hulls) and the percentage with onboard freezers (as opposed to those that purchase ice to preserve their catch or used live wells in the case of bait shrimp) as well as the average fuel capacity. A third block of numbers gives the

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<sup>42</sup> Exceptions are Table 8 through Table 11 that apply to a single category each, and where the number of observations is given in the table’s title.

percentage distribution of vessels across the Gulf states. Note that these numbers do not always add up to 100% as the non-Gulf state category is not reported.

### Balance Sheet

A balance sheet is a snapshot of the average vessel's financial condition. We wish to calculate the owner's equity, which is the *net* worth of the company and always equals the difference between the value of all assets and what is owed (the liabilities). The data collection and hence the financial statements focus exclusively on the harvesting component of any shrimping enterprise. In other words, we focus solely on the financial flows directly associated with owning and operating a fishing vessel. Hence we define the balance sheet's assets as the vessel including any fishing gear affixed to it. Land-based assets will sometimes comprise a substantial part of a fishing company's productive enterprise, but we purposefully exclude these assets in order to retain comparability across all permit holders. Generating consistent summary statistics for operations ranging from small owner operated catcher vessels to vertically integrated catcher-processor-wholesaler companies would be difficult.<sup>43</sup> Focusing solely on the fishing vessel is facilitated by the common practice, even among larger, complex companies, to legally treat each vessel as a single incorporated entity (such as an S-corporation). We use the current market value of the vessel (with permit) as reported by the respondent as **Asset (market value of vessel)** in the tables.<sup>44</sup>

The balance sheet's liabilities usually consist of loans from banks, ship builders, or individuals. Any amount owed is summarized as **Loan on vessel** in the tables. Business credit lines or homeowner debt are not included because these data were not collected from respondents, and because these liabilities are usually associated more with the land-based components of the fishing enterprise. In enabling a shrimper to "run his business," they represent critical financial capital. But since land-based assets are excluded from the asset side of the balance sheet, they need to be dropped from the liability side as well.

In conclusion, the balance sheets reported do not represent the average balance sheet of the actual companies involved in Gulf shrimping, but rather represent the value and liabilities associated with their harvesting components only. The total asset value reported in the balance sheets should be interpreted as a lower bound for the actual total asset value associated with the "shrimp related business" owned by the fishermen. **Owner's equity in the vessel**, or net-assets, was not asked for on the questionnaire, and hence is calculated by subtracting the loan amount from the vessel's market value.

For convenience, several more items from the questionnaire are reported, in italics, in the balance sheet section of the tables. **Original value of vessel (at purchase price)** comes directly from the survey questionnaire. Based on the phrasing of the question, it was not required that the vessel was purchased new, and the purchase price might reflect a

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<sup>43</sup> A practical reason for excluding land-based assets is the fact that the necessary data were not, and in some cases cannot, be collected.

<sup>44</sup> On the 2007 survey, we asked respondents for estimates of their vessel's value with or without permit. In the shrimp industry, it appears that the value with permit most closely resembles the value provided in 2006 when neither setting was specified.

recently purchased used vessel. Hence this variable reflects the capital invested by the current owner only. The **Implicit permit value** is derived by subtracting the respondent provided market value of vessel without permit from the value with permit.<sup>45</sup> **% of vessels with loan** is self-explanatory. Finally, two percentages are given to inform the reader about the fleet's situation regarding **Insurance coverage**.<sup>46</sup> The first “% of vessels” is the percentage of vessels that have hull insurance, while the second, “% of assets,” reports the percentage of the fleet's vessel assets that are insured with hull insurance.<sup>47</sup> The two usually differ substantially since newer, more expensive vessels are much more likely to be insured as lenders often demand it as a condition of granting a loan.

### Vessel Operation

Before the tables turn to the cash flow and income statements, some context about vessel operations is provided. The percentage of vessels actively fishing for shrimp,<sup>48</sup> the average pounds of shrimp landed (heads-off or tail weight), and the average price per pound of shrimp (averaged across vessels) are derived from the GSS with some adjustments as described in the Additional Data: Revenue section of the Implementation chapter.<sup>49</sup> The rest of the numbers, including the percentage of owner-operated vessels, average annual fuel use and price (averaged across vessels), and two measures of fuel efficiency are either obtained directly from our survey or derived thereof. Fuel efficiency measures I and II are pounds of shrimp sold and shrimp revenue per gallon of fuel used, averaged on a vessel basis.

The price of shrimp, the price of fuel, and the fuel efficiency measures are ratios, and hence differ from the purely additive nature of most of the other entries in the result-table and the financial statements in particular. When we “average” a price, it matters quite a lot if we first derive the price at the vessel level by dividing the vessel's revenue by its quantity and *then* average across all vessels; *or* if we *first* add up all revenue and quantities across vessels, and then calculate the ratio of the aggregated numbers. In the latter case, we have the average price across all pounds of shrimp, i.e. the true average price of a pound of shrimp caught by the fleet. In the former case, we calculate the overall average price based on the average prices received by individual vessels regardless of the quantity each vessel produced. In this case, the importance of vessels that produce very little is equal to the importance of vessels that produce a lot when calculating the overall average price. Since the nature of the result-tables is the “average vessel,” these values are reported for the prices and fuel efficiency, even though the quantity-weighted measures are more useful for many applications. But unlike the quantity-weighted measures, the “per vessel” values cannot be derived from other

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<sup>45</sup> As the only exception, the average implicit permit value is based on fewer observations than the rest of the averages in the column. Observations were only used if the respondent supplied both a value with permit and a (reasonable) value without.

<sup>46</sup> Only the first percentage is provided in Table 8, Table 9, Table 10, and Table 11.

<sup>47</sup> Some respondents entered insurance payments rather than coverage levels (easily identified due to the different magnitudes). Follow-up calls were conducted to collect the correct value.

<sup>48</sup> Any shrimp, including food shrimp in the S. Atlantic or bait shrimp off the west coast of Florida.

<sup>49</sup> Technically, there are some very minor amounts of shrimp measured in units other than heads-off pounds in 2007. Practically, the amounts are trivial and the prices are within the range of Gulf shrimp.

numbers provided.<sup>50</sup> In the result tables in the appendix, both averages are provided for the price of shrimp, fuel, and the fuel efficiency measures.

### Cash Flow

The cash flow section in the tables shows the average inflows and outflows of money coming into and leaving the shrimp enterprises over the course of 2007. Three sources of cash inflow are listed separately. Under the heading **Shrimp landings**, all revenue derived from selling shrimp is consolidated. Most of this revenue is generated by the catch and sale of Gulf of Mexico food shrimp, but minor contributions are also made by S. Atlantic food shrimp and by bait shrimp in the Gulf. Revenue from any seafood product other than shrimp is listed under **Non-shrimp landings**.<sup>51</sup> The third inflow, labeled **Government payments received (shrimp related)**, lists the government payments reported on the survey questionnaire. The most prominent transfers are the anti-dumping tariff disbursements to the shrimp harvesting and processing industry associated with the Byrd amendment.<sup>52,53</sup>

The cash outflows are listed roughly according to their appearance on the survey questionnaire. The averages presented are the arithmetic means of the answers to the survey questions. The expenses for the variable factors **Fuel** and **Other supplies** are self-explanatory.<sup>54,55</sup> **Crew & captain (hired)** lists crew expenses exclusive of any captain's share for an owner-operator. The cash outflows listed as i) **Regular maintenance (vessel and gear)**, ii) **Major repair and haul-out**, and iii) **New investments and upgrades (in vessel)** are values derived from questions 7 a) and 7 b) on the survey, and more details on this can be found in the Data cleaning section of the Implementation chapter. The remaining expenses for the fixed factors **Overhead (excluding loan payments)**, **Interest payments made (on vessel loans)**, and **Principal payments made (on vessel loans)** once again are self-explanatory. Finally, **Net Cash Flow** is calculated as the difference of the **Inflow - Total** and the **Outflow - Total**. Net cash flow reflects the liquidity or

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<sup>50</sup> It is easy to calculate the prices and fuel efficiency measures on a per-pound or per gallon basis. Simply divide the appropriate (average) cash flow amount by the (average) quantity listed in the tables.

<sup>51</sup> See the Additional Data: Revenue section in the Implementation chapter for the various data sources and caveats associated with the revenue numbers.

<sup>52</sup> Antidumping duties (tariffs) are assessed on the imports of certain farmed shrimp from a variety of foreign countries. The Continued Dumping and Subsidy Offset Act of 2000, commonly referred to as the "Byrd Amendment," provides for the annual distribution of antidumping and countervailing duties assessed. The distribution is available to "affected domestic producers for qualifying expenditures." In part due to lawsuits, it can take a long time before the actual payment is received by a shrimper.

<sup>53</sup> A couple of vessels also reported being leased out for research or other work, or had income from non-commercial fishing activities (mostly in the oil sector services industry). In cases where this type of income did not materially affect the financial results of active fishing vessels, it was ignored throughout this report. Surveys from vessels which incurred a large portion of their cost from non-fishing activities were deemed incomplete and hence do not influence the results.

<sup>54</sup> Consult the survey instrument and instructions in Appendix 1 and 2 and the discussion in the Design chapter for more details on these data fields. In the 2006 survey, ice was a separate cost category but was collected as part of "other supplies" in 2007 due to its small magnitude.

<sup>55</sup> Some vessels have arrangements with fish houses where they receive ice for free. To the extent that the fish houses implicitly reduce the amount they pay for the shrimp to cover their cost, these arrangements will have little effect on the net revenue numbers we calculate.

solvency of the average shrimping enterprise and is useful in determining the short-term viability of the vessels in question.

### Income Statement

The income statement in the tables presents the (estimated) average financial and economic performance of the vessel type in question over the course of 2007. The income statement first lists the revenue and expenses related to the **Operating Activities**, which for our purpose is commercial fishing. **Revenue (from commercial fishing)** lists the value of both shrimp and non-shrimp catch. Next, the total operating **Expenses** are given. These comprise most of the same expense categories making up the cash flow's Outflow - Total. Differences are the exclusion of expenses for Principal payments made and New investments and upgrades, and the inclusion of expenses for **Owner's vessel time** and **Depreciation**. Because the dollar values for each expense category have already been given in the cash flow, they are not repeated in the income statement. Rather, the values are expressed as the percentage contributions to total expenses. The expenses are grouped into variable costs for supplies (**Fuel** and **Other supplies**), variable costs for labor (**Crew and captain (hired)** and **Owner's vessel time**) and fixed costs (**Regular maintenance; Major repair and haul-out; Depreciation; and Overhead (excluding loan payments)**). The value of an owner-operator's time spent working as the vessel's captain is a derived value for the majority of (owner-operated) observations and was explained in more detail in the Data Cleaning section of the Implementation chapter. Depreciation comes from the questionnaire, but it too required some processing (also described in the Data cleaning section).

**Net Revenue from Operations** is calculated as the difference between **Revenue (from commercial fishing)** and total **Expenses**. This is a measure of the true economic return to a productive activity. More relevant to the owners of a company is the net revenue before taxes, i.e. their actual "profit" or "loss". This "bottom line" is calculated by adding or subtracting the revenue or costs associated with **Non-Operating Activities**, respectively. In particular, **Interest payments made (on vessel loans)** are subtracted and **Government payments received (shrimp related)** are added to net revenue from operations. This results in the final number, **Net Revenue (before taxes)**.

This standardized data presentation is adhered to in all result-tables. The general explanations and caveats will not be repeated in the discussion of each table, unless especially and specifically relevant to the conclusion(s) drawn. As a final note, below the income statement, two values *in dollars* are presented, **Owner's vessel time** and **Depreciation**. These two variables are not part of the cash flow statement where averages normally are presented. Because all the expense categories in the income statement itself are presented only as percentages of total expenses, the dollar values for these two variables are provided separately for readers who might wish to construct their own measures and calculations.



## Categorizing Observations into Fleets by Fishery

The full set of observations in the analyses (505), labeled “total fleet” for the remainder of the report, includes vessels active solely or partly in other fisheries vessels active solely or partly in the S. Atlantic shrimp fishery, vessels completely inactive, and vessels active in the Gulf shrimp fishery. As a reminder, surveys for vessels clearly not qualifying as commercial fishing vessels were marked as incomplete and are not included in the total fleet (see Table 4). To answer many questions, it makes sense to look at more homogeneous sub-fleets or sub-groups among the observations. For this purpose, we assign each vessel in the total fleet to four *mutually exclusive* fisheries, even though some vessels clearly engaged in multiple fisheries in 2007 (Table 6). The assignment was based on both question 14 on the survey instrument (“This vessel was active in...”) and the reported revenue numbers collected from different fisheries. Sorting out the cases with contradictory numbers in different databases is a labor intensive process.

Table 6: Vessel Count by Fleet and by Activity in Different Fisheries (2007)

Sub-Fleet	# of Vessels	Count of vessels reporting landings in:			
		Gulf Shrimp Fishery	S. Atlantic Shrimp Fishery	Gulf Non-Shrimp Fishery	Other Non-Shrimp Fishery
Active Gulf Shrimp Fleet	388	388	2	47	5
S. Atlantic Shrimp Fleet	13	-	13	-	13
Other Fish Fleet	14	-	-	3	11
Inactive Shrimp Fleet	90 <sup>1</sup>	-	-	-	-
<b>Total Fleet</b>	<b>505</b>	<b>388</b>	<b>15</b>	<b>50</b>	<b>29</b>

<sup>1</sup> One inactive vessel from North Carolina is excluded from the 'inactive Gulf shrimp fleet' in all later analysis. This vessel had such high reinvestments that it is very likely a vessel in the (very profitable) Atlantic scallop fishery.

Vessels that reported any non-trivial amount of Gulf shrimp landings in 2007 were assigned to the “active Gulf shrimp fleet” (388). Among these 388 vessels, 2 were also active in the S. Atlantic shrimp fishery, 47 in other non-shrimp *Gulf* fisheries, and 5 in non-shrimp fisheries not in the Gulf (Table 6). The 13 vessels in the total fleet that did not fish for Gulf shrimp but reported non-trivial amounts of S. Atlantic shrimp landings were assigned to the (active) “S. Atlantic shrimp fleet.” All of these vessels were also active to some degree in non-shrimp fisheries outside the Gulf in 2007. Of the total fleet, another 14 vessels were active solely in non-shrimp fisheries, both in the Gulf and beyond. These were assigned to the (active) “other fish fleet.” The remaining 90 vessels were inactive in 2007 to the best of our knowledge, and all but one were assigned to the

idle or “inactive Gulf shrimp fleet.”<sup>56</sup> The “Gulf shrimp fleet” is defined as the sum of its active and inactive parts, and consists of 477 vessels (388 + 89).

## Overview of Results Presented

Table 7 provides a systematic overview of all the different fleets, strata, and categories of vessels for which 2007 results are reported in this technical memorandum. Table 8 contains the (average) financial statements for all vessels whose surveys were judged complete and usable (the total fleet). Beyond the arithmetic mean for each variable, the table reports the standard deviation, the upper and lower bounds of the confidence interval (at a 95% certainty level), and the median. We also report these summary statistics for three other sub-fleets that are deemed important, the Gulf shrimp fleet (Table 9), the active Gulf shrimp fleet (Table 10), and the inactive Gulf shrimp fleet (Table 11). Note that unlike the four “primary” fishery fleets defined in the last section, the four fleets listed here are *not* mutually exclusive. The layout of the tables for these three sub-fleets mirror Table 8 (i.e. they include summary statistics), and the results are discussed in the next section. The rest of the tables (Table 14 through Table 22) can be found in Appendix 5 and only major findings, as summarized in Table 12, will be discussed in a section below. A comparison of 2007 and 2006 results is provided in next chapter.

The relevance of each table depends on the question at hand. Table 8 presents data for the average vessel that holds a federal Gulf shrimp permit. Since these observations were drawn at random from the full population of vessels holding this permit, any extrapolation or statement about *vessels with a federal Gulf shrimp moratorium permit* should begin with this table. In other words, while this sample includes, beyond active Gulf shrimp vessels, vessels fishing in the Atlantic scallop fishery, and broken and otherwise idle vessels, this is the best reflection of the actual status of all permit holding vessels.

Table 9 looks at the averages for Gulf shrimp vessels only, excluding vessels of the S. Atlantic shrimp and other fish fleets. By excluding these vessels, Table 9 better represents the economic situation that the federally permitted *Gulf shrimp vessels* are facing. For example, Gulf shrimpers exhibit lower revenue and cost than the numbers for the total fleet indicate, as more active (and profitable) vessels in other fisheries do not affect the results. Questions pertaining to *Gulf shrimp vessels* (with federal permits) should probably use these numbers.

Table 10 reports results for Gulf shrimp vessels that were active in 2007, thereby excluding the vessels in the inactive Gulf shrimp fleet. By excluding idle and not operational vessels, these numbers better reflect the actual revenue, cost, and return to actual shrimping in the Gulf of Mexico. Questions concerning the *production process of*

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<sup>56</sup> Based on statistical probability and some secondary sources, most of these idle vessels are commercial shrimping vessels. All but four were located in Gulf states. Of the four, three fit the Gulf shrimp profile. A single inactive vessel from North Carolina had such high reinvestments that it is very likely a vessel in the (very profitable) Atlantic scallop fishery. It was excluded from the inactive Gulf shrimp fleet throughout the rest of this report.

*trawling for shrimp* should probably be based on these numbers. An example might include a question about the amount of fuel required to harvest a pound of shrimp.<sup>57</sup>

Table 7: Overview of Tables with 2007 Financial and Economic (F&E) Results

Table	Fleet	Stat.	Looks at by:	Category Levels
8	Total Fleet	yes	-	-
9	Gulf Shrimp Fleet	yes	-	-
10	Active Gulf Shrimp Fleet	yes	-	-
11	Inactive Gulf Shrimp Fleet	yes	-	-
14	Total Fleet	-	by Fleet by Fishery	Other Fishing Fleet, S. Atlantic Shrimp Fleet, Gulf Shrimp Fleet
15	Total Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas, Other
16	Gulf Shrimp Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas
16	Gulf Shrimp Fleet	-	by Activity Status	Inactive, Active
17	Active Gulf Shrimp Fleet	-	by State	Florida, Alabama and Mississippi, Louisiana, Texas
18	Active Gulf Shrimp Fleet	-	by Refrigeration	Freezer, Ice
18	Active Gulf Shrimp Fleet	-	by Hull Material	Steel, Wood, Fiberglass
19	Active Gulf Shrimp Fleet	-	by Vessel Length	0-49 feet, 50-74 feet, 75-99 feet
20	Active Gulf Shrimp Fleet	-	by Vessel Age	Built: 1968-1979, 1980-1989, 1990-1999, 2000-2007
21	Active Gulf Shrimp Fleet	-	by Landings Volume	0-49,000 lbs, 50,000-99,000 lbs, 100,000-149,000 lbs, 150,000+ lbs
22	Active Gulf Shrimp Fleet	-	by Survey Quality	Medium Quality, High Quality
23	Active Gulf Shrimp Fleet	-	by Ownership Structure	Hired Captain, Owner-Operator
23	Owner-Operated Active Gulf Shrimp Fleet	-	by Captain's Share Structure	without Share, with Share (explicit)

Table 11 reports the averages for inactive Gulf shrimp vessels. The results apply to Gulf shrimp vessels that conducted no commercial fishing, anywhere, in 2007. Due to the limited sample size of this sub-fleet, caution is warranted when interpreting these numbers.

<sup>57</sup> Any extrapolation of results in Table 9 and Table 10 should be done with care! The numbers can definitely not be multiplied by 1,915 (the permitted vessel universe), since many of these vessels are not active Gulf shrimp vessels or even Gulf shrimp vessels. The most appropriate equivalent “population” numbers *might* be 1,809 for Gulf shrimp vessels holding a federal permit (proportional scaling, based on the survey results) and 1,388 for active Gulf shrimp vessels holding a federal permit (based on GSS data; Table 1). A future report will address the extrapolation from the survey numbers to the population in more detail.

The result-tables in Appendix 5 report only the arithmetic mean for each variable. Table 14 reports averages for the total fleet by fishery. Results are also reported for each sub-fleet and by state in Table 15, Table 16, and Table 17.<sup>58</sup> Even within the active Gulf shrimp fleet there is much diversity. To explore the impact this diversity might have on financial and economic performance, results are also reported for different categories of vessels within the active Gulf shrimp fleet. Results are reported by various vessel characteristics (Table 18, Table 19, and Table 20), by landings volume (Table 21), by an indicator of survey quality (Table 22), by ownership structure (Table 23), and by captain's share structure (Table 23).<sup>59</sup> Consult the overview in Table 7 for the reported categories and category levels and the table number of each result-table.

## **2007 Financial and Economic Results for the Sub-Fleets (Summary Statistics)**

This section discusses summary statistics for the total fleet, i.e. for all 505 usable observations in the sample. Discussions for the other three sub-fleets are limited to those results that materially differ from results for the total fleet.

### Total Fleet

We now turn to the summary statistics in Table 8 as reported for the total fleet. According to the sample, the average federal Gulf shrimp moratorium permit holder owns a vessel that is on average 68 feet long, weighs 103 gross tons, is powered by a 502 hp engine(s), and was built in 1986 (23 years old). For the entire population (first column in Table 2), the average federal Gulf shrimp permit holder owns a vessel that is 68 feet long, weighs 102 gross tons, is powered by 507 hp engines, and was built in 1985. As we would expect, these true population values are within the estimated confidence intervals based on the sample. Just under three-quarters of the vessels have steel hulls and a bit over half use freezers in both the sample and full population. Approximately 27% of boats in the sample were from Louisiana compared to 25% in the full population, while 37% of vessels in the sample were from Texas compared to slightly more than 39% in the full population.

The average market value in 2007 for a vessel in the total fleet is \$201,154, about \$68,000 less than the original purchase price. The outstanding loans average \$85,345, leading to an average equity of \$115,809 for the owner. These asset and equity results materially differ from those reported later for the Gulf shrimp fleet. The confidence interval for the average equity is quite broad at fifty-five-thousand dollars, and the reader is reminded that the total fleet encompasses a very diverse set of operations. The median

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<sup>58</sup> The sample size of the inactive Gulf shrimp fleet is too small to justify further dividing it into four state strata.

<sup>59</sup> A survey quality indicator, low, medium, or high, was assigned during the survey processing and data entry based on the overall appearance and internal consistency of the returned survey. Most surveys were assigned to the high quality category (average and better). Surveys that appeared particularly sloppy, rushed, rounded to a high digit, or involving many corrections were assigned a medium quality. Low quality was reserved for a few special cases which were later processed as incomplete surveys.

Table 8: F&E Results: Summary Statistics for the Total Fleet (n=505)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Vessel Characteristics</b>					
Length (feet)	68	16	66	69	69
Gross tons	103	51	98	107	105
Horse power	502	236	481	523	430
Year built	1986	12	1985	1987	1986
Hull material - Steel (%)	72%	-	69%	75%	-
Refrigeration - Freezer (%)	52%	-	49%	56%	-
Fuel capacity (gallons)	13,077	10,335	12,174	13,981	10,000
State - Florida (%)	16%	-	13%	19%	-
State - AL or MS (%)	16%	-	14%	19%	-
State - Louisiana (%)	27%	-	23%	30%	-
State - Texas (%)	37%	-	34%	41%	-
<b>Balance Sheet (end of 2007)</b>					
<b>Assets - Market value of vessel</b>	<b>201,154</b>	<b>318,686</b>	<b>173,292</b>	<b>229,015</b>	<b>120,000</b>
<i>Original value of vessel (at purchase price)</i>	269,489	285,560	244,523	294,455	155,000
<i>Implicit permit value</i>	49,778	248,284	28,071	71,484	10,000
<b>Liabilities - Loan on vessel</b>	<b>85,345</b>	<b>198,412</b>	<b>67,998</b>	<b>102,691</b>	<b>0</b>
<i>% of vessels with loan</i>	46%	-	42%	49%	-
<b>Equity - Owner's equity in vessel</b>	<b>115,809</b>	<b>317,076</b>	<b>88,088</b>	<b>143,530</b>	<b>68,500</b>
<i>Insurance coverage (% of vessels)</i>	39%	-	36%	43%	-
<b>Vessel Operation (2007)</b>					
Actively shrimping (%)	79%	-	76%	82%	-
Owner-operator (%)	47%	-	43%	51%	-
Shrimp landed (pounds)	58,203	55,687	53,335	63,072	46,328
Shrimp price per pound (vessels basis)	2.94	0.88	2.87	3.02	3.00
Annual fuel use (gallons)	34,945	35,682	31,825	38,064	25,882
Fuel price per gallon (vessels basis)	2.45	0.31	2.42	2.47	2.38
Fuel efficiency I (shrimp pounds/gallon)	2.5	2.6	2.2	2.7	1.8
Fuel efficiency II (shrimp revenue/gallon)	6.49	7.00	5.88	7.11	5.20
<b>Cash Flow (2007)</b>					
<b>Inflow - Total</b>	<b>195,839</b>	<b>198,397</b>	<b>178,494</b>	<b>213,184</b>	<b>147,809</b>
Shrimp landings	171,625	168,687	156,878	186,373	126,484
Non-shrimp landings	17,432	123,108	6,669	28,195	0
Government payments received (shrimp related)	6,782	9,369	5,963	7,601	2,273
<b>Outflow - Total</b>	<b>201,620</b>	<b>187,545</b>	<b>185,224</b>	<b>218,017</b>	<b>153,463</b>
Fuel	83,658	84,954	76,231	91,085	60,840
Other supplies	18,515	20,696	16,706	20,325	11,650
Crew & captain (hired)	46,335	59,144	41,164	51,506	32,943
Regular maintenance (vessel and gear)	19,063	38,620	15,686	22,439	12,000
Major repair and haul-out	5,359	21,763	3,456	7,261	0
Overhead (excluding loan payments)	13,899	20,083	12,144	15,655	6,700
Interest payments made (on vessel loans)	5,989	13,468	4,812	7,167	0
Principal payments made (on vessel loans)	8,695	18,826	7,049	10,341	0
New investments and upgrades (in vessel)	107	297	81	133	0
<b>Net Cash Flow</b>	<b>(5,781)</b>	<b>90,013</b>	<b>(13,651)</b>	<b>2,088</b>	<b>(3,370)</b>

Table 8: F&E Results: Summary Statistics for the Total Fleet (n=505), cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	189,057	194,996	172,009	206,105	139,000
<b>Expenses</b>	<b>206,507</b>	<b>187,828</b>	<b>190,086</b>	<b>222,928</b>	<b>164,681</b>
<i>Variable costs - Supplies</i>	<i>49.5%</i>	-	-	-	-
Fuel	40.5%	-	-	-	-
Other supplies	9.0%	-	-	-	-
<i>Variable costs - Labor</i>	<i>25.2%</i>	-	-	-	-
Crew & captain (hired)	22.4%	-	-	-	-
Owner's vessel time	2.7%	-	-	-	-
<i>Fixed costs</i>	<i>25.4%</i>	-	-	-	-
Regular maintenance (vessel and gear)	9.2%	-	-	-	-
Major repair and haul-out	2.6%	-	-	-	-
Depreciation	6.8%	-	-	-	-
Overhead (excluding loan payments)	6.7%	-	-	-	-
<b>Net Revenue from Operations</b>	<b>(17,450)</b>	<b>88,042</b>	<b>(25,147)</b>	<b>(9,752)</b>	<b>(9,711)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	5,989		(see above)		
Government payments received (shrimp related)	6,782		(see above)		
<b>Net Revenue (before taxes)</b>	<b>(16,657)</b>	<b>89,984</b>	<b>(24,524)</b>	<b>(8,790)</b>	<b>(7,868)</b>
<i>Owner's vessel time</i>	5,647	9,180	4,845	6,450	0
<i>Depreciation</i>	14,031	25,833	11,772	16,289	2,590

value for assets, purchase price, and liabilities are far below the mean values, suggesting the presence of large outliers skewing the distribution. The high implicit permit value is likely a reflection of a few respondents with valuable Atlantic scallop permits. The median value of \$10,000 probably is more representative of the Gulf shrimp fishery.

Turning to the average vessel operation in 2007, 79% of the total fleet is actively shrimping for any shrimp, while 77.6% are actively Gulf shrimping (Table 2). This is a bit higher than among the population (73% for Gulf shrimp; see the discussion associated with Table 2 and Table 5). This does not seem like much, but could have an effect on the average revenue numbers and net revenue numbers in particular. Just under half (47%) of the vessels are owner-operated. The average vessel caught 58,203 lbs of shrimp (heads-off) and received \$2.94 per pound. Note that, not listed in the table but easily calculated, the *average pound* was sold for \$2.95, i.e. not averaged across vessels but across all shrimp landings of the total fleet. By the same token, the average gallon of fuel was purchased for \$2.39, while the average vessel paid \$2.45 per gallon. We are fairly confident in this latter mean as the confidence interval has a width of only 5 cents. The median fuel price is \$2.38. The average vessel used 34,945 gallons of fuel and generated

revenue of \$6.49 for each gallon used. Analog to above, the fuel efficiency averaged across all gallons used rather than across vessels was \$4.91, significantly less, and signifying the almost trivial relationship that the inefficient vessels use more fuel per dollar of shrimp landed.

Having looked at the vessel operations, we now turn to the average cash flow and income statements for the total fleet during 2007 (still in Table 8). The average inflow from shrimp landings is \$171,625. On average, non-shrimp landings account for about 9.2% of inflow from commercial fishing. Note that the median for non-shrimp landings is zero, indicating that more than 50% of the fleet receives no cash inflow from other forms of commercial fishing. In contrast, the median government payment inflow is \$2,273, indicating that over 50% of the vessels receive such payments. The average total outflow is \$201,620 of which \$83,658 is due to fuel expenses alone. The median fuel expense is lower at \$60,840. The expense for hired crew and captains is on average \$46,335 which indicates the importance of the industry as a source of wage income. The average net cash flow is negative \$5,781 but has a (very large) standard deviation of \$90,013. This leads to a broad confidence interval ranging from negative \$13,651 to positive \$2,088. Hence we cannot state with 95% certainty that the average net cash flow of the population is different from zero. The median net cash flow is negative \$3,370.

Turning to the income statement, the average total revenue from commercial fishing operations for the total fleet is \$189,057 with a confidence interval of +/- \$17,048. The median is \$139,000. Looking at the percentage break-up of costs, we note that fixed costs account for just over a quarter of operating expenses (25.4%); labor costs account for just over a quarter (25.2%);<sup>60</sup> and the non-labor variable costs for just under half (49.5%). The fuel costs alone accounted for 40.5% of total operating expenses in 2007 at an average price of \$2.45 per gallon. The average net revenue from operations is negative \$17,450, while the average net revenue before taxes (the loss) is negative \$16,657. Both measures of net revenue have very large standard deviations that produce large confidence intervals. But in both cases, we can reject with 95% certainty the possibility that the true means are zero, i.e. we are pretty sure the population average is negative. The medians for both measures of net revenue are well below zero, which indicates that economic costs in 2007 exceeded revenues for well over 50% of the sample. More general financial and economic conclusions for the total fleet will be drawn in the “Key Results” section below.

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<sup>60</sup> As a reminder, this category includes both the actual cash costs for hired labor and, to a lesser degree (~11%), the estimated opportunity cost of owner’s captain’s labor input.

Table 9: F&E Results: Summary Statistics for the Gulf Shrimp Fleet (n=477)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Vessel Characteristics</b>					
Length (feet)	67	16	66	69	69
Gross tons	102	51	97	106	103
Horse power	497	237	476	519	425
Year built	1986	12	1984	1987	1986
Hull material - Steel (%)	72%	-	68%	75%	-
Refrigeration - Freezer (%)	52%	-	48%	56%	-
Fuel capacity (gallons)	13,041	10,355	12,110	13,973	10,000
State - Florida (%)	15%	-	13%	18%	-
State - AL or MS (%)	17%	-	14%	20%	-
State - Louisiana (%)	28%	-	24%	31%	-
State - Texas (%)	39%	-	35%	43%	-
<b>Balance Sheet (end of 2007)</b>					
<b>Assets - Market value of vessel</b>	<b>172,554</b>	<b>168,555</b>	<b>157,389</b>	<b>187,719</b>	<b>120,000</b>
<i>Original value of vessel (at purchase price)</i>	265,548	274,361	240,864	290,232	150,000
<i>Implicit permit value</i>	23,158	43,947	19,205	27,112	8,000
<b>Liabilities - Loan on vessel</b>	<b>78,250</b>	<b>154,735</b>	<b>64,329</b>	<b>92,172</b>	<b>0</b>
<i>% of vessels with loan</i>	45%	-	41%	49%	-
<b>Equity - Owner's equity in vessel</b>	<b>94,304</b>	<b>156,255</b>	<b>80,246</b>	<b>108,362</b>	<b>65,599</b>
<i>Insurance coverage (% of vessels)</i>	37%	-	34%	41%	-
<b>Vessel Operation (2007)</b>					
Actively shrimping (%)	81%	-	78%	84%	-
Owner-operator (%)	48%	-	44%	52%	-
Shrimp landed (pounds)	58,085	52,196	53,389	62,781	48,226
Shrimp price per pound (vessels basis)	2.97	0.88	2.89	3.05	3.04
Annual fuel use (gallons)	34,889	36,178	31,634	38,144	25,804
Fuel price per gallon (vessels basis)	2.44	0.31	2.41	2.47	2.38
Fuel efficiency I (shrimp pounds/gallon)	2.4	2.7	2.2	2.7	1.8
Fuel efficiency II (shrimp revenue/gallon)	6.53	7.11	5.89	7.17	5.20
<b>Cash Flow (2007)</b>					
<b>Inflow - Total</b>	<b>181,582</b>	<b>171,533</b>	<b>166,149</b>	<b>197,015</b>	<b>140,188</b>
Shrimp landings	174,318	167,019	159,291	189,345	130,301
Non-shrimp landings	395	2,791	144	646	0
Government payments received (shrimp related)	6,869	9,389	6,024	7,714	2,363
<b>Outflow - Total</b>	<b>188,206</b>	<b>167,310</b>	<b>173,153</b>	<b>203,258</b>	<b>146,880</b>
Fuel	83,236	85,921	75,506	90,966	60,509
Other supplies	18,035	20,349	16,204	19,865	11,500
Crew & captain (hired)	40,088	39,823	36,505	43,671	30,901
Regular maintenance (vessel and gear)	16,727	19,126	15,006	18,447	11,600
Major repair and haul-out	4,087	8,293	3,341	4,833	0
Overhead (excluding loan payments)	12,121	15,282	10,746	13,496	6,000
Interest payments made (on vessel loans)	5,740	12,502	4,615	6,865	0
Principal payments made (on vessel loans)	8,079	17,590	6,496	9,661	0
New investments and upgrades (in vessel)	94	240	73	116	0
<b>Net Cash Flow</b>	<b>(6,624)</b>	<b>60,687</b>	<b>(12,084)</b>	<b>(1,164)</b>	<b>(3,456)</b>



Table 9: F&E Results: Summary Statistics for the Gulf Shrimp Fleet (n=477), cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	174,713	167,056	159,683	189,743	130,644
<b>Expenses</b>	<b>192,708</b>	<b>167,070</b>	<b>177,676</b>	<b>207,739</b>	<b>156,137</b>
<i>Variable costs - Supplies</i>	<i>52.6%</i>	-	-	-	-
Fuel	43.2%	-	-	-	-
Other supplies	9.4%	-	-	-	-
<i>Variable costs - Labor</i>	<i>23.7%</i>	-	-	-	-
Crew & captain (hired)	20.8%	-	-	-	-
Owner's vessel time	2.9%	-	-	-	-
<i>Fixed costs</i>	<i>23.8%</i>	-	-	-	-
Regular maintenance (vessel and gear)	8.7%	-	-	-	-
Major repair and haul-out	2.1%	-	-	-	-
Depreciation	6.7%	-	-	-	-
Overhead (excluding loan payments)	6.3%	-	-	-	-
<b>Net Revenue from Operations</b>	<b>(17,994)</b>	<b>58,573</b>	<b>(23,264)</b>	<b>(12,725)</b>	<b>(10,460)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	5,740		(see above)		
Government payments received (shrimp related)	6,869		(see above)		
<b>Net Revenue (before taxes)</b>	<b>(16,866)</b>	<b>59,413</b>	<b>(22,211)</b>	<b>(11,520)</b>	<b>(8,119)</b>
<i>Owner's vessel time</i>	<i>5,545</i>	<i>8,924</i>	<i>4,743</i>	<i>6,348</i>	<i>0</i>
<i>Depreciation</i>	<i>12,870</i>	<i>20,897</i>	<i>10,989</i>	<i>14,750</i>	<i>2,377</i>

### Gulf Shrimp Fleet

Removing the 28 non-Gulf shrimp vessels from the 505 vessels in the total fleet has a noticeable impact on the balance sheet values (Table 9).<sup>61</sup> The average asset value drops by about \$29,000 to \$172,554, while average liabilities only drop by about \$7,000 to \$78,250. As a result, the average Gulf shrimper's equity is only \$94,304, over \$21,000 less than for the total fleet. On the other hand, the confidence intervals, while still large, narrow substantially. The implicit permit value among the Gulf shrimp fleet is \$23,158 which is somewhat contradicted by the fact that permits are being allowed to terminate by their owners (in 2009, at the writing of this report). The median value of \$8,000 is closer to the anecdotal amount of about \$5,000 for a federal Gulf shrimp permit.

Focusing solely on the 477 Gulf shrimp vessels has little relevant qualitative and minimal quantitative effect on the rest of the financial and economic results discussed in the context of the total fleet. The only significant difference is the much lower average cash inflow from non-shrimp landings. The average cash inflow from non-shrimp landings for

<sup>61</sup> Table 14 in Appendix 5 also provides a side by side comparison of the means for the different sub-fleets, at the expense of the other summary statistics.

the Gulf shrimp fleet (\$395) is less than a quarter of one percent of the total revenue from commercial fishing; much less than the 9.2% for the total fleet. The Gulf shrimp fleet of 477 vessels generates an average net cash flow of negative \$6,624; just \$843 less than for the total fleet. Yet in contrast to the total fleet the upper bound of the confidence interval is below zero for the Gulf shrimp fleet, and hence we can state with 95% certainty that the average Gulf shrimper has a negative cash flow.

For the Gulf shrimp fleet, fuel and other variable costs comprise a slightly larger percentage of total costs, while labor costs and fixed costs comprise slightly smaller percentages than for the total fleet. Accounting for all costs leads to average net revenue from operations of negative \$17,994 and net revenue (before taxes) of negative \$16,866 (the “loss”). The confidence intervals for these net-values are each about \$5,000 tighter than those for the total fleet and entirely below zero. Again, we can state with 95% certainty that these average net-values are negative for the Gulf shrimp fleet. The median net revenues barely differ for the two fleet definitions. To sustain such losses and especially to survive the negative cash flow---if that is what they are doing---many of the owners must be subsidizing their shrimp vessels with the help of other sources of income or wealth.

#### Active Gulf Shrimp Fleet

The active Gulf shrimp fleet of 388 vessels excludes about 23% of the 505 vessels that comprise the total fleet and about 19% of the 477 vessels that comprise the Gulf shrimp fleet. In this case, it is somewhat more surprising than in the last section that the results are quite similar, definitely from a qualitative perspective. This finding indicates that the results are robust with respect to noise and outliers in the data, and confirms our belief in the overall validity of the numbers. Again, we will only point out the differences rather than discuss all results.<sup>62</sup>

The average vessel in the active Gulf shrimp fleet (Table 10) is somewhat larger both physically and “economically” than the average vessel in the total Gulf shrimp fleet. The average asset value is more than \$13,000 larger, while the average liabilities are about \$16,000 larger. As a result, the average equity of \$92,041 for the active fleet is actually about \$2,000 less than for the total Gulf shrimp fleet. Oddly, the confidence interval is wider for the more homogeneous active Gulf shrimp fleet, implying a higher variation in owner’s equity. Active Gulf shrimp vessels are slightly more likely to have a loan (51% vs. 45%) and insurance (45% vs. 37%). The shrimp landings for the average active Gulf shrimp vessel are 71,380 pounds, and the median is 66,186 pounds.<sup>63</sup> As would be expected after excluding inactive vessels, both measures of shrimp production are substantially higher than for the total Gulf shrimp fleet. Average annual fuel use among active Gulf shrimp vessels is 42,841 gallons; about 7,952 gallons more than for the total Gulf shrimp fleet.

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<sup>62</sup> Table 16 in Appendix 5 provides a side by side comparison of the means, at the expense of the other summary statistics.

<sup>63</sup> For those looking for inconsistencies, note that the slight difference between the average shrimp price here and in Table 1 is due to the focus on just Gulf shrimp landings in that table.

Table 10: F&E Results: Summary Statistics for the Active Gulf Shrimp Fleet (n=388)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Vessel Characteristics</b>					
Length (feet)	70	15	68	71	72
Gross tons	108	49	103	113	113.5
Horse power	527	244	502	551	464
Year built	1987	11	1986	1988	1987
Hull material - Steel (%)	78%	-	74%	81%	-
Refrigeration - Freezer (%)	58%	-	54%	62%	-
Fuel capacity (gallons)	14,086	10,341	13,054	15,119	12,000
State - Florida (%)	14%	-	11%	17%	-
State - AL or MS (%)	17%	-	14%	20%	-
State - Louisiana (%)	28%	-	24%	32%	-
State - Texas (%)	40%	-	36%	45%	-
<b>Balance Sheet (end of 2007)</b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>164,368</b>	<b>169,614</b>	<b>202,427</b>	<b>150,000</b>
<i>Original value of vessel (at purchase price)</i>	299,193	285,155	270,731	327,656	187,750
<i>Implicit permit value</i>	22,308	39,577	18,357	26,258	8,000
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>166,912</b>	<b>77,320</b>	<b>110,640</b>	<b>0</b>
<i>% of vessels with loan</i>	51%	-	47%	55%	-
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>153,521</b>	<b>76,717</b>	<b>107,364</b>	<b>74,434</b>
<i>Insurance coverage (% of vessels)</i>	45%	-	41%	49%	-
<b>Vessel Operation (2007)</b>					
Actively shrimping (%)	100%	-	100%	100%	-
Owner-operator (%)	49%	-	44%	53%	-
Shrimp landed (pounds)	71,380	49,001	66,489	76,271	66,186
Shrimp price per pound (vessels basis)	2.99	0.87	2.90	3.07	3.05
Annual fuel use (gallons)	42,841	35,637	39,284	46,398	36,878
Fuel price per gallon (vessels basis)	2.43	0.30	2.40	2.46	2.37
Fuel efficiency I (shrimp pounds/gallon)	2.4	2.6	2.2	2.7	1.8
Fuel efficiency II (shrimp revenue/gallon)	6.52	7.09	5.82	7.23	5.20
<b>Cash Flow (2007)</b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>164,547</b>	<b>206,329</b>	<b>239,178</b>	<b>185,119</b>
Shrimp landings	214,256	160,436	198,242	230,270	178,121
Non-shrimp landings	451	3,065	145	757	0
Government payments received (shrimp related)	8,046	9,784	7,070	9,023	4,726
<b>Outflow - Total</b>	<b>228,721</b>	<b>159,711</b>	<b>212,779</b>	<b>244,662</b>	<b>204,032</b>
Fuel	102,199	84,542	93,760	110,637	87,512
Other supplies	22,105	20,493	20,059	24,150	15,210
Crew & captain (hired)	49,268	38,700	45,405	53,131	43,887
Regular maintenance (vessel and gear)	19,480	19,546	17,529	21,431	13,765
Major repair and haul-out	4,702	8,827	3,821	5,583	0
Overhead (excluding loan payments)	14,277	15,996	12,681	15,874	9,119
Interest payments made (on vessel loans)	6,891	13,546	5,539	8,243	0
Principal payments made (on vessel loans)	9,698	19,073	7,794	11,602	0
New investments and upgrades (in vessel)	102	245	77	126	0
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>66,499</b>	<b>(12,605)</b>	<b>670</b>	<b>(3,879)</b>

Table 10: F&E Results: Summary Statistics for the Active Gulf Shrimp Fleet , cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	214,707	160,408	198,696	230,718	178,121
<b>Expenses</b>	<b>234,340</b>	<b>157,874</b>	<b>218,582</b>	<b>250,098</b>	<b>209,345</b>
<i>Variable costs - Supplies</i>	<i>53.0%</i>	-	-	-	-
Fuel	43.6%	-	-	-	-
Other supplies	9.4%	-	-	-	-
<i>Variable costs - Labor</i>	<i>23.9%</i>	-	-	-	-
Crew & captain (hired)	21.0%	-	-	-	-
Owner's vessel time	2.9%	-	-	-	-
<i>Fixed costs</i>	<i>23.0%</i>	-	-	-	-
Regular maintenance (vessel and gear)	8.3%	-	-	-	-
Major repair and haul-out	2.0%	-	-	-	-
Depreciation	6.6%	-	-	-	-
Overhead (excluding loan payments)	6.1%	-	-	-	-
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>64,120</b>	<b>(26,033)</b>	<b>(13,233)</b>	<b>(15,274)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891		(see above)		
Government payments received (shrimp related)	8,046		(see above)		
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>64,923</b>	<b>(24,958)</b>	<b>(11,997)</b>	<b>(13,089)</b>
<i>Owner's vessel time</i>	<i>6,790</i>	<i>9,463</i>	<i>5,845</i>	<i>7,734</i>	<i>0</i>
<i>Depreciation</i>	<i>15,520</i>	<i>22,238</i>	<i>13,301</i>	<i>17,740</i>	<i>4,409</i>

The average revenue from shrimp landings is \$214,256, and the median is \$178,121. Both measures are more than \$40,000 larger than for the total Gulf shrimp fleet. The medians for all cost categories are larger among the active Gulf shrimp fleet (except for where they remain zero). This is logical when we consider that the active Gulf shrimp fleet excludes 89 inactive vessels with no or low costs in many categories. The median government payment rises to \$4,726 compared to \$2,363 for the total Gulf shrimp fleet. Average fuel costs of \$102,199 are \$18,963 more than for the total Gulf shrimp fleet. The average net cash flow is marginally better at negative \$5,967 for the active Gulf shrimp fleet vs. negative \$6,624 for the total Gulf shrimp fleet. Unlike for the total Gulf shrimp fleet, we cannot reject with 95% confidence that the true population mean is zero for the active fleet.

Finally, turning to the income statement, the average revenue from commercial fishing mirrors the revenue from shrimp landings due to the minimal contribution to revenue by non-shrimp landings. We note that the percentages of total cost for variable costs, labor costs, and fixed costs are essentially the same as for the total fleet, but that total expenses are higher leading to a negative net cash flow from operations. Because the upper bound

of the 95% confidence interval is negative, the mean of negative \$19,633 is statistically different and less than zero. With a median of negative \$15,274, a majority of vessels generate negative net revenue from operations. The numbers for average net revenue (before taxes) are very similar. As a last remark, we mention that the average estimated value of the owner's vessel time is \$6,790 for the active Gulf shrimp fleet. Taking account of the fact that only 49% of these vessels are owner-operated, the average labor contribution (as captain) of an owner-operator is valued at only about \$13,900.

### Inactive Gulf Shrimp Fleet

Table 11 reports the averages for inactive Gulf shrimp vessels. The results apply to vessels that conducted no fishing in 2007, i.e. were idle or broken. Due to the limited sample size of this sub-fleet, caution interpreting the numbers is warranted. Instead of comparing the inactive fleet with the total fleet, we will compare the results of the inactive Gulf shrimp fleet with the active one.<sup>64</sup> In the next section, this comparison will be conducted for the key financial and economic results, and hence they will not be discussed here. We concentrate on the differences in the average vessel characteristics and among the individual cost categories in the financial statements.

The average inactive Gulf shrimp vessel is generally of a different scale than the average active vessel. The average inactive vessel is 12 feet shorter, weighs 35 gross tons less, and is 9 years older. Less than half have steel hulls compared to 78% with steel hulls among active vessels, and less than 27% use freezers compared to 58% among active vessels. Inactive Gulf shrimp vessels are more likely to be from Florida and much less likely from Texas than active vessels. Owner-operators are less frequent (45% for inactive vessels vs. 49% for active vessels). As would be expected, the vessel market value and purchase price are significantly less than for the active fleet. But since liabilities are much lower as well (only \$9,676), the average owner's equity is actually substantially larger for the inactive than for the active Gulf shrimp fleet (\$104,171 vs. \$92,041). Oddly, the implicit value associated with the shrimp permit is somewhat larger among the inactive group, though the median is less.

In the cash flow, the largest cash inflow is government payments at an average of \$1,736, while cash outflow averages \$11,578. The largest cost categories are maintenance (\$4,725), overhead (\$2,721), major repair or haul-out (\$1,406), and principal payments (\$1,017). Fixed costs account for over 90% of the total operating costs compared to 23% for active Gulf shrimp vessels. Vessels in the inactive Gulf shrimp fleet have average net revenue from operations of negative \$10,853, with an average loss before taxes of \$9,841 (Table 11). With an average net cash flow of negative \$9,485, the inactive Gulf shrimp fleet has a major liquidity problem. The upper bounds of the confidence intervals for each of the net-values are negative, indicating that each mean is significantly lower than zero in spite of the small sample size. The medians are negative as well. To sustain such losses and especially to survive the negative cash flow---if that is what they are doing---many of the owners must be subsidizing their shrimp vessels with the help of other source of income or wealth sources.

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<sup>64</sup> Table 16 in Appendix 5 provides a side by side comparison of the means, at the expense of the other summary statistics.

Table 11: F&E Results: Summary Statistics for the Inactive Gulf Shrimp Fleet (n=89)

(in USD or unless noted)	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Vessel Characteristics</b>					
Length (feet)	58	17	54	61	65
Gross tons	73	46	64	83	87
Horse power	369	153	336	401	365
Year built	1978	14	1975	1981	1979
Hull material - Steel (%)	46%	-	37%	55%	-
Refrigeration - Freezer (%)	27%	-	19%	35%	-
Fuel capacity (gallons)	8,486	9,160	6,557	10,416	7,000
State - Florida (%)	20%	-	13%	28%	-
State - AL or MS (%)	16%	-	9%	23%	-
State - Louisiana (%)	28%	-	20%	36%	-
State - Texas (%)	33%	-	24%	41%	-
<b>Balance Sheet (end of 2007)</b>					
<b>Assets - Market value of vessel</b>	<b>113,847</b>	<b>174,867</b>	<b>77,011</b>	<b>150,683</b>	<b>60,000</b>
<i>Original value of vessel (at purchase price)</i>	118,868	151,064	87,046	150,690	72,500
<i>Implicit permit value</i>	26,993	60,045	14,345	39,642	6,000
<b>Liabilities - Loan on vessel</b>	<b>9,676</b>	<b>33,812</b>	<b>2,554</b>	<b>16,799</b>	<b>0</b>
<i>% of vessels with loan</i>	18%	-	11%	25%	-
<b>Equity - Owner's equity in vessel</b>	<b>104,171</b>	<b>168,216</b>	<b>68,736</b>	<b>139,606</b>	<b>55,500</b>
<i>Insurance coverage (% of vessels)</i>	4%	-	1%	8%	-
<b>Vessel Operation (2007)</b>					
Actively shrimping (%)	0%	-	0%	0%	-
Owner-operator (%)	45%	-	36%	54%	-
Shrimp landed (pounds)	124	521	14	233	0
Shrimp price per pound (vessels basis)	2.11	1.07	1.88	2.33	1.81
Annual fuel use (gallons)	222	683	78	365	0
Fuel price per gallon (vessels basis)	2.64	0.42	2.55	2.73	2.58
Fuel efficiency I (shrimp pounds/gallon)	-	-	-	-	-
Fuel efficiency II (shrimp revenue/gallon)	-	-	-	-	-
<b>Cash Flow (2007)</b>					
<b>Inflow - Total</b>	<b>2,093</b>	<b>5,105</b>	<b>1,018</b>	<b>3,168</b>	<b>0</b>
Shrimp landings	206	815	35	378	0
Non-shrimp landings	151	859	(30)	332	0
Government payments received (shrimp related)	1,736	4,808	723	2,749	0
<b>Outflow - Total</b>	<b>11,578</b>	<b>21,196</b>	<b>7,113</b>	<b>16,043</b>	<b>3,370</b>
Fuel	567	1,738	201	933	0
Other supplies	291	1,182	42	540	0
Crew & captain (hired)	65	349	(8)	139	0
Regular maintenance (vessel and gear)	4,725	10,927	2,423	7,026	0
Major repair and haul-out	1,406	4,518	454	2,357	0
Overhead (excluding loan payments)	2,721	5,294	1,606	3,837	0
Interest payments made (on vessel loans)	724	2,680	159	1,289	0
Principal payments made (on vessel loans)	1,017	3,423	296	1,738	0
New investments and upgrades (in vessel)	62	216	16	108	0
<b>Net Cash Flow</b>	<b>(9,485)</b>	<b>21,541</b>	<b>(14,023)</b>	<b>(4,947)</b>	<b>(3,044)</b>

Table 11: F&E Results: Summary Statistics for the Inactive Gulf Shrimp Fleet , cont.

	Mean	Standard Deviation	95% Confidence Interval		Median
			Lower	Upper	
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	357	1,167	111	603	0
<b>Expenses</b>	<b>11,210</b>	<b>20,307</b>	<b>6,932</b>	<b>15,487</b>	<b>3,370</b>
<i>Variable costs - Supplies</i>	<i>7.7%</i>	-	-	-	-
Fuel	5.1%	-	-	-	-
Other supplies	2.6%	-	-	-	-
<i>Variable costs - Labor</i>	<i>1.7%</i>	-	-	-	-
Crew & captain (hired)	0.6%	-	-	-	-
Owner's vessel time	1.1%	-	-	-	-
<i>Fixed costs</i>	<i>90.7%</i>	-	-	-	-
Regular maintenance (vessel and gear)	42.1%	-	-	-	-
Major repair and haul-out	12.5%	-	-	-	-
Depreciation	11.7%	-	-	-	-
Overhead (excluding loan payments)	24.3%	-	-	-	-
<b>Net Revenue from Operations</b>	<b>(10,853)</b>	<b>20,341</b>	<b>(15,138)</b>	<b>(6,568)</b>	<b>(3,370)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	724		(see above)		
Government payments received (shrimp related)	1,736		(see above)		
<b>Net Revenue (before taxes)</b>	<b>(9,841)</b>	<b>22,272</b>	<b>(14,532)</b>	<b>(5,149)</b>	<b>(3,044)</b>
<i>Owner's vessel time</i>	121	587	(2)	245	0
<i>Depreciation</i>	1,314	4,616	341	2,286	0

## Comparison of Key Results across Fleets and Categories

Table 12 pulls together the key financial averages broken down by various categories within each fleet. Each row presents results for one category of vessel within a specific fleet, with tabulated entries from the corresponding result-table. Table 12 lists the number of observations in each category, the estimated average total assets per vessel, average total equity, average net cash flow, average net revenue from operations, and average net revenue before taxes, further referred to as “profit” or “loss.” All numbers are expressed in thousands of dollars and rounded off to the nearest thousand.

The final two columns in Table 12 are simple measures of return. The economic return is calculated by dividing net revenue from operations by the value of total assets. Economic return quantifies the fundamental or primary productivity/economic efficiency of the shrimp production activity. In the abstract, from a societal perspective, an economic activity is only worth undertaking if its economic return exceeds the true cost of capital. In contrast, the return on equity is the primary concern of the individual owner. The return on equity is calculated by dividing the “profit” by the total equity currently

invested by the owner.<sup>65</sup> This measure describes the actual profitability of the investment for the owner, and undertaking the economic activity is reasonable only if the return on equity exceeds the return his financial capital could have generated elsewhere.<sup>66</sup> Both measures of return are expressed as percentages. Negative values are enclosed in parentheses.

The general conclusion of Table 12 is that the financial and economic situation continues to be very bleak for the average vessels in the total fleet, the Gulf shrimp fleet, and the active Gulf shrimp fleet, as well as for the average vessels in most of the various categories within these fleets. Unlike in 2006, we find that most categories have a negative cash flow, and the net revenue from operations and the profit dropped further within the negative range for basically all categories of Gulf shrimping.

The only Gulf shrimp sub-fleets that still managed a positive average cash flow in 2007 included the Louisiana fleet, the owner-operated fleet, vessels with average shrimp landings of at least 150,000 lbs, and, barely, vessels using ice and vessels smaller than 50 feet. We would generally expect to find a positive cash flow. Commercial operations with a negative cash flow face an imminent liquidity problem. Unless they have access to some outside sources of cash, they will be unable to pay their bills, become insolvent and forced into bankruptcy, eventually to sell or lose their vessel and permit. Finding negative cash flows for nearly all groups is a testament to the extremely difficult economic environment the industry finds itself in. For some categories of vessels, including those from Texas (negative \$13,000 to \$16,000), those using freezers (negative \$12,000), those built in the 1990s (negative \$17,000), and those operated by hired captains (negative \$22,000), the negative cash flow is so large it raises questions about the validity of the numbers. On the other hand, if these numbers correctly reflect reality, we would expect a further dramatic decline in effort and landings in 2008. This seems to be what the preliminary catch and effort data for 2008 are showing.

The average net revenue from operations is negative in all cases in 2007, except for the other fish fleet not catching shrimp and for a small group of vessels landing over 150,000 pounds of shrimp (a category that is inherently biased toward high liners). Hence, the average economic return to shrimping is also less than zero for all but these two groups, and the fundamentals of the industry are in doubt. Government payments just offset financing costs (interest payments) and as a result “losses” (net revenue before taxes) generally mirror the negative net revenue from operations. Overall, an average return on equity of about negative 10% on the substantial financial (and entrepreneurial) capital invested in the average shrimping enterprise will lead to rapid consolidation and shrinking of the industry.

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<sup>65</sup> An alternative measure of return on equity could compare the profit to the total equity *actually* invested at the time of the vessel purchase. In a setting of irreversible investments and ill-functioning capital markets this measure might be more meaningful than the one reported, which is more analytically pure, but presents its own problems and biases. The reader is encouraged to calculate his preferred measure.

<sup>66</sup> It should be noted that, for owner-operators, the investment in a vessel might function more like an investment in education, enabling an employment opportunity that pays a higher wage than could otherwise be gotten. In this case, the return on equity might be a less important measure than the captain’s compensation.



Table 12: Overview of 2007 Financial and Economic (F&amp;E) Results (thousand dollars)

	Table #	# of Obs.	Assets	Equity	Net Cash Flow	Net Rev. from Operations	"Profit" - Net Revenue (before taxes)	Economic Return	Return on Equity
<b>Total Fleet</b>	<b>8</b>	<b>505</b>	<b>201</b>	<b>116</b>	<b>(6)</b>	<b>(17)</b>	<b>(17)</b>	<b>(9%)</b>	<b>(14%)</b>
by Other Fish	14	14	1,164	891	118	100	90	9%	10%
S. Atlantic Shrimp	"	13	202	61	(11)	(30)	(29)	(15%)	(47%)
Gulf Shrimp	"	477	173	94	(7)	(18)	(17)	(10%)	(18%)
by Florida	15	81	123	69	(7)	(16)	(15)	(13%)	(22%)
Alabama and Mississippi	"	83	245	138	(5)	(24)	(18)	(10%)	(13%)
Louisiana	"	134	166	96	5	(13)	(11)	(8%)	(11%)
Texas	"	188	157	73	(13)	(18)	(19)	(11%)	(27%)
Other	"	19	1,026	778	(8)	(20)	(32)	(2%)	(4%)
<b>Gulf Shrimp Fleet</b>	<b>9</b>	<b>477</b>	<b>173</b>	<b>94</b>	<b>(7)</b>	<b>(18)</b>	<b>(17)</b>	<b>(10%)</b>	<b>(18%)</b>
by Florida	16	73	113	69	(9)	(17)	(16)	(15%)	(23%)
Alabama and Mississippi	"	81	247	139	(4)	(24)	(18)	(10%)	(13%)
Louisiana	"	133	167	97	5	(13)	(11)	(8%)	(11%)
Texas	"	186	158	73	(14)	(19)	(20)	(12%)	(28%)
by Inactive (Table 11 as well)	16	89	114	104	(9)	(11)	(10)	(10%)	(9%)
Active	"	388	186	92	(6)	(20)	(18)	(11%)	(20%)
<b>Active Gulf Shrimp Fleet</b>	<b>10</b>	<b>388</b>	<b>186</b>	<b>92</b>	<b>(6)</b>	<b>(20)</b>	<b>(18)</b>	<b>(11%)</b>	<b>(20%)</b>
by Florida	17	55	136	78	(7)	(17)	(17)	(12%)	(21%)
Alabama and Mississippi	"	67	254	123	(3)	(27)	(19)	(11%)	(16%)
Louisiana	"	108	189	105	6	(15)	(13)	(8%)	(12%)
Texas	"	157	173	74	(16)	(21)	(23)	(12%)	(31%)
by Freezer	18	225	251	102	(12)	(25)	(26)	(10%)	(26%)
Ice	"	153	99	80	2	(13)	(8)	(13%)	(10%)
by Steel	18	302	217	100	(6)	(21)	(21)	(10%)	(21%)
Wood	"	33	58	53	(2)	(12)	(7)	(21%)	(14%)
Fiberglass	"	51	89	72	(6)	(14)	(12)	(16%)	(17%)
by < 50 feet	19	48	67	60	2	(9)	(6)	(14%)	(9%)
< 75 feet	"	169	115	93	(5)	(16)	(12)	(14%)	(13%)
<100 feet	"	171	289	100	(9)	(26)	(28)	(9%)	(28%)
by 1968+	20	106	89	70	(3)	(12)	(9)	(14%)	(12%)
1980+	"	118	125	92	(2)	(14)	(9)	(11%)	(10%)
1990+	"	83	250	134	(17)	(30)	(30)	(12%)	(22%)
2000+	"	72	374	82	(5)	(29)	(36)	(8%)	(44%)
by < 50k lbs	21	155	91	74	(19)	(29)	(26)	(32%)	(35%)
<100k lbs	"	135	180	95	(13)	(28)	(26)	(15%)	(28%)
<150k lbs	"	70	328	134	10	(4)	(7)	(1%)	(6%)
>150k lbs	"	28	384	75	63	34	34	9%	46%
by Hired Captain	23	199	202	97	(22)	(28)	(27)	(14%)	(28%)
Owner-Operator	"	189	169	87	11	(11)	(9)	(6%)	(10%)

Looking more closely at the rows in Table 12 for the total fleet, we note the much higher average asset value for the other fish fleet compared to the shrimp fleets. Because the other fish fleet's owners' average equity is also so much higher, high net revenue numbers (around \$100,000) still only lead of a 10% return on equity. Some of these vessels are active in the currently very lucrative Atlantic scallop fishery.<sup>67</sup>

In 2006, the S. Atlantic shrimp fleet generated an economic return of 25% in contrast with the negative return of 5% generated by the Gulf shrimp fleet. In 2007, the performance of the S. Atlantic shrimp fleet is equal to or worse than the Gulf shrimp fleet's.<sup>68,69</sup> It should be noted that the small sample sizes of the other fish and S. Atlantic shrimp fleets argues for interpreting their numbers as very rough "ballpark" indicators rather than exact numbers. More importantly still, our sample is not representative of all vessels that participated in these other fisheries.

Looking at the rows in Table 12 for the Gulf shrimp fleet, we compare the active and inactive Gulf shrimp vessels. We immediately notice the substantially smaller assets among the inactive fleet and the much lower dependence on loans (as implied by the higher equity relative to assets).<sup>70</sup> The inactive vessels generate an average negative cash flow of about \$9,000 compared to a negative cash flow of about \$6,000 among the active vessels. Once all costs are included, both fleets incur substantial losses from operations, negative \$11,000 for the average inactive vessel and negative \$20,000 for the average active vessel. The average inactive vessel incurs a loss before taxes of about \$10,000, which amounts to a negative 9% return on equity, while the average active vessel loses about \$18,000, which amounts to a negative 20% return on equity. To sustain such losses and especially to survive the negative cash flow, the owners of these vessels must be subsidizing their shrimp vessels with the help of other income sources or are consuming their equity at an unprecedented rate (negative returns are also unsustainable).

When looking at differences among states for active Gulf shrimp vessels, Table 12 indicates that the average vessel in all states exhibited negative rates of return in 2007. Louisiana vessels are the only ones that report an average positive cash flow of \$6,000. As a result, they have the "highest" average returns of the states, with a negative 8% economic return and negative 12% return on equity. The Alabama and Mississippi fleets (which are reported jointly due to small sample sizes) have the highest assets on average. Yet they generate negative \$27,000 net revenue from operations, the highest among all the states. Due to high government payments the Alabama and Mississippi fleets "only" have a negative 16% return on equity. Florida and Texas vessels have negative cash flows of \$7,000 and \$16,000, respectively. Due to their high leverage ratios, each state's

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<sup>67</sup> See Amendment 11 to the Atlantic Sea Scallop Fishery Management Plan at <http://www.nefmc.org/scallops/index.html> for more information on this topic.

<sup>68</sup> The probably unreasonably low return to equity, negative 47%, is a result of the very high leverage ratio among the 13 vessels in the 2007 S. Atlantic shrimp fleet.

<sup>69</sup> A valid comparison of the S. Atlantic and Gulf shrimp fisheries will have to wait until this survey is expanded to properly include the S. Atlantic shrimp fishery.

<sup>70</sup> Leverage with respect to businesses is usually defined as the ratio of loans to equity (or assets).

negative 12% economic return is amplified into a negative 21% and negative 31% return on equity, respectively.

The relative performance of vessel categories in Table 12 based on vessel characteristics among the active Gulf shrimp fleet continues to defy simple explanation. In 2006, less modern vessels using ice, vessels with hulls made of wood or fiberglass, vessels smaller than 75 feet, and vessels older than 18 years generally generated a higher economic return than their more modern, ferrous, larger, and younger counterparts. We hypothesized that the latter vessels were less profitable in an economic environment characterized by high fuel costs and low shrimp prices. In contrast to 2006, in 2007 the newer, larger vessels with freezers and steel hulls on average exhibited a higher---less negative---economic return than the less modern ones. Since the shrimp price improved in 2007, this might have been to the advantage of the larger scale vessels focused on volume production. Yet the “improvement” is only relative, i.e. in absolute terms the performance in all vessel categories deteriorated in 2007. Finally, the performance picture reverses again when return to equity is considered. Since the leverage level increases with the vessel scale, the modern, larger scale vessels exhibit the worst return on equity.<sup>71</sup>

Vessels were categorized by volume of shrimp landed in 2007 as follows: less than 50 thousand pounds, from 50 thousand to 100 thousand pounds, from 100 thousand to 150 thousand pounds, and more than 150 thousand pounds. Cash flow, net revenue from operations, net revenue (before taxes), economic return, and return on equity all improve as the volume of shrimp catch increases (Table 12). For the highest volume vessels the measures even turn positive. The group of vessels landing more than 150 thousand pounds consists of the largest operations and high-liners and has the highest average assets and the lowest equity, i.e. they are among the most leveraged vessels. The positive economic return of 9% is thus amplified into a 46% return on equity. Further, over 50% of their total expenses were for fuel, and 71% were owner-operated (Table 21). In 2007, only 28 vessels made it into this category (in contrast to 72 in 2006) and hence the results should be interpreted with caution.

Table 12 also reports financial results for vessels operated by the owner (representing 49% of the sample) and those operated by hired captains (51% of the sample). Reference to the more detailed standardized information in Table 23 reveals that vessels with hired captains are somewhat larger and more powerful, more expensive and valuable, generate more revenue and costs, and occur much more frequently in Texas. Owner-operators exhibit substantially higher net cash flow (positive \$11,133 vs. negative \$22,208) since they have crew costs of only \$37,130 compared to \$60,796 by vessels with hired captains. This is not surprising as the latter payments include the compensation of the captain, while the former does not. Yet we estimated that the owner contributes only \$13,938 worth of his time as captain. As a result, the large discrepancy does not disappear when looking at the net revenue and return results. Owner-operated vessels generated a negative 6% economic return and negative 10% return on equity compared to

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<sup>71</sup> Details on the various categories can be found in Table 18 about hull construction and refrigeration, in Table 19 about vessel size, and in Table 20 about age of vessel.

hired captain vessels' negative 14% and negative 28%, respectively. Even if we somewhat underestimated the time value of owner operators (see below), the central result remains that on average in 2007 owner-operated vessels did less bad than vessels with hired captains.

The last two columns of Table 23 consider the financial results for owner-operated vessels where the owner is not explicitly compensated for working as the captain and for vessels that reported paying a captain's share to the owner. Overall, the two groups exhibit similar vessel characteristics. Yet differences in operations translate into differences in the financial situations. Vessels that paid a captain's share to the owner-operator are more frequently from Florida and---while catching the same amount of shrimp---did so with less fuel and were able to sell the shrimp at a higher price. On the other hand, they also had higher crew cost and spent more on maintenance. Nonetheless, they had a cash flow of \$16,368; \$7,119 more than the vessels which did not explicitly pay the owner a captain's share.

Once we account for all costs---especially for the value of the captain's labor---the difference in the financial results somewhat narrows. Average net revenue from operations for vessels which did not explicitly pay the owner a captain's share was negative \$11,808; \$3,429 less than for vessels which pay a share. This difference might be larger, since we might be underestimating the value of the owner-operator's time spent as captain for those not explicitly being paid a share. We estimated an average captain's salary of \$12,543 for vessels that did not explicitly pay a captain's share, whereas vessels that paid a captain's share to the owner-operator reported an average payment of \$17,816.<sup>72</sup> If we had simply used the average from the vessels with an explicit share instead of estimating it with a regression approach, the net revenue numbers for the vessels without an explicit share would deteriorate by a further \$5,000. This would exacerbate the difference between the financial results of the two groups. For now, we decided to keep the approach we used in 2006 to maintain comparability, but we will have to reevaluate our approach in future years.

The reader is encouraged to explore the above mentioned differences in more detail by going to the respective result-table. See the overview in Table 7 for the appropriate result-table. The first column in Table 7 also gives the table number for each sub-group of vessels. It should be noted that the tabulated results are averages and hence hide the variation that clearly exists within all fleets. The large standard errors in the tables with summary statistics make this clear. Many vessels are profitable, but many others are not.

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<sup>72</sup> Both the actual and estimated average values for the owner's vessel time are lower in 2007 compared to 2006. In both years, the average estimated values are about \$5,000 less than the average actual values.

## Comments by Respondents

Many written comments were received together with the survey instrument. Of the comments about the status and future of the Gulf shrimp industry the large majority communicate a very negative situation and outlook. The foremost concern among all comments about the fishery was the high price of fuel, probably due in part to the very high fuel price at the time of the survey's implementation (March – August, 2008). This was followed closely by the concern about the low price of shrimp, frequently blamed on imports. Concern about regulation was much less frequent, indicating the preeminence of the current economic problems. A number of respondents indicated they left the shrimp fishery to work in the oil sector (with and without their vessels). Figure 4 below, received as a comment, illustrates the content and feeling of most comments (both written and verbal) concerning the state of the Gulf shrimp fishery.

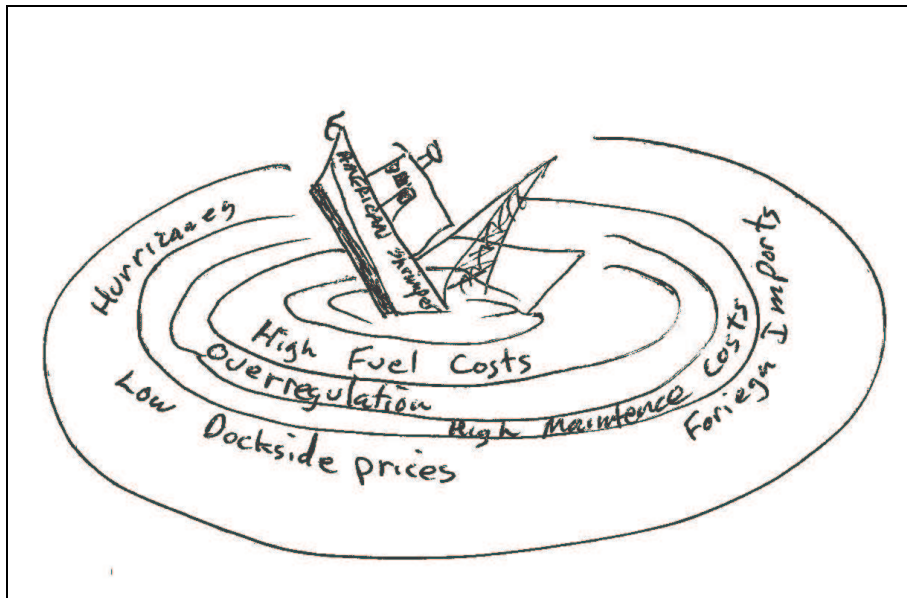


Figure 4: Comment on the state of the Gulf shrimp fishery (source: J. D. Passwater)

The disappointment and hopelessness felt by many in the industry is also apparent in the selected examples of comments below (edited for clarity):

“[I] could not afford to operate [the boat]; it sat and deteriorated.”

“The problem is all the commercial dockage has been sold out to pleasure [boats]; there is no ice; and no place to sell shrimp; ...”

“We could not afford insurance in 2007. If something is not done, most boats will be under this year.”

“I really don’t know what will happen this year with fuel prices nearing \$4. I’m 32 years of age and have had my boat since 1996. It’s all I know, I just hope I can continue to do what I love. Not get rich and don’t want pity. Just feed my family and make an honest living.”

“Please help the boats that are left. Our family has been in seafood since 1940. I think 2008 or 2009 might be the end.”

“My prediction [is that] you are looking at an end to an old fishing industry. You might even have to lay off some of your [government] personnel. There will be no catch to count.”

“I don’t think anyone in their right mind would buy a shrimp boat these days, so the market value would probably be zero.”

“It has become impossible now to make a living at [shrimping].”

“It seems this survey is late. Any help for the shrimpers should have come sooner. If you haven’t noticed, most shrimpers in the Florida Gulf have already been forced to quit for economic reasons. After shrimping as a boat owner for 23 years, I can’t make a living anymore.”

“The domestic shrimp industry is over and it has nothing to do with over-fishing. [] Where was NMFS while the shrimpers slowly went bankrupt?”

“I started shrimping in 1975. This has been the biggest decline in shrimping I have ever seen.”

“I am just about out of business because of all the implications by our government, NMFS, fuel prices, shrimp prices. My boys love the fishery but they cannot take over because there is no future in the shrimp fisheries!”

“[The management of the fishery] does not seem to give adequate thought of how to bring new blood into the business.”

## **5. Comparison of Results for 2007 and 2006**

One intention of this data collection is to track the status and changes in the Gulf shrimp industry through time. 2007 is the second year for which this data have been collected. To the extent possible, we attempted to conduct the 2007 survey identically to the 2006 one in order to ensure comparability of the numbers and results. Nonetheless, some differences were made to the survey instrument and its implementation, and they are described in more detail in the Design and Implementation chapters. The 2007 survey was conducted earlier in the year (March vs. May), and the sampling frame improved (the deadline for moratorium permits had passed, finalizing the population). The 2007 sample was slightly larger (636 vs. 580), and no vessel selected in 2006 was sampled again in 2007, i.e. no vessel occurs in both the 2007 and 2006 data sets. The response rates, here calculated as arrived surveys over the eligible sample, were 90% and 94% in 2007 and 2006, respectively. The difference in response rate is entirely due to the ‘No contact’ non-response category which was significantly higher in 2007 than in 2006 (50 vs. 16 or, in relative terms, 7.9% vs. 2.8%). One reason for this large increase in non-response probably is the continued difficult economic environment the industry is in, motivating shrimpers to simply “hang up their nets” and literally “move on.” Yet this interpretation is confounded by the fact that the contact information in the sampling frame had “aged” by the time the 2007 sample was drawn compared to the 2006 draw, and because we stopped actively pursuing non-respondents much sooner in 2007 than the previous year.

For the data processing, cleaning, analysis, and creation of result, we followed our 2006 protocols and formats as closely as was possible. Occasionally, this involved foregoing options that might have produced “better” results for 2007, but would have come at the expense of comparability with the 2006 results. Table 13 presents the 2007 and 2006 results side by side for the active Gulf shrimp fleet. No adjustments were made to either 2007 or 2006 numbers to compensate for inflation.

In Table 13, the average vessel characteristics and balance sheet numbers effectively do not change from 2006 to 2007---neither in a statistical sense nor from the perspective of economic relevance (magnitude). This is to be expected due to the fairly large sample sizes in both years. Insignificant changes include a smaller number of vessels that used freezers in 2007. The frequency of these vessels decreases by 5 percentage points (from 63% to 58%), but this difference is not statistically significant even at (only) a 90% confidence level. Similarly, the average liabilities decrease by \$10,617 in 2007. But given the high variability in the sample, this difference is not statistically significant either. If we restrict the comparison to vessels with loans, the drop in the average outstanding loan amount remains statistically insignificant.<sup>73</sup> Since the reduction in liabilities is greater than the reduction in the value of the assets (\$6,917), the average owner’s equity actually

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<sup>73</sup> The average outstanding loan amount for vessels with loans was \$184,163 and \$197,031 in 2007 and 2006, respectively. A drop in outstanding loans---if it was significant---could be due to shrimpers having difficulty financing their operations, i.e. less readily available credit. Alternatively, it could also be due to no brand new vessels, which historically carry proportionally more loans, entering this unprofitable fishery.

increased in 2007 by \$3,701 (which is not a statistically significant difference). Finally, the slight drop in the percent of vessels with insurance is not significant (not shown), but the insurance level in terms of % of assets covered by hull insurance did decrease by 8 percentage points, which is significant at the 95% confidence level.<sup>74</sup>

Major, statistically significant changes between 2007 and 2006 can be seen among vessel operations. The shrimp catch in pounds and fuel use in gallons decreased, and the price of shrimp and fuel increased, each at the 99.9% confidence level. While the steadily rising price of fuel has attracted much attention, the effective price environment for the shrimpers substantially improved in 2007. The average shrimp price increased from \$2.47 to \$2.99 per pound, a 21% increase. While the price of fuel also increased (by 16%, from \$2.09 to \$2.43), the fuel price rise only applies to less than 50% of the costs of shrimping compared to the shrimp price which applies to almost 100% of the benefits of shrimping (the revenue).<sup>75</sup>

Overall, shrimping effort declined in 2007 as can be seen by a 19% decrease in fuel use.<sup>76</sup> Yet due to the rising price of fuel, this only led to a 6% decrease in fuel expenses. The fuel efficiency in terms of pounds of shrimp caught per gallon of fuel used (fuel efficiency I) dropped slightly in 2007, but the change is not statistically significant. On the other hand, we can be 99% certain that the fuel efficiency measured in terms of revenue per gallon of fuel used (fuel efficiency II) did increase in 2007. The cumulative impact on landings is a reduction of 30% from 2006 levels to 71,380 pounds in 2007. Given the increase in the price of shrimp, average revenue from shrimp fell by only 12% or about \$30,000. Besides shrimp revenue, government payments also significantly and substantially decreased from \$13,662 in 2006 to \$8,046 in 2007, a 41% drop.

Expenses in most major cost categories remained statistically and economically the same, including fuel, other supplies, regular maintenance, overhead, and loan payments (and depreciation, in the income statement part of Table 13). The only expenses that are lower in a statistically significant sense are the cost of hired crew (by \$5,598 at a 90% confidence level) and the cost of major repairs and haul-out (by \$2,131 at a 99% confidence level). New investment--already very minor in 2006--is nearly zero in 2007.<sup>77</sup> In other words, on average shrimpers were not able to reduce their total costs by much from 2006 levels given the fixed cost nature of many of their expenses.

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<sup>74</sup> A confounding factor might be a slight rewording of the insurance question on the survey in 2007. See Survey Instrument section in the Design chapter.

<sup>75</sup> Note that prices and fuel efficiency averages are all in terms of vessel averages, not the overall population averages (see the Standardized Data Presentation section of the Results for 2007 chapter for a more detailed explanation).

<sup>76</sup> Based on preliminary numbers, the annual Gulf shrimping effort in offshore waters dropped by 12% from 2006 to 2007 (James M. Nance, personal communication). This follows on the heels of offshore effort dropping by 55% from 2002 to 2006.

<sup>77</sup> Note that the implied level of statistical significance is driven by the estimation and extrapolation procedure which assigned (based on regressions on the data) all the reduction in vessel and gear expenses to the major repair and new investment categories. Vessel and gear expenses in aggregate, as collected on the survey, are probably not significantly different (\$24,284 in 2007 and \$27,373 in 2006).



Table 13: Comparison of Results for 2007 and 2006

(in USD unless otherwise noted)	2007		2006		Significance of difference in the means <sup>1</sup>
	Mean	Standard Deviation	Mean	Standard Deviation	
	# of Observations	388	386		
<b><u>Vessel Characteristics</u></b>					
Length (feet)	70	15	70	13	n.s.
Gross tons	108	49	111	45	n.s.
Horse power	527	244	531	247	n.s.
Year built	1987	11	1986	11	n.s.
Hull material - Steel (%)	78%	-	80%	-	n.s.
Refrigeration - Freezer (%)	58%	-	63%	-	n.s.
Fuel capacity (gallons)	14,086	10,341	14,184	9,836	n.s.
State - Florida (%)	14%	-	13%	-	n.s.
State - Alabama or Mississippi (%)	17%	-	16%	-	n.s.
State - Louisiana (%)	28%	-	27%	-	n.s.
State - Texas (%)	40%	-	43%	-	n.s.
<b><u>Balance Sheet</u></b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>164,368</b>	<b>192,938</b>	<b>151,382</b>	n.s.
<i>Original value of vessel (at purchase price)</i>	<i>299,193</i>	<i>285,155</i>	<i>300,185</i>	<i>264,471</i>	n.s.
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>166,912</b>	<b>104,597</b>	<b>182,610</b>	n.s.
<i>% of vessels with loan</i>	<i>51%</i>	<i>-</i>	<i>53%</i>	<i>-</i>	n.s.
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>153,521</b>	<b>88,340</b>	<b>152,903</b>	n.s.
<i>Insurance coverage (% of assets)</i>	<i>64%</i>	<i>-</i>	<i>72%</i>	<i>-</i>	**
<b><u>Vessel Operation</u></b>					
Actively shrimping (%)	100%	-	100%	-	-
Owner-operator (%)	49%	-	46%	-	n.s.
Shrimp landed (pounds)	71,380	49,001	101,268	63,855	****
Shrimp price per pound (vessel basis / pound basis)	2.99	0.87	2.47	0.70	****
Annual fuel use (gallons)	42,841	35,637	52,931	40,704	****
Fuel price per gallon (vessel basis)	2.43	0.30	2.09	0.19	****
Fuel efficiency I (vessel basis)	2.4	2.6	2.6	2.3	n.s.
Fuel efficiency II (vessel basis)	6.52	7.09	5.68	3.32	**
<b><u>Cash Flow</u></b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>164,547</b>	<b>259,640</b>	<b>168,776</b>	***
Shrimp landings	214,256	160,436	244,136	158,946	***
Non-shrimp landings	451	3,065	1,842	17,558	n.s.
Government payments received (shrimp related)	8,046	9,784	13,662	16,711	****
<b>Outflow - Total</b>	<b>228,721</b>	<b>159,711</b>	<b>243,415</b>	<b>158,623</b>	n.s.
Fuel	102,199	84,542	108,775	82,731	n.s.
Other supplies	22,105	20,493	21,986	24,035	n.s.
Crew & captain (hired)	49,268	38,700	54,866	40,762	*
Regular maintenance (vessel and gear)	19,480	19,546	18,988	17,857	n.s.
Major repair and haul-out	4,702	8,827	6,833	10,160	***
Overhead (excluding loan payments)	14,277	15,996	14,746	16,782	n.s.
Interest payments made (on vessel loans)	6,891	13,546	7,140	13,936	n.s.
Principal payments made (on vessel loans)	9,698	19,073	8,528	16,268	n.s.
New investments and upgrades (in vessel)	102	245	1,552	3,919	****
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>66,499</b>	<b>16,225</b>	<b>66,953</b>	****

<sup>1</sup> Confidence levels: n.s. = not significant, \* = 90%, \*\* = 95%, \*\*\* = 99%, \*\*\*\* = 99.9%

Table 13: Comparison of Results for 2007 and 2006, cont.

(in USD unless otherwise noted)	2007		2006		Significance of difference in the means <sup>1</sup>
	Mean	Standard Deviation	Mean	Standard Deviation	
# of Observations	388		386		
<b><u>Income Statement</u></b>					
<b>Operating Activities</b>					
<b>Revenue (from commercial fishing)</b>	<b>214,707</b>	<b>160,408</b>	<b>245,978</b>	<b>158,302</b>	<b>***</b>
<b>Expenses</b>	<b>234,340</b>	<b>157,874</b>	<b>253,407</b>	<b>159,049</b>	<b>*</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	-	<u>51.6%</u>	-	-
Fuel	43.6%	-	42.9%	-	-
Other supplies	9.4%	-	8.7%	-	-
<i>Variable costs - Labor</i>	<u>23.9%</u>	-	<u>25.3%</u>	-	-
Crew & captain (hired)	21.0%	-	21.7%	-	-
Owner's vessel time	2.9%	-	3.6%	-	-
<i>Fixed costs</i>	<u>23.0%</u>	-	<u>23.1%</u>	-	-
Regular maintenance (vessel and gear)	8.3%	-	7.5%	-	-
Major repair and haul-out	2.0%	-	2.7%	-	-
Depreciation	6.6%	-	7.1%	-	-
Overhead (excluding loan payments)	6.1%	-	5.8%	-	-
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>64,120</b>	<b>(7,429)</b>	<b>64,075</b>	<b>***</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891	-	7,140	-	-
Government payments received (shrimp related)	8,046	-	13,662	-	-
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>64,923</b>	<b>(907)</b>	<b>66,718</b>	<b>****</b>
<i>Owner's vessel time</i>	6,790	9,463	9,138	13,113	<b>***</b>
<i>Depreciation</i>	15,520	22,238	18,076	23,225	n.s.

<sup>1</sup> Confidence levels: n.s. = not significant, \* = 90%, \*\* = 95%, \*\*\* = 99%, \*\*\*\* = 99.9%

Overall, average total inflow of revenue fell from \$259,640 to \$222,753, a statistically significant 14% drop. In contrast, the average vessel was only able to reduce total cash outflows by 6% from \$243,415 in 2006 to \$228,721 in 2007, and, interestingly, this difference is not statistically significant. The average net cash flow dropped by \$22,192, from positive \$16,225 in 2006 to negative \$5,967 in 2007, and in spite of vast variability (standard deviation) the drop is statistically significant at the 99.9% confidence level.

Turning to the income statement, we note that revenue, net revenue from operations, and net revenue (before taxes) are all significantly lower in 2007 than in 2006 at the 99% confidence level or more. In contrast, total operating expenses are lower at only the 90% confidence level. Net revenue from operations decreased to negative \$19,633 in 2007 from negative \$7,429. As a result the average economic return to Gulf shrimping (by federally permitted vessels) dropped from negative 4% to negative 11%. In terms of "profit," the average vessel fared even worse in 2007. The average loss increased from negative \$907 to negative \$18,477; the return on equity from negative 1% to negative

20%. The negative economic return and the terrible return on equity---on average--- clearly are not sustainable in any industry. Note that all these results apply to active Gulf shrimp vessels, i.e. excluding results for Gulf shrimp vessels that were inactive in 2007.

Finally, we note that for the average vessel the contribution that owner-operators make as captains of their vessels dropped significantly (both statistically and economically) from \$9,138 to \$6,790 in spite of a slight increase in the percentage of owner-operators among the 2007 sample. Based on Table 23, the captain's share of owner-operators was \$13,938 in 2007, down from \$19,815.<sup>78</sup> While part of this 30% drop is likely to be due to less time on the water (remember fuel used decreased by 19%), the rest is likely a self-imposed "wage cut" due to the extremely difficult economic situation.

Looking at the active Gulf shrimp fleet by state, a substantially different picture emerges in 2007 than in 2006. The Texas fleet---the sole profitable segment in 2006--- turned into the worst performer in 2007. In contrast, the Alabama and Mississippi fleet, which was the worst performer ("doing terrible") in 2006, now looks "middle of the road," i.e. the results did not deteriorate any further and even improved on some measures. The Louisiana fleet, which was "middle of the road" in 2006, turned in the best performance in 2007 (though still bad). In summary, most of the deterioration of economic performance in the overall active Gulf shrimp fleet is driven by Texas vessels, followed by Florida vessels. Alabama, Mississippi, and Louisiana vessels contributed only marginally to the drop.<sup>79</sup> Changes in the performance of vessel categories based on vessel characteristics were already discussed in the context of Table 12 at the end of the Results for 2007 chapter; though no clear picture emerges other than the general deterioration of financial and economic results.

There are no big differences for inactive Gulf shrimp vessels between 2007 and 2006. Net cash flow, net revenue from operations, and the loss were around negative \$10,000 in both years. The return on equity actually improved a little from negative 17% to negative 9%, but this is probably due to the much less leveraged nature of the 2007 sample (loans as percentage of assets were 9% in 2007 compared to 29% in 2006).

In summary, the general conclusion of this comparison is that the financial and economic situation actually deteriorated in 2007 from the already bleak outlook in 2006 for the average vessel in the active Gulf shrimp fleet. As was apparent in the discussion to Table 12, these results roughly apply to all categories of Gulf shrimp vessels. In 2006, the average vessel in most categories was still generating a positive cash flow, was making a slightly negative economic return, and nearly broke even on a profit/loss basis due in part to high government payments. In 2007, cash flow for the average vessel in most categories is negative, and the negative economic return and the loss have further increased to clearly non-sustainable levels.

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<sup>78</sup> Removing the possible distortion due to the estimation procedures by focusing on the vessels that paid an explicit captain's share to the owner-operator, the general relationship still holds up (\$17,816 in 2007 vs. \$23,150 in 2006).

<sup>79</sup> The economic return for the Texas, Florida, Louisiana, and Alabama and Mississippi fleets changed from +1% to -12%, -6% to -12%, -5% to -8%, and -11% to -11%, respectively, between 2006 and 2007.

Interestingly, the effective economic environment in 2007 actually improved somewhat from 2006 as shrimp prices increased proportionally more than fuel prices. A question that arises is why vessels did not expand production to cover more of their fixed costs as the aggregate economics seem to indicate that more shrimping would have improved the bottom line. While this descriptive look at the data cannot solve this issue, we hazard some possible explanations. A negative cash flow presents a major operational problem. A diesel “fill-up” of an average Gulf shrimp vessel would have run over \$34,000 in 2007. If cash is tight, such an “investment” is hard to justify for an entrepreneur herself, much less for a creditor to an industry in decline (bankruptcies and repossessions). With the liquidity constraint implied by a negative cash flow and after many marginal years, the average vessel might simply not have had the ability to exploit the improvement in the shrimp price leading to the cut its overall effort.<sup>80</sup>

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<sup>80</sup> An alternative explanation could be that harvesting further shrimp would not have been profitable anymore, and that liquidity did not pose a problem. Such a situation might occur if the amount of fuel needed per pound of catch increased with the cumulative catch (e.g. if vessels had to travel further and further from port to find productive shrimp stocks). In such a scenario, the high price of fuel might limit total catch in a manner that is not obvious from aggregate, annual data.

## **6. Conclusion**

The general conclusion of this report is that the financial and economic situation actually deteriorated in 2007 from the already bleak outlook in 2006 for the average vessels in all of the evaluated categories. With few exceptions, cash flow for the average vessel has now turned negative, and the negative net revenue from operations and the “loss” have further increased to clearly non-sustainable levels. In the short-term, this will discourage new investments in the industry. The financial situation in 2007, especially if it endures over multiple years, also is economically unsustainable for the average established business.

Vessels in the active and inactive Gulf shrimp fleet are, on average, 67 feet long, weigh 102 gross tons, are powered by 497 hp motor(s), and are 23 years old. Seventy-two percent of the vessels have steel hulls and 52% use a freezer for refrigeration. The average market value of these vessels was \$172,554 in 2007, roughly a hundred-thousand dollars less than the average original purchase price. The outstanding loans averaged \$78,250, leading to average owner equity of \$94,304.

Based on the sample, 81% of the federally permitted Gulf shrimp fleet was actively shrimping in 2007. Of these 388 active Gulf shrimp vessels, just under half (49%) were owner-operated. On average, these vessels burned 42,841 gallons of fuel, landed 71,380 lbs of shrimp, and received \$2.99 per pound of shrimp. Non-shrimp landings added a trivial amount to the cash flow, indicating that the federal Gulf shrimp fishery is very specialized. The average total cash outflow was \$228,721 of which a staggering \$102,199 was due to fuel expenses alone. The expenses for hired crew and captains were on average \$49,268 which indicates the importance of the industry as a source of wage income. The resulting average net cash flow is negative \$5,967 but has a large standard deviation. For the population of active Gulf shrimp vessels we cannot state with 95% certainty that the average net cash flow was less than zero in 2007. The median net cash flow was negative \$3,879. To sustain such losses and especially to survive the negative cash flow---if that is what they are doing--- many of the owners must be subsidizing their shrimp vessels with the help of other sources of income or wealth.

Based on the income statement for active Gulf shrimp vessels, the average fixed costs accounted for just under a quarter of operating expenses (23.0%), labor costs for just under a quarter (23.9%), and the non-labor variable costs for just over half (53.0%). The fuel costs alone accounted for 43.6% of total operating expenses in 2007. It should be noted that the labor cost category in the income statement includes both the actual cash payments to hired labor and an estimate of the opportunity cost of owner-operators' time spent as captain. The average net revenue from operations is negative \$19,633, and is statistically different and less than zero in spite of a large standard deviation. The economic return to Gulf shrimping is negative 11%. Including non-operating activities this leads to an average loss before taxes of \$18,477 for the vessel owners.

The average inactive Gulf shrimp vessel is generally of a smaller scale than the average active vessel. Inactive vessels are physically smaller, valued much lower, and much less dependent on loans. Fixed costs account for over 90% of the total operating expenses of \$11,210, and only 18% of these vessels have hull insurance. The average net cash flow is negative \$9,485, and, unlike for the active Gulf shrimp fleet, we are 95% certain that the average cash flow for the sub-population of inactive vessels is less than zero. On average, net revenue from operations is negative \$10,853, which amounts to a negative 10% economic return, and owners lose \$9,841 on their vessels before taxes.

When looking at differences among states for active Gulf shrimp vessels, we note that the average vessel in all states exhibited negative rates of return in 2007. Louisiana vessels are the only ones that report an average positive cash flow of \$6,000. As a result, they have the “highest” average returns of the states, with a negative 8% economic return and negative 12% return on equity. The Alabama and Mississippi fleets (which are reported jointly due to small sample sizes) have the highest assets on average. Yet they generate negative \$27,000 net revenue from operations, the highest among all the states. Due to high government payments, the Alabama and Mississippi fleets “only” have a negative 16% return on equity. Florida and Texas vessels have negative cash flows of \$7,000 and \$16,000, respectively. Due to their high leverage ratios, each state’s negative 12% economic return is amplified into a negative 21% and negative 31% return on equity, respectively.

Comparing results for 2007 and 2006 for active Gulf shrimp vessels, we note that, as we would expect, the average vessel characteristics and balance sheet numbers effectively do not change---neither in a statistical sense nor from the perspective of economic relevance. Major, statistically significant changes can be seen among vessel operations. The shrimp catch in pounds and fuel use in gallons decreased, and the price of shrimp and fuel increased (all at the 99.9% confidence level). Overall, average total inflow of revenue fell from \$259,640 to \$222,753, a statistically significant 14% drop. In contrast, the average vessel was only able to reduce total cash outflows by 6% from \$243,415 in 2006 to \$228,721 in 2007, and, interestingly, this difference is not statistically significant. On average, shrimpers were not able to reduce their costs by much from 2006 levels given the fixed nature of many of their expenses.

The average net cash flow dropped by \$22,192, from positive \$16,225 in 2006 to negative \$5,967 in 2007, and, in spite of large variability (standard deviation), in the sample the drop is statistically very significant. Net revenue from operations decreased to negative \$19,633 in 2007 from negative \$7,429 in 2006. As a result, the average economic return to Gulf shrimping (by federally permitted vessels) dropped from negative 4% to negative 11%. In terms of “profit,” the average vessel fared even worse in 2007. The average loss increased from negative \$907 to negative \$18,477; the return on equity from negative 1% to negative 20%.

Interestingly, while the steadily rising price of fuel has attracted much attention, the effective price environment in 2007 actually improved somewhat from 2006 as shrimp prices increased proportionally more than fuel prices. However, with the liquidity

constraint implied by a negative cash flow and following many marginal years, it seems the average vessel simply did not have the ability to exploit this improvement and had to cut its overall effort. In 2007, the average active Gulf shrimp vessel consumed 19% less fuel (in terms of gallons) and caught 30% less shrimp (in terms of pounds). After accounting for the price changes, the vessel spent 6% less on fuel and generated 12% less revenue from shrimp. But since fixed costs remained approximately the same, the overall economic and financial returns significantly deteriorated when compared to 2006. Finally, government payments, which helped the average owner just about break even in 2006, were significantly less in 2007. Overall, the financial situation in 2007 is economically unsustainable for the average established business, and we expect a further reduction in effort and further consolidation in the industry.

It should be noted that these results are averages and hence hide the variation that clearly exists within all fleets and all categories. Although the financial situation for the average vessel is bleak, some vessels are profitable.





## **Appendix 1: 2007 Survey Instrument**



**Other Important Economic Information (permit #: «Permit»):**

10. Vessel insurance in 2007 (check all that apply):  None  Hull  P&I

**If Hull insured**, enter coverage level if vessel is lost: \$ \_\_, \_\_, \_\_.00  
(do not enter monthly or annual insurance premium)

11. Appraised value of this vessel (if insured) or best estimate of this value (if not insured):

a) Market value of vessel with permit (anytime in 2007): \$ \_\_, \_\_, \_\_.00

b) Market value of vessel without permit (anytime in 2007): \$ \_\_, \_\_, \_\_.00

c) Original purchase price of vessel: \$ \_\_, \_\_, \_\_.00

12. Did you have any loan(s) on your vessel at any time during 2007:  Yes  No

**If Yes:** a) Total amount you still owe at *end of 2007*: \$ \_\_, \_\_, \_\_.00

b) Total loan payments in 2007: \$ \_\_, \_\_, \_\_.00

Please split b) into: c) Interest paid in 2007: \$ \_\_, \_\_, \_\_.00

d) Principal repaid in 2007: \$ \_\_, \_\_, \_\_.00

13. Depreciation of vessel as claimed for tax purposes (2007): \$ \_\_, \_\_, \_\_.00

14. During 2007 this vessel was active in (check all that apply):

Shrimp Fishery  Other Commercial Fisheries  Non-Fishing Income Activities  Not Active

15. Total gross revenue generated by this vessel in commercial fisheries *other than shrimp* in 2007 (if none enter "0"): \$ \_\_, \_\_, \_\_.00

16. Government payments received for this vessel in 2007; for example due to imports and low shrimp prices (tariff money; trade assistance adjustment payments) or hurricanes/disaster relief (if none enter "0"): \$ \_\_, \_\_, \_\_.00

I certify that the information contained on this form is accurate and complete to the best of my knowledge:

\_\_\_\_\_  
Signature of person completing report

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of person signing report

(\_\_\_\_\_)\_\_\_\_\_  
Phone number

**Please return this completed form in the enclosed prepaid envelope!**

[Mail to: NMFS; Miami Lab; P.O. Box 491500; Key Biscayne, FL 33149-9916]

**Thank You!**

**Other Questions (voluntary)**

1. Would you like to receive future economic surveys in Vietnamese?  Yes  No
2. In the future, would you prefer to fill out this survey online rather than on paper?  Yes  No
3. Please use the reverse side or a separate piece of paper for any comments. We appreciate any comments concerning this survey effort and any ideas on how to improve or simplify it.



## **Appendix 2: 2007 Survey Instructions**

## Detailed Instructions

Please check that your information at the top of Page 1 is correct. If not, please clearly print the correct information in the white space.

### Page 1 – Total 2007 Expenses

On **Page 1** we would like you to enter the total financial expenses you incurred during 2007 for the operation and keeping **of your vessel** with the registration number listed at the top of the page. This should correspond to actual dollar payments made. For each question enter the sum of all 2007 expenses in that category. If you had **NO expenses in a category, please enter “0”** and do not leave any spaces blank.

- Please be comprehensive: **Account for all the expenses** incurred by this boat in 2007 on **Page 1**.
- Please **avoid double counting**: Any expense should appear only a single time on **Page 1**.
- If an expense benefits this vessel as well as other vessel(s) and/or business operations (such as processing), **only list the share of the expense** that can be assigned to this vessel.
- Feel free to round numbers to the nearest \$100, such as entering \$ 3,600.00 rather than \$ 3,643.00.

**Question 1:** Check the YES box, if you (the owner) also act as captain for this vessel. Check the NO box if you hired captain(s) to operate this vessel.

**Question 2:** Enter the sum of all hired crew and captains' shares paid during 2007. This should reflect the amount the crew and captain(s) actually received, including any bonuses, but excluding any contributions she/he made to cover operating costs.

**Question 3:** Check the YES box, if you separately account for your income *as captain* (as opposed to *as owner*, i.e. business profit). If you checked Yes, enter the total amount you paid yourself on the following line. If you do not pay yourself a captain's share, simply check the No box and continue with question 4.

**Question 4:** Enter the total amount spent on fuel in 2007. The total amount should reflect the actual amount paid for the fuel used by this vessel; including those portions “paid” out of the crew's or captain's shares.

**Question 5:** **a)** Please estimate the average price per gallon you paid for fuel in 2007 (in dollars and cents per gallon, as best you can). **b)** Enter the total number of gallons of fuel you purchased in 2007 in order to operate this vessel and all its equipment (such as generators and freezers). If this number is not available, then divide the amount entered in Question 4 by the estimated price per gallon entered in a) and enter this amount in the space provided.

**Question 6:** Enter the sum of all remaining expenses incurred on a ‘per fishing trip’ basis in 2007. This should exclude all amounts already listed in the above questions, i.e. amounts paid to crew,

captain or fuel. Please sum all your expenses for: ice, groceries, oil and lubricants, freezing and packaging supplies, gloves, processing, storage, cleaning supplies or services, and any other trip related expense.

**Question 7: a)** Enter the total 2007 expenses, not already listed above, related to the vessel (hull and all) and associated equipment, such as fishing gear (nets, trawl doors, etc), engine(s), freezers and electronics. Include all expenses for maintenance, repair, replacement, upgrades and new purchases. Also include haul-outs, rebuilds, retrofits, etc.

**b)** This question asks about the type of expenses that are included in Question 7. a). Please check all the boxes that apply. Check the first box if some or all the expenses listed in 7.a) were for normal maintenance or regular repairs and repeated replacements (such as worn out nets). Check “Major repairs and haul-out” if you incurred expenses in 2007 that occur less than annually, include haul-outs, repairs during haul-outs, and other major repairs or replacement; or unusual expenses resulting from unexpected events such as hurricanes, accidents or theft. Check “New investments or upgrades” if you spent money on the vessel that extend its functionality, such as increases in engine power, new electronic systems, increases or improvements to fishing gear, etc.

**Question 8:** Enter the total amount of overhead applicable to this vessel. Typical overhead expenses include: Dockage/mooring, rent, utilities, insurance, loan payments, commercial fishing licenses and permits, property taxes and other fees, (share of) car or truck expenses, (share of) office expenses, (share of) accountant, lawyer, other professional services fees, and any other annual expenditure paid by the vessel (not already included in Questions 1 through 7). **Very Important on Question 8:**

- **Include: Loan Payments** (interest and principal) and **Insurance** premiums for the vessel!
- **Exclude: Depreciation** and **Income Tax!**
- If an overhead expense benefits this vessel AND other vessel(s) and/or business operations (such as processing), then only list the **share of the expense** that can be assigned to this vessel.

**End of Page 1:** Please make sure you have accounted for all expenses associated with the operation and keeping of this vessel in 2007. **If there are expenses not yet accounted for, please add them to the category they fit best:**

- If they are trip-related, add them to Question 6.
- If they relate to the vessel, gear and equipment, add them to Question 7.
- If they fit in neither of the above categories, add them to Question 8 (overhead or business related costs).

**Question 9:** Enter the total financial expenses you incurred during 2007 for the operation and keeping of this vessel. This number should equal the sum of all \$ dollar expenses entered on Page 1.

## **Page 2 – Other Important Economic Information**

**Question 10:** Check the boxes for how your vessel was insured in 2007. Check all that apply or ‘None’ if your vessel was not insured. **If the hull was insured**, then enter the total amount the hull was insured for, i.e. the maximum dollar amount the insurance would have paid in case of a total loss of the vessel. Do not enter your monthly or yearly insurance premiums or payments!

**Question 11:** Enter the market value of your vessel in 2007. Please enter the most accurate number you have. If the vessel is insured, please consult your insurance records for these values. Otherwise, please give us your best estimate or guess. For market value with permit **(a)**, please enter the approximate amount you would expect to receive if you had sold your vessel and federal Gulf shrimp permit together during 2007. For market value without permit **(b)**, please enter the amount you would expect to receive if you had sold your vessel in 2007 without the federal Gulf shrimp permit.  
c) Enter your purchase price of the vessel.

**Question 12:** Check YES if you had any outstanding loans on your vessel **at any time during 2007**. If Yes, enter: **a)** the amount of principal still needing to be paid back **at the end of 2007**; and **b)** your total loan payments for this vessel in 2007. Please split your total loan payments entered under **b)** into: **c)** the total sum of interest paid in 2007; and **d)** the total amount of principal repaid in 2007. Please estimate if you do not have the exact numbers.

**Question 13:** Enter the amount of depreciation you claimed for your vessel on your 2007 tax return.

**Question 14:** Please indicate in what fisheries or other income activities your vessel participated in during 2007. Please **check all the boxes that apply**. Check “Shrimp Fishery” if this vessel caught shrimp anywhere for commercial sale. Check “Other Commercial Fisheries” if your vessel participated in any commercial fisheries other than shrimp. Check “Non-Fishing Income Activities” if this vessel was used to generate income besides commercial fishing (oil work, charter, etc.). Check “Not Active” if your vessel did not generate any revenue or income during 2007.

**Question 15:** Enter the total sum of all revenue generated by this vessel in 2007 in commercial fisheries **other than shrimp**. This can include revenue generated in the Gulf of Mexico as well as the rest of the Atlantic Ocean and elsewhere; from State, Federal or international waters; offshore or inshore; etc. It should not include any revenue generated by the sale of shrimp (caught anywhere).

**Question 16:** Enter the sum of all payments received by this vessel in 2007 from federal, state, and local governments. Such as payments resulting from low shrimp prices and the dumping of imports (for example, tariff monies received from U.S. Customs, trade assistance adjustment payments received from the U.S. Department of Agriculture, “kickbacks”, incentives, etc.) and disaster relief (monies received for hurricane recovery).

If you have any questions, please call Diana Pina or Christopher Liese at (305) 361-4263.

**PAPERWORK REDUCTION ACT STATEMENT:**

Public reporting burden for this collection of information is estimated to average 45 minutes per response, including the time for reviewing the instructions, searching the existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Christopher Liese, National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, Florida 33149. Information submitted will be treated as confidential in accordance with NOAA Administrative Order 216-100. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection displays a currently valid OMB Control Number. This reporting is required for permit renewal. NMFS requires this information for the conservation and management of marine fishery resources. These data will be used to evaluate the economic effects of proposed regulations in the fishery.



### **Appendix 3: 2007 Survey Other Materials**



# Southeast Fishery Bulletin

National Marine Fisheries Service, Southeast Regional Office, 263 1<sup>st</sup> Avenue South, St. Petersburg, Florida 33701

FOR INFORMATION CONTACT:  
(see specific contacts for each program below)

February 14, 2008  
FB08-011

## Notice of Federal Data Collections in the Gulf Shrimp Fishery in 2008

NOAA's National Marine Fisheries Service (NOAA Fisheries Service) is working to improve the quality of information available for the Gulf of Mexico shrimp fishery. Having appropriate and current data enables the Gulf of Mexico Fishery Management Council and NOAA Fisheries Service to carry out responsive and timely fisheries management.

With the implementation of the permit moratorium, NOAA Fisheries Service's Southeast Fisheries Science Center is starting new data collections. This bulletin provides permit holders an overview of the data collection requirements related to the federal Gulf of Mexico moratorium shrimp permit.

Federal Gulf shrimp permits are renewed annually. The application for renewal needs to be received within one year of the permit's expiration date. The permit office can be reached by calling 1-877-376-4877 (toll free). Permit related information also can be found on the Web at: <http://sero.nmfs.noaa.gov>.

Besides the annual permit renewal, **every permit holder is required** to complete and submit the following:

**1. "Annual landings form" (Gulf of Mexico Shrimp Federal Permit Reporting Form):**

This one-page form collects total annual shrimp landings in pounds and dollars by shrimp species harvested from state and federal waters of the Gulf of Mexico. This data collection is being introduced this year, asking for 2005, 2006, and 2007 information. In subsequent years, the request will only be for the previous year.

**2. Gulf Shrimp Vessel & Gear Characterization Form:**

This six-page form collects information about total annual fishing effort (such as number of trips, days at sea, and crew), and about the gear most commonly used during the past year (such as details on typical gear configuration, bycatch reduction device and turtle excluder device used, and on-board electronics). This year, information will be requested for both 2006 and 2007. In subsequent years, the request will only be for the previous year.

Both these forms are required for all permit holders. Please direct any questions to Rebecca Smith at (409) 766-3783. Forms are expected to be mailed beginning February 2008. The due date is April 30, 2008.

In addition to the above forms, **permit holders may be selected** to participate in one or more additional data collections. Only a limited number of vessels will be sampled to minimize the overall reporting burden on shrimp fishermen. **Permit holders will be notified if selected for any of the following data collections. If selected, participation is required for permit renewal.**

**3. Annual Economic Survey of Federal Gulf Shrimp Permit Holders:**

If selected, permit holders are required to provide data about operating expenses and the cost of owning shrimp vessels to determine the economic and social effects of regulations and other factors affecting the profitability of the fishery. The two-page survey will be sent annually to a random sample of 20 percent of permitted vessels, but no vessel will be selected two years in a row. Please direct any questions to Christopher Liese at (305) 361-4263. Selection letters are expected to be sent out beginning in February 2008. The information requested in this survey should be readily available from tax or similar forms. The due date is April 30, 2008.

**4. Electronic Logbook (ELB) Program:**

If selected, a vessel will be equipped with an electronic logbook provided by NOAA Fisheries Service. The ELB program collects information regarding the geographic location of effort. The memory units will be changed two to four times during the year, at no cost to the fisherman. The contacts for the program are Benny Gallaway or John Cole at LGL Ecological Research Associates, Inc., (979) 775-2000. Selection is an ongoing process, and notification is through the mail.

**5. Onboard Observers Program:**

If selected, a vessel will carry a NOAA Fisheries Service-approved observer on selected trips. Observers collect catch, effort, bycatch, and other scientific

information, as necessary. Please direct any questions to Elizabeth Scott-Denton at (409) 766-3571. Sampling is conducted for three periods in 2008, starting in January, May, and September. Notification is by certified letter.

6. Trip Interview Information:

If selected, permit holders need to provide information for any fishing trip, as requested by authorized statistical reporting agents of the NOAA Fisheries Service, including, but not limited to, vessel identification, gear, effort, amount of shrimp caught by species, shrimp condition (heads on/heads off), fishing areas and depths, and the person to whom the shrimp was sold.

Thank you for your past and future cooperation with these data collection efforts. The information is critical for more responsive and timely management of the fishery. All individual information will be treated strictly confidential.

**How Can We Improve These Fishery Bulletins?**

If you have any suggestions on how we may improve future fishery bulletins, please contact:

Kim Amendola, Communication Specialist

Phone: 727-551-5707

FAX: 727-824-5320

E-mail: [SERO.Communications.Comments@noaa.gov](mailto:SERO.Communications.Comments@noaa.gov)

If you would like to receive these fishery bulletins via e-mail as soon as they are published, please e-mail us at the address below. You will still receive a print copy of these bulletins through the mail.

E-mail [SERO.Communications.Comments@noaa.gov](mailto:SERO.Communications.Comments@noaa.gov) and include (1) "Request for Electronic Fishery Bulletins" in the subject line; and (2) Your preferred e-mail address in the body of the e-mail.

FIRST CLASS MAIL  
POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF COMMERCE  
PERMIT NO. G-19

National Marine Fisheries Service  
Southeast Regional Office, F/SER27  
263 13th Avenue South  
St. Petersburg, FL 33701  
Official Business  
Penalty for Private Use - \$ 300  
FB08-011

Cover Letter:



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Southeast Fisheries Science Center  
75 Virginia Beach Dr.  
Miami, Florida 33149

March 7, 2008

«Primary\_Mailing\_Recipient»  
«Street\_Address»  
«City», «State» «Zipcode»

Dear Permit Owner:

Together with the introduction of the permit moratorium, the NOAA Fisheries Service started an **Annual Economic Survey of Federal Gulf Shrimp Permit Holders**. Each year we will randomly select about 20% of permitted vessels in order to collect data about operating expenses and the costs of owning and maintaining shrimp vessels.

**You have been randomly selected to participate in this year's survey.** Enclosed is a form asking about expenditures you made in 2007 for your vessel "«Vessel»" with the registration number «VESID». **You must complete and submit this survey in order to be eligible for permit renewal.** We have tried hard to reduce the collection of information to the minimum necessary. Please look at the enclosed material for more details on this survey effort and why we need to collect this data. No vessel will be selected two years in a row.

Please complete the enclosed survey form and return it to us by April 30, 2008. A pre-addressed, postage-paid envelope is enclosed. All information you supply is strictly confidential and will be combined with information from other fishermen to present an overall view of the economic status of the fishery and the problems it faces. A summary of these results will be sent to you once the survey data has been analyzed.

By accurately completing this survey, you will ensure that management decisions are based on correct information about the economic effects of regulations on fishermen. Please print all requested information clearly. A form with incomplete or unclear information cannot be entered into the database and will be returned for clarification. If you have any questions or require help filling out the survey, please contact Diana Pina or Christopher Liese at (305) 361-4263.

Thank you very much for your cooperation with this data collection and Good Luck this shrimping season.

Sincerely yours,

Bonnie J. Pönwith, Ph. D.,  
Science and Research Director (Acting)

SPGM-«Permit»

## **Appendix 4: Data Cleaning Regressions (2007)**

<b><u>Regression to estimate missing market values of vessels</u></b>				<b><u>Regression to estimate missing depreciation of vessels</u></b>			
Dependent variable:		Market value (log)		Dependent variable:		Depreciation	
Number of observations:		483		Number of observations:		452	
F Value (Pr > F):		136.58 (<.0001)		F Value (Pr > F):		106.75 (<.0001)	
R-Squared:		0.5888		R-Squared:		0.5448	
<b>Variable</b>	<b>Parameter</b>	<b>Standard Error</b>	<b>t Value</b>	<b>Variable</b>	<b>Parameter</b>	<b>Standard Error</b>	<b>t Value</b>
Intercept	6.218	0.673	9.24	Intercept	2,989.597	4,530.942	0.66
Value bought (log)	0.242	0.032	7.46	Value bought	0.067	0.005	13.39
Horse power (log)	0.539	0.100	5.37	Length	-168.129	91.530	-1.84
Age (log)	-0.266	0.074	-3.61	Horse power	8.599	6.783	1.27
Hull insurance (dummy)	0.519	0.081	6.40	Fuel use	0.041	0.038	1.08
Texas (dummy)	-0.274	0.068	-4.04	Texas (dummy)	-3,663.833	1,840.070	-1.99
<b><u>Regression to estimate value of owner's captain labor</u></b>				<b><u>Regression to estimate equipment cost breakup</u></b>			
Dependent variable:		Captain's share (log)		Dependent variable:		Equipment expenses	
Number of observations:		55		Number of observations:		402	
F Value (Pr > F):		64.17 (<.0001)		F Value (Pr > F):		12.32 (<.0001)	
R-Squared:		0.5476		R-Squared:		0.0581	
<b>Variable</b>	<b>Parameter</b>	<b>Standard Error</b>	<b>t Value</b>	<b>Variable</b>	<b>Parameter</b>	<b>Standard Error</b>	<b>t Value</b>
Intercept	4.452	0.651	6.84	Intercept	20,471	1,632	12.54
Crew share (log)	0.497	0.062	8.01	Major repair (dummy)	12,086	2,511	4.81
				New investment (dummy)	455	2,859	0.16

**Appendix 5:**  
**Tables with 2007 Financial and Economic Results (Averages)**

Table 14: F&E Results: Averages for the Total Fleet by Fishery

(in USD unless otherwise noted) # of Observations	Total Fleet 505	Total Fleet		
		Other Fish 14	S. Atlantic Shrimp 13	Gulf Shrimp 477
<b><u>Vessel Characteristics</u></b>				
Length (feet)	68	73	76	67
Gross tons	103	112	126	102
Horse power	502	582	562	497
Year built	1986	1985	1988	1986
Hull material - Steel (%)	72%	79%	69%	72%
Refrigeration - Freezer (%)	52%	36%	69%	52%
Fuel capacity (gallons)	13,077	11,950	13,923	13,041
State - Florida (%)	16%	14%	46%	15%
State - Alabama or Mississippi (%)	16%	7%	8%	17%
State - Louisiana (%)	27%	7%	0%	28%
State - Texas (%)	37%	14%	0%	39%
<b><u>Balance Sheet (end of 2007)</u></b>				
<b>Assets - Market value of vessel</b>	<b>201,154</b>	<b>1,163,652</b>	<b>201,557</b>	<b>172,554</b>
<i>Original value of vessel (at purchase price)</i>	269,489	389,415	290,308	265,548
<i>Implicit permit value</i>	49,778	839,615	35,909	23,158
<b>Liabilities - Loan on vessel</b>	<b>85,345</b>	<b>272,340</b>	<b>140,248</b>	<b>78,250</b>
<i>% of vessels with loan</i>	46%	50%	69%	45%
<b>Equity - Owner's equity in vessel</b>	<b>115,809</b>	<b>891,312</b>	<b>61,309</b>	<b>94,304</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	39% / 56%	79% / 36%	62% / 75%	37% / 57%
<b><u>Vessel Operation (2007)</u></b>				
Actively shrimping (%)	79%	0%	100%	81%
Owner-operator (%)	47%	21%	46%	48%
Shrimp landed (pounds)	58,203	1,517	128,059	58,085
Shrimp price per pound (vessel basis / pound basis)	2.94 / 2.95	-	2.19 / 2.08	2.97 / 3.00
Annual fuel use (gallons)	34,945	33,508	41,230	34,889
Fuel price per gallon (vessel basis / gallon basis)	2.45 / 2.39	2.55 / 2.49	2.55 / 2.56	2.44 / 2.39
Fuel efficiency I (vessel basis / gallon basis)	2.5 / 1.7	-	3.0 / 3.1	2.4 / 1.7
Fuel efficiency II (vessel basis / gallon basis)	6.49 / 4.91	-	6.58 / 6.47	6.53 / 5.00
<b><u>Cash Flow (2007)</u></b>				
<b>Inflow - Total</b>	<b>195,839</b>	<b>600,821</b>	<b>297,898</b>	<b>181,582</b>
Shrimp landings	171,625	3,974	266,581	174,318
Non-shrimp landings	17,432	594,998	21,901	395
Government payments received (shrimp related)	6,782	1,850	9,416	6,869
<b>Outflow - Total</b>	<b>201,620</b>	<b>483,252</b>	<b>308,661</b>	<b>188,206</b>
Fuel	83,658	83,528	105,718	83,236
Other supplies	18,515	31,526	23,577	18,035
Crew & captain (hired)	46,335	232,767	78,360	40,088
Regular maintenance (vessel and gear)	19,063	38,141	27,662	16,727
Major repair and haul-out	5,359	14,376	8,461	4,087
Overhead (excluding loan payments)	13,899	53,040	35,013	12,121
Interest payments made (on vessel loans)	5,989	12,219	7,960	5,740
Principal payments made (on vessel loans)	8,695	17,151	21,755	8,079
New investments and upgrades (in vessel)	107	503	155	94
<b>Net Cash Flow</b>	<b>(5,781)</b>	<b>117,569</b>	<b>(10,763)</b>	<b>(6,624)</b>



Table 14: F&E Results: Averages for the Total Fleet by Fishery, cont.

	Total Fleet # of Observations 505	Total Fleet		
		Other Fish 14	S. Atlantic Shrimp 13	Gulf Shrimp 477
<b>Income Statement (2007)</b>				
<b>Operating Activities</b>				
Revenue (from commercial fishing)	189,057	598,971	288,481	174,713
<b>Expenses</b>	<b>206,507</b>	<b>498,755</b>	<b>318,646</b>	<b>192,708</b>
<i>Variable costs - Supplies</i>	<i>49.5%</i>	<i>23.1%</i>	<i>40.6%</i>	<i>52.6%</i>
Fuel	40.5%	16.7%	33.2%	43.2%
Other supplies	9.0%	6.3%	7.4%	9.4%
<i>Variable costs - Labor</i>	<i>25.2%</i>	<i>47.2%</i>	<i>28.6%</i>	<i>23.7%</i>
Crew & captain (hired)	22.4%	46.7%	24.6%	20.8%
Owner's vessel time	2.7%	0.6%	4.1%	2.9%
<i>Fixed costs</i>	<i>25.4%</i>	<i>29.7%</i>	<i>30.8%</i>	<i>23.8%</i>
Regular maintenance (vessel and gear)	9.2%	7.6%	8.7%	8.7%
Major repair and haul-out	2.6%	2.9%	2.7%	2.1%
Depreciation	6.8%	8.5%	8.5%	6.7%
Overhead (excluding loan payments)	6.7%	10.6%	11.0%	6.3%
<b>Net Revenue from Operations</b>	<b>(17,450)</b>	<b>100,216</b>	<b>(30,165)</b>	<b>(17,994)</b>
<b>Non-Operating Activities</b>				
Interest payments made (on vessel loans)	5,989	12,219	7,960	5,740
Government payments received (shrimp related)	6,782	1,850	9,416	6,869
<b>Net Revenue (before taxes)</b>	<b>(16,657)</b>	<b>89,847</b>	<b>(28,709)</b>	<b>(16,866)</b>
<i>Owner's vessel time</i>	<i>5,647</i>	<i>2,778</i>	<i>12,909</i>	<i>5,545</i>
<i>Depreciation</i>	<i>14,031</i>	<i>42,599</i>	<i>26,946</i>	<i>12,870</i>

Table 15: F&E Results: Averages for the Total Fleet by State

(in USD unless otherwise noted)	Total Fleet				
	FL	AL+MS	LA	TX	Other
# of Observations	81	40 + 43	134	188	19
<b>Vessel Characteristics</b>					
Length (feet)	59	70	64	72	81
Gross tons	83	112	83	118	141
Horse power	398	550	475	528	662
Year built	1980	1989	1987	1985	1990
Hull material - Steel (%)	31%	75%	74%	86%	89%
Refrigeration - Freezer (%)	52%	58%	26%	70%	42%
Fuel capacity (gallons)	7,836	15,346	9,751	16,140	18,668
State - Florida (%)	100%	0%	0%	0%	0%
State - Alabama or Mississippi (%)	0%	100%	0%	0%	0%
State - Louisiana (%)	0%	0%	100%	0%	0%
State - Texas (%)	0%	0%	0%	100%	0%
<b>Balance Sheet (end of 2007)</b>					
<b>Assets - Market value of vessel</b>	<b>122,578</b>	<b>245,352</b>	<b>165,913</b>	<b>157,225</b>	<b>1,026,260</b>
<i>Original value of vessel (at purchase price)</i>	171,134	363,619	235,836	281,146	399,595
<i>Implicit permit value</i>	9,036	20,421	18,858	28,870	702,941
<b>Liabilities - Loan on vessel</b>	<b>53,462</b>	<b>107,446</b>	<b>69,588</b>	<b>84,119</b>	<b>247,969</b>
<i>% of vessels with loan</i>	35%	48%	45%	49%	58%
<b>Equity - Owner's equity in vessel</b>	<b>69,117</b>	<b>137,906</b>	<b>96,325</b>	<b>73,106</b>	<b>778,292</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	22% / 55%	53% / 69%	37% / 47%	38% / 61%	79% / 43%
<b>Vessel Operation (2007)</b>					
Actively shrimping (%)	75%	82%	81%	84%	37%
Owner-operator (%)	46%	53%	68%	33%	21%
Shrimp landed (pounds)	46,116	72,064	60,038	59,100	27,367
Shrimp price per pound (vessel basis / pound basis)	3.50 / 2.92	2.89 / 3.03	2.27 / 2.40	3.25 / 3.35	2.40 / 2.31
Annual fuel use (gallons)	22,946	44,265	27,924	41,245	32,556
Fuel price per gallon (vessel basis / gallon basis)	2.61 / 2.49	2.44 / 2.38	2.40 / 2.37	2.40 / 2.38	2.55 / 2.50
Fuel efficiency I (vessel basis / gallon basis)	2.3 / 2.0	2.1 / 1.6	3.5 / 2.2	1.9 / 1.4	2.9 / 0.8
Fuel efficiency II (vessel basis / gallon basis)	8.01 / 5.87	5.58 / 4.93	6.86 / 5.15	6.03 / 4.79	6.99 / 1.94
<b>Cash Flow (2007)</b>					
<b>Inflow - Total</b>	<b>143,323</b>	<b>232,649</b>	<b>153,192</b>	<b>204,393</b>	<b>475,059</b>
Shrimp landings	134,685	218,082	143,932	197,721	63,264
Non-shrimp landings	5,404	1,398	992	1,682	410,544
Government payments received (shrimp related)	3,233	13,169	8,269	4,990	1,251
<b>Outflow - Total</b>	<b>150,129</b>	<b>237,311</b>	<b>148,517</b>	<b>217,487</b>	<b>482,749</b>
Fuel	57,235	105,188	66,256	98,163	81,454
Other supplies	12,498	20,691	14,817	21,948	26,785
Crew & captain (hired)	38,998	49,084	30,682	46,173	177,610
Regular maintenance (vessel and gear)	16,720	22,520	11,803	17,584	79,784
Major repair and haul-out	3,191	5,666	3,218	4,405	37,784
Overhead (excluding loan payments)	11,148	15,808	10,025	13,534	48,233
Interest payments made (on vessel loans)	2,925	6,691	5,512	6,609	13,214
Principal payments made (on vessel loans)	7,286	11,561	6,101	9,011	17,345
New investments and upgrades (in vessel)	129	102	102	60	538
<b>Net Cash Flow</b>	<b>(6,806)</b>	<b>(4,663)</b>	<b>4,675</b>	<b>(13,094)</b>	<b>(7,690)</b>

Table 15: F&E Results: Averages for the Total Fleet by State, cont.

	Total Fleet				
	FL	AL+MS	LA	TX	Other
# of Observations	81	40 + 43	134	188	19
<b><u>Income Statement (2007)</u></b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	140,090	219,480	144,923	199,403	473,808
<b>Expenses</b>	<b>155,722</b>	<b>243,729</b>	<b>158,375</b>	<b>217,202</b>	<b>494,052</b>
<i>Variable costs - Supplies</i>	<i>44.8%</i>	<i>51.6%</i>	<i>51.2%</i>	<i>55.3%</i>	<i>21.9%</i>
Fuel	36.8%	43.2%	41.8%	45.2%	16.5%
Other supplies	8.0%	8.5%	9.4%	10.1%	5.4%
<i>Variable costs - Labor</i>	<i>29.1%</i>	<i>23.0%</i>	<i>24.2%</i>	<i>22.9%</i>	<i>36.6%</i>
Crew & captain (hired)	25.0%	20.1%	19.4%	21.3%	35.9%
Owner's vessel time	4.0%	2.9%	4.8%	1.6%	0.7%
<i>Fixed costs</i>	<i>26.1%</i>	<i>25.3%</i>	<i>24.6%</i>	<i>21.8%</i>	<i>41.4%</i>
Regular maintenance (vessel and gear)	10.7%	9.2%	7.5%	8.1%	16.1%
Major repair and haul-out	2.0%	2.3%	2.0%	2.0%	7.6%
Depreciation	6.2%	7.3%	8.8%	5.5%	7.9%
Overhead (excluding loan payments)	7.2%	6.5%	6.3%	6.2%	9.8%
<b>Net Revenue from Operations</b>	<b>(15,632)</b>	<b>(24,249)</b>	<b>(13,451)</b>	<b>(17,799)</b>	<b>(20,244)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	2,925	6,691	5,512	6,609	13,214
Government payments received (shrimp related)	3,233	13,169	8,269	4,990	1,251
<b>Net Revenue (before taxes)</b>	<b>(15,324)</b>	<b>(17,772)</b>	<b>(10,695)</b>	<b>(19,418)</b>	<b>(32,208)</b>
<i>Owner's vessel time</i>	<i>6,300</i>	<i>7,091</i>	<i>7,614</i>	<i>3,548</i>	<i>3,451</i>
<i>Depreciation</i>	<i>9,632</i>	<i>17,681</i>	<i>13,959</i>	<i>11,847</i>	<i>38,951</i>

Table 16: F&E Results: Averages for the Gulf Shrimp Fleet by State and by Activity Status

(in USD unless otherwise noted)	Gulf Shrimp Fleet				Gulf Shrimp Fleet	
	FL	AL+MS	LA	TX	Inactive	Active
# of Observations	73	39 + 42	133	186	89	388
<b><u>Vessel Characteristics</u></b>						
Length (feet)	58	70	64	72	58	70
Gross tons	79	111	83	118	73	108
Horse power	382	549	476	530	369	527
Year built	1980	1989	1987	1985	1978	1987
Hull material - Steel (%)	29%	74%	74%	86%	46%	78%
Refrigeration - Freezer (%)	49%	57%	26%	70%	27%	58%
Fuel capacity (gallons)	7,260	15,404	9,779	16,303	8,486	14,086
State - Florida (%)	100%	0%	0%	0%	20%	14%
State - Alabama or Mississippi (%)	0%	100%	0%	0%	16%	17%
State - Louisiana (%)	0%	0%	100%	0%	28%	28%
State - Texas (%)	0%	0%	0%	100%	33%	40%
<b><u>Balance Sheet (end of 2007)</u></b>						
<b>Assets - Market value of vessel</b>	<b>113,200</b>	<b>246,719</b>	<b>166,559</b>	<b>158,109</b>	<b>113,847</b>	<b>186,021</b>
<i>Original value of vessel (at purchase price)</i>	158,121	365,622	236,857	283,024	118,868	299,193
<i>Implicit permit value</i>	8,639	19,016	19,045	29,169	26,993	22,308
<b>Liabilities - Loan on vessel</b>	<b>43,910</b>	<b>108,077</b>	<b>69,737</b>	<b>85,023</b>	<b>9,676</b>	<b>93,980</b>
<i>% of vessels with loan</i>	32%	47%	44%	49%	18%	51%
<b>Equity - Owner's equity in vessel</b>	<b>69,290</b>	<b>138,642</b>	<b>96,822</b>	<b>73,085</b>	<b>104,171</b>	<b>92,041</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	16% / 45%	52% / 69%	37% / 47%	38% / 62%	4% / 11%	45% / 64%
<b><u>Vessel Operation (2007)</u></b>						
Actively shrimping (%)	75%	83%	81%	84%	0%	100%
Owner-operator (%)	44%	54%	68%	33%	45%	49%
Shrimp landed (pounds)	36,465	72,369	60,416	59,710	124	71,380
Shrimp price per pound (vessel basis / pound basis)	3.65 / 3.29	2.90 / 3.04	2.26 / 2.40	3.26 / 3.35	2.11 / 1.67	2.99 / 3.00
Annual fuel use (gallons)	20,969	44,610	28,081	41,597	222	42,841
Fuel price per gallon (vessel basis / gallon basis)	2.62 / 2.47	2.44 / 2.37	2.41 / 2.37	2.40 / 2.38	2.64 / 2.56	2.43 / 2.39
Fuel efficiency I (vessel basis / gallon basis)	2.2 / 1.7	2.1 / 1.6	3.5 / 2.2	1.9 / 1.4	4.0 / 0.6	2.4 / 1.7
Fuel efficiency II (vessel basis / gallon basis)	8.21 / 5.72	5.64 / 4.93	6.89 / 5.16	6.07 / 4.80	6.68 / 0.93	6.52 / 5.00
<b><u>Cash Flow (2007)</u></b>						
<b>Inflow - Total</b>	<b>123,876</b>	<b>233,471</b>	<b>153,560</b>	<b>204,821</b>	<b>2,093</b>	<b>222,753</b>
Shrimp landings	120,015	220,056	144,835	199,790	206	214,256
Non-shrimp landings	1,032	530	490	27	151	451
Government payments received (shrimp related)	2,830	12,885	8,236	5,004	1,736	8,046
<b>Outflow - Total</b>	<b>132,584</b>	<b>237,818</b>	<b>148,966</b>	<b>218,790</b>	<b>11,578</b>	<b>228,721</b>
Fuel	51,861	105,924	66,638	99,012	567	102,199
Other supplies	11,144	20,793	14,910	22,151	291	22,105
Crew & captain (hired)	34,143	49,613	30,459	45,936	65	49,268
Regular maintenance (vessel and gear)	15,748	22,715	11,885	17,748	4,725	19,480
Major repair and haul-out	3,101	5,620	3,242	4,438	1,406	4,702
Overhead (excluding loan payments)	8,974	14,533	10,051	13,656	2,721	14,277
Interest payments made (on vessel loans)	2,603	6,706	5,542	6,680	724	6,891
Principal payments made (on vessel loans)	4,879	11,809	6,136	9,108	1,017	9,698
New investments and upgrades (in vessel)	132	104	103	60	62	102
<b>Net Cash Flow</b>	<b>(8,708)</b>	<b>(4,347)</b>	<b>4,594</b>	<b>(13,969)</b>	<b>(9,485)</b>	<b>(5,967)</b>

Table 16: F&E Results: Averages for the Gulf Shrimp Fleet by State and by Activity Status, cont.

	Gulf Shrimp Fleet				Gulf Shrimp Fleet	
	FL	AL+MS	LA	TX	Inactive	Active
# of Observations	73	39 + 42	133	186	89	388
<b><u>Income Statement (2007)</u></b>						
<b>Operating Activities</b>						
Revenue (from commercial fishing)	121,046	220,586	145,324	199,817	357	214,707
<b>Expenses</b>	<b>137,555</b>	<b>244,279</b>	<b>158,757</b>	<b>218,327</b>	<b>11,210</b>	<b>234,340</b>
<i>Variable costs - Supplies</i>	<u>45.8%</u>	<u>51.9%</u>	<u>51.4%</u>	<u>55.5%</u>	<u>7.7%</u>	<u>53.0%</u>
Fuel	37.7%	43.4%	42.0%	45.4%	5.1%	43.6%
Other supplies	8.1%	8.5%	9.4%	10.1%	2.6%	9.4%
<i>Variable costs - Labor</i>	<u>28.6%</u>	<u>23.3%</u>	<u>23.9%</u>	<u>22.7%</u>	<u>1.7%</u>	<u>23.9%</u>
Crew & captain (hired)	24.8%	20.3%	19.2%	21.0%	0.6%	21.0%
Owner's vessel time	3.8%	3.0%	4.7%	1.6%	1.1%	2.9%
<i>Fixed costs</i>	<u>25.6%</u>	<u>24.8%</u>	<u>24.7%</u>	<u>21.8%</u>	<u>90.7%</u>	<u>23.0%</u>
Regular maintenance (vessel and gear)	11.4%	9.3%	7.5%	8.1%	42.1%	8.3%
Major repair and haul-out	2.3%	2.3%	2.0%	2.0%	12.5%	2.0%
Depreciation	5.3%	7.3%	8.9%	5.4%	11.7%	6.6%
Overhead (excluding loan payments)	6.5%	5.9%	6.3%	6.3%	24.3%	6.1%
<b>Net Revenue from Operations</b>	<b>(16,508)</b>	<b>(23,693)</b>	<b>(13,432)</b>	<b>(18,510)</b>	<b>(10,853)</b>	<b>(19,633)</b>
<b>Non-Operating Activities</b>						
Interest payments made (on vessel loans)	2,603	6,706	5,542	6,680	724	6,891
Government payments received (shrimp related)	2,830	12,885	8,236	5,004	1,736	8,046
<b>Net Revenue (before taxes)</b>	<b>(16,282)</b>	<b>(17,514)</b>	<b>(10,738)</b>	<b>(20,186)</b>	<b>(9,841)</b>	<b>(18,477)</b>
<i>Owner's vessel time</i>	5,227	7,266	7,519	3,573	121	6,790
<i>Depreciation</i>	7,357	17,814	14,053	11,813	1,314	15,520

Table 17: F&E Results: Averages for the Active Gulf Shrimp Fleet by State

(in USD unless otherwise noted)	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		FL	AL+MS	LA	TX
	388	55	28 + 39	108	157
<b><u>Vessel Characteristics</u></b>					
Length (feet)	70	61	73	66	74
Gross tons	108	86	118	89	124
Horse power	527	399	584	509	556
Year built	1987	1981	1989	1989	1987
Hull material - Steel (%)	78%	29%	81%	81%	91%
Refrigeration - Freezer (%)	58%	56%	58%	31%	77%
Fuel capacity (gallons)	14,086	8,117	15,932	11,030	17,423
State - Florida (%)	14%	100%	0%	0%	0%
State - Alabama or Mississippi (%)	17%	0%	100%	0%	0%
State - Louisiana (%)	28%	0%	0%	100%	0%
State - Texas (%)	40%	0%	0%	0%	100%
<b><u>Balance Sheet (end of 2007)</u></b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>135,548</b>	<b>253,647</b>	<b>188,803</b>	<b>172,521</b>
<i>Original value of vessel (at purchase price)</i>	299,193	185,415	388,058	274,438	314,968
<i>Implicit permit value</i>	22,308	8,771	16,010	21,524	31,083
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>57,508</b>	<b>130,660</b>	<b>83,704</b>	<b>98,771</b>
<i>% of vessels with loan</i>	51%	38%	57%	49%	55%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>78,040</b>	<b>122,987</b>	<b>105,099</b>	<b>73,750</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	22% / 50%	63% / 81%	45% / 51%	45% / 67%
<b><u>Vessel Operation (2007)</u></b>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	49%	45%	55%	69%	32%
Shrimp landed (pounds)	71,380	48,394	87,470	74,316	70,739
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	3.63 / 3.29	2.91 / 3.04	2.29 / 2.40	3.27 / 3.35
Annual fuel use (gallons)	42,841	27,670	53,901	34,539	49,266
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.61 / 2.47	2.44 / 2.37	2.39 / 2.37	2.39 / 2.38
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	2.2 / 1.7	2.1 / 1.6	3.4 / 2.2	1.9 / 1.4
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	8.21 / 5.76	5.72 / 4.93	6.78 / 5.16	6.10 / 4.80
<b><u>Cash Flow (2007)</u></b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>163,738</b>	<b>282,209</b>	<b>188,100</b>	<b>242,419</b>
Shrimp landings	214,256	159,273	265,991	178,231	236,693
Non-shrimp landings	451	1,352	641	531	2
Government payments received (shrimp related)	8,046	3,112	15,578	9,337	5,724
<b>Outflow - Total</b>	<b>228,721</b>	<b>170,348</b>	<b>285,620</b>	<b>181,992</b>	<b>257,986</b>
Fuel	102,199	68,421	127,982	81,951	117,264
Other supplies	22,105	14,389	25,127	18,344	26,235
Crew & captain (hired)	49,268	45,262	59,980	37,497	54,412
Regular maintenance (vessel and gear)	19,480	18,647	26,364	14,051	20,685
Major repair and haul-out	4,702	3,364	6,146	3,918	5,123
Overhead (excluding loan payments)	14,277	10,673	17,510	12,149	15,671
Interest payments made (on vessel loans)	6,891	3,157	8,107	6,683	7,867
Principal payments made (on vessel loans)	9,698	6,294	14,277	7,283	10,660
New investments and upgrades (in vessel)	102	141	126	115	69
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>(6,609)</b>	<b>(3,410)</b>	<b>6,108</b>	<b>(15,568)</b>

Table 17: F&E Results: Averages for the Active Gulf Shrimp Fleet by State, cont.

	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		FL	AL+MS	LA	TX
	388	55	28 + 39	108	157
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	214,707	160,626	266,632	178,762	236,695
<b>Expenses</b>	<b>234,340</b>	<b>177,187</b>	<b>293,274</b>	<b>194,127</b>	<b>257,477</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>46.7%</u>	<u>52.2%</u>	<u>51.7%</u>	<u>55.7%</u>
Fuel	43.6%	38.6%	43.6%	42.2%	45.5%
Other supplies	9.4%	8.1%	8.6%	9.4%	10.2%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>29.5%</u>	<u>23.4%</u>	<u>24.1%</u>	<u>22.8%</u>
Crew & captain (hired)	21.0%	25.5%	20.5%	19.3%	21.1%
Owner's vessel time	2.9%	3.9%	3.0%	4.7%	1.6%
<i>Fixed costs</i>	<u>23.0%</u>	<u>23.8%</u>	<u>24.3%</u>	<u>24.3%</u>	<u>21.5%</u>
Regular maintenance (vessel and gear)	8.3%	10.5%	9.0%	7.2%	8.0%
Major repair and haul-out	2.0%	1.9%	2.1%	2.0%	2.0%
Depreciation	6.6%	5.4%	7.3%	8.8%	5.4%
Overhead (excluding loan payments)	6.1%	6.0%	6.0%	6.3%	6.1%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>(16,561)</b>	<b>(26,642)</b>	<b>(15,365)</b>	<b>(20,782)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891	3,157	8,107	6,683	7,867
Government payments received (shrimp related)	8,046	3,112	15,578	9,337	5,724
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>(16,605)</b>	<b>(19,172)</b>	<b>(12,711)</b>	<b>(22,925)</b>
<i>Owner's vessel time</i>	6,790	6,938	8,785	9,201	4,205
<i>Depreciation</i>	15,520	9,493	21,379	17,016	13,882

Table 18: F&E Results: Averages for the Active Gulf Shrimp Fleet by Refrigeration and by Hull Material

(in USD unless otherwise noted)	Active Gulf			Active Gulf Shrimp Fleet		
	Shrimp	Freezer	Ice	Steel	Wood	Fiberglass
# of Observations	388	225	153	302	33	51
<b><u>Vessel Characteristics</u></b>						
Length (feet)	70	77	60	74	55	51
Gross tons	108	136	73	123	59	57
Horse power	527	638	383	583	308	347
Year built	1987	1990	1983	1989	1975	1982
Hull material - Steel (%)	78%	89%	66%	100%	0%	0%
Refrigeration - Freezer (%)	58%	100%	0%	67%	27%	29%
Fuel capacity (gallons)	14,086	20,019	6,269	16,980	4,146	3,860
State - Florida (%)	14%	14%	9%	5%	39%	49%
State - Alabama or Mississippi (%)	17%	17%	18%	18%	27%	8%
State - Louisiana (%)	28%	15%	49%	29%	18%	25%
State - Texas (%)	40%	54%	24%	47%	15%	18%
<b><u>Balance Sheet (end of 2007)</u></b>						
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>251,397</b>	<b>98,580</b>	<b>217,138</b>	<b>58,180</b>	<b>88,525</b>
<i>Original value of vessel (at purchase price)</i>	299,193	433,673	119,328	361,353	68,130	90,101
<i>Implicit permit value</i>	22,308	29,278	12,427	25,671	11,143	10,822
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>148,995</b>	<b>18,660</b>	<b>117,491</b>	<b>4,698</b>	<b>16,213</b>
<i>% of vessels with loan</i>	51%	66%	29%	58%	21%	31%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>102,402</b>	<b>79,920</b>	<b>99,647</b>	<b>53,482</b>	<b>72,312</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	61% / 75%	24% / 26%	53% / 68%	12% / 7%	18% / 23%
<b><u>Vessel Operation (2007)</u></b>						
Actively shrimping (%)	100%	100%	100%	100%	100%	100%
Owner-operator (%)	49%	35%	71%	46%	64%	53%
Shrimp landed (pounds)	71,380	90,731	46,438	83,716	22,727	31,485
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	3.28 / 3.26	2.43 / 2.22	2.95 / 3.01	2.97 / 2.89	3.22 / 3.01
Annual fuel use (gallons)	42,841	60,933	18,699	50,997	10,465	16,760
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.41 / 2.38	2.43 / 2.39	2.40 / 2.38	2.56 / 2.56	2.49 / 2.35
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	1.8 / 1.5	3.3 / 2.5	2.3 / 1.6	3.1 / 2.2	2.9 / 1.9
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	5.82 / 4.85	6.86 / 5.52	6.02 / 4.93	7.99 / 6.27	8.49 / 5.66
<b><u>Cash Flow (2007)</u></b>						
<b>Inflow - Total</b>	<b>222,753</b>	<b>305,389</b>	<b>109,781</b>	<b>261,182</b>	<b>71,260</b>	<b>98,939</b>
Shrimp landings	214,256	295,397	103,196	251,625	65,584	94,781
Non-shrimp landings	451	196	585	309	720	1,127
Government payments received (shrimp related)	8,046	9,795	6,000	9,247	4,956	3,031
<b>Outflow - Total</b>	<b>228,721</b>	<b>317,442</b>	<b>107,841</b>	<b>267,469</b>	<b>73,045</b>	<b>105,156</b>
Fuel	102,199	145,176	44,709	121,535	26,832	39,333
Other supplies	22,105	28,024	14,677	25,121	11,708	11,299
Crew & captain (hired)	49,268	67,174	23,383	56,523	16,962	28,064
Regular maintenance (vessel and gear)	19,480	25,378	11,195	21,851	8,057	13,049
Major repair and haul-out	4,702	6,139	2,743	5,344	2,428	2,556
Overhead (excluding loan payments)	14,277	19,561	7,061	16,487	5,451	6,956
Interest payments made (on vessel loans)	6,891	10,996	1,297	8,699	314	709
Principal payments made (on vessel loans)	9,698	14,895	2,679	11,806	1,224	3,082
New investments and upgrades (in vessel)	102	99	96	103	69	109
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>(12,054)</b>	<b>1,940</b>	<b>(6,287)</b>	<b>(1,785)</b>	<b>(6,217)</b>



Table 18: F&E Results: Averages for the Active Gulf Shrimp Fleet by Refrigeration and by Hull Material, cont.

	Active Gulf	Active Gulf Shrimp Fleet		Active Gulf Shrimp Fleet		
	Shrimp	Freezer	Ice	Steel	Wood	Fiberglass
# of Observations	388	225	153	302	33	51
<b><u>Income Statement (2007)</u></b>						
<b>Operating Activities</b>						
Revenue (from commercial fishing)	214,707	295,593	103,781	251,935	66,305	95,908
<b>Expenses</b>	<b>234,340</b>	<b>320,841</b>	<b>116,643</b>	<b>273,076</b>	<b>78,308</b>	<b>110,292</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>54.0%</u>	<u>50.9%</u>	<u>53.7%</u>	<u>49.2%</u>	<u>45.9%</u>
Fuel	43.6%	45.2%	38.3%	44.5%	34.3%	35.7%
Other supplies	9.4%	8.7%	12.6%	9.2%	15.0%	10.2%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>22.9%</u>	<u>26.6%</u>	<u>23.4%</u>	<u>28.8%</u>	<u>28.8%</u>
Crew & captain (hired)	21.0%	20.9%	20.0%	20.7%	21.7%	25.4%
Owner's vessel time	2.9%	2.0%	6.5%	2.7%	7.1%	3.4%
<i>Fixed costs</i>	<u>23.0%</u>	<u>23.1%</u>	<u>22.5%</u>	<u>22.9%</u>	<u>22.0%</u>	<u>25.3%</u>
Regular maintenance (vessel and gear)	8.3%	7.9%	9.6%	8.0%	10.3%	11.8%
Major repair and haul-out	2.0%	1.9%	2.4%	2.0%	3.1%	2.3%
Depreciation	6.6%	7.2%	4.5%	6.9%	1.6%	4.8%
Overhead (excluding loan payments)	6.1%	6.1%	6.1%	6.0%	7.0%	6.3%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>(25,248)</b>	<b>(12,862)</b>	<b>(21,141)</b>	<b>(12,003)</b>	<b>(14,384)</b>
<b>Non-Operating Activities</b>						
Interest payments made (on vessel loans)	6,891	10,996	1,297	8,699	314	709
Government payments received (shrimp related)	8,046	9,795	6,000	9,247	4,956	3,031
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>(26,449)</b>	<b>(8,158)</b>	<b>(20,593)</b>	<b>(7,361)</b>	<b>(12,062)</b>
<i>Owner's vessel time</i>	6,790	6,394	7,625	7,367	5,578	3,732
<i>Depreciation</i>	15,520	22,995	5,249	18,847	1,292	5,304

Table 19: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Length

(in USD unless otherwise noted)	Active Gulf	Active Gulf Shrimp Fleet		
	Shrimp	<50 feet	<75 feet	<100 feet
# of Observations	388	48	169	171
<b><u>Vessel Characteristics</u></b>				
Length (feet)	70	40	65	82
Gross tons	108	23	89	152
Horse power	527	282	396	725
Year built	1987	1981	1981	1995
Hull material - Steel (%)	78%	17%	73%	99%
Refrigeration - Freezer (%)	58%	0%	48%	84%
Fuel capacity (gallons)	14,086	1,267	8,989	22,722
State - Florida (%)	14%	31%	18%	5%
State - Alabama or Mississippi (%)	17%	13%	13%	23%
State - Louisiana (%)	28%	48%	28%	22%
State - Texas (%)	40%	8%	41%	49%
<b><u>Balance Sheet (end of 2007)</u></b>				
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>66,911</b>	<b>115,462</b>	<b>289,189</b>
<i>Original value of vessel (at purchase price)</i>	299,193	41,108	145,214	523,816
<i>Implicit permit value</i>	22,308	12,547	15,309	32,831
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>7,194</b>	<b>22,199</b>	<b>189,282</b>
<i>% of vessels with loan</i>	51%	27%	35%	74%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>59,717</b>	<b>93,263</b>	<b>99,906</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	6% / 4%	29% / 30%	71% / 81%
<b><u>Vessel Operation (2007)</u></b>				
Actively shrimping (%)	100%	100%	100%	100%
Owner-operator (%)	49%	73%	49%	42%
Shrimp landed (pounds)	71,380	21,849	56,477	100,013
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	2.78 / 2.40	2.84 / 2.73	3.19 / 3.19
Annual fuel use (gallons)	42,841	5,732	27,792	68,130
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.51 / 2.48	2.43 / 2.37	2.41 / 2.39
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	4.2 / 3.8	2.5 / 2.0	1.8 / 1.5
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	10.18 / 9.15	6.33 / 5.54	5.69 / 4.69
<b><u>Cash Flow (2007)</u></b>				
<b>Inflow - Total</b>	<b>222,753</b>	<b>58,212</b>	<b>160,217</b>	<b>330,745</b>
Shrimp landings	214,256	52,444	154,011	319,217
Non-shrimp landings	451	1,599	425	155
Government payments received (shrimp related)	8,046	4,169	5,781	11,373
<b>Outflow - Total</b>	<b>228,721</b>	<b>56,223</b>	<b>165,360</b>	<b>339,761</b>
Fuel	102,199	14,208	65,966	162,707
Other supplies	22,105	7,494	20,565	27,728
Crew & captain (hired)	49,268	15,924	40,030	67,758
Regular maintenance (vessel and gear)	19,480	8,854	18,798	23,136
Major repair and haul-out	4,702	2,481	3,636	6,379
Overhead (excluding loan payments)	14,277	5,767	10,151	20,744
Interest payments made (on vessel loans)	6,891	358	1,676	13,879
Principal payments made (on vessel loans)	9,698	1,028	4,435	17,334
New investments and upgrades (in vessel)	102	110	104	97
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>1,988</b>	<b>(5,142)</b>	<b>(9,016)</b>

Table 19: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Length, cont.

	# of Observations	Active Gulf Shrimp Fleet			
		Active Gulf Shrimp 388	<50 feet 48	<75 feet 169	<100 feet 171
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)		214,707	54,043	154,436	319,372
<b>Expenses</b>		<b>234,340</b>	<b>63,450</b>	<b>170,584</b>	<b>345,319</b>
<i>Variable costs - Supplies</i>		<u>53.0%</u>	<u>34.2%</u>	<u>50.7%</u>	<u>55.1%</u>
Fuel		43.6%	22.4%	38.7%	47.1%
Other supplies		9.4%	11.8%	12.1%	8.0%
<i>Variable costs - Labor</i>		<u>23.9%</u>	<u>33.8%</u>	<u>27.2%</u>	<u>21.8%</u>
Crew & captain (hired)		21.0%	25.1%	23.5%	19.6%
Owner's vessel time		2.9%	8.7%	3.7%	2.2%
<i>Fixed costs</i>		<u>23.0%</u>	<u>32.0%</u>	<u>22.1%</u>	<u>23.0%</u>
Regular maintenance (vessel and gear)		8.3%	14.0%	11.0%	6.7%
Major repair and haul-out		2.0%	3.9%	2.1%	1.8%
Depreciation		6.6%	5.1%	3.0%	8.5%
Overhead (excluding loan payments)		6.1%	9.1%	6.0%	6.0%
<b>Net Revenue from Operations</b>		<b>(19,633)</b>	<b>(9,407)</b>	<b>(16,148)</b>	<b>(25,947)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)		6,891	358	1,676	13,879
Government payments received (shrimp related)		8,046	4,169	5,781	11,373
<b>Net Revenue (before taxes)</b>		<b>(18,477)</b>	<b>(5,596)</b>	<b>(12,042)</b>	<b>(28,453)</b>
<i>Owner's vessel time</i>		6,790	5,510	6,344	7,588
<i>Depreciation</i>		15,520	3,213	5,094	29,279

Table 20: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Age

(in USD unless otherwise noted)	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		1968+	1980+	1990+	2000+
	388	106	118	83	72
<b><u>Vessel Characteristics</u></b>					
Length (feet)	70	62	64	77	82
Gross tons	108	90	87	128	154
Horse power	527	390	417	633	807
Year built	1987	1976	1985	1996	2001
Hull material - Steel (%)	78%	59%	74%	95%	96%
Refrigeration - Freezer (%)	58%	52%	34%	80%	86%
Fuel capacity (gallons)	14,086	9,252	8,540	18,980	25,742
State - Florida (%)	14%	27%	13%	5%	6%
State - Alabama or Mississippi (%)	17%	13%	19%	20%	18%
State - Louisiana (%)	28%	10%	36%	25%	40%
State - Texas (%)	40%	49%	31%	49%	36%
<b><u>Balance Sheet (end of 2007)</u></b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>88,966</b>	<b>124,880</b>	<b>249,945</b>	<b>373,594</b>
<i>Original value of vessel (at purchase price)</i>	299,193	116,968	166,150	431,998	664,187
<i>Implicit permit value</i>	22,308	17,015	18,182	22,257	38,458
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>18,762</b>	<b>32,445</b>	<b>115,890</b>	<b>291,632</b>
<i>% of vessels with loan</i>	51%	39%	39%	63%	79%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>70,204</b>	<b>92,435</b>	<b>134,056</b>	<b>81,962</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	24% / 31%	35% / 41%	58% / 66%	82% / 87%
<b><u>Vessel Operation (2007)</u></b>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	49%	41%	62%	36%	51%
Shrimp landed (pounds)	71,380	49,177	54,412	89,309	116,473
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	3.13 / 3.10	2.77 / 2.74	2.99 / 3.01	3.14 / 3.14
Annual fuel use (gallons)	42,841	26,458	27,140	56,411	80,596
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.48 / 2.41	2.43 / 2.36	2.42 / 2.38	2.38 / 2.39
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	2.6 / 1.9	2.5 / 2.0	2.6 / 1.6	1.8 / 1.4
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	7.48 / 5.76	6.13 / 5.50	7.19 / 4.77	5.12 / 4.54
<b><u>Cash Flow (2007)</u></b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>157,994</b>	<b>156,393</b>	<b>279,200</b>	<b>379,617</b>
Shrimp landings	214,256	152,308	149,172	268,974	366,296
Non-shrimp landings	451	795	174	655	152
Government payments received (shrimp related)	8,046	4,891	7,047	9,570	13,169
<b>Outflow - Total</b>	<b>228,721</b>	<b>160,835</b>	<b>158,013</b>	<b>296,534</b>	<b>385,111</b>
Fuel	102,199	63,817	64,090	134,278	192,638
Other supplies	22,105	19,601	19,447	28,860	24,261
Crew & captain (hired)	49,268	40,704	37,349	60,567	72,327
Regular maintenance (vessel and gear)	19,480	17,407	16,935	25,481	20,701
Major repair and haul-out	4,702	3,838	4,319	6,096	5,273
Overhead (excluding loan payments)	14,277	10,325	9,333	18,500	24,528
Interest payments made (on vessel loans)	6,891	1,394	2,291	9,659	20,175
Principal payments made (on vessel loans)	9,698	3,661	4,138	12,993	25,095
New investments and upgrades (in vessel)	102	89	112	100	114
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>(2,841)</b>	<b>(1,620)</b>	<b>(17,334)</b>	<b>(5,493)</b>

Table 20: F&E Results: Averages for the Active Gulf Shrimp Fleet by Vessel Age, cont.

	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		1968+	1980+	1990+	2000+
	388	106	118	83	72
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	214,707	153,103	149,346	269,630	366,448
<b>Expenses</b>	<b>234,340</b>	<b>165,280</b>	<b>163,023</b>	<b>299,614</b>	<b>395,707</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>50.5%</u>	<u>51.2%</u>	<u>54.4%</u>	<u>54.8%</u>
Fuel	43.6%	38.6%	39.3%	44.8%	48.7%
Other supplies	9.4%	11.9%	11.9%	9.6%	6.1%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>27.9%</u>	<u>26.7%</u>	<u>22.4%</u>	<u>20.8%</u>
Crew & captain (hired)	21.0%	24.6%	22.9%	20.2%	18.3%
Owner's vessel time	2.9%	3.3%	3.8%	2.2%	2.5%
<i>Fixed costs</i>	<u>23.0%</u>	<u>21.6%</u>	<u>22.1%</u>	<u>23.1%</u>	<u>24.4%</u>
Regular maintenance (vessel and gear)	8.3%	10.5%	10.4%	8.5%	5.2%
Major repair and haul-out	2.0%	2.3%	2.6%	2.0%	1.3%
Depreciation	6.6%	2.5%	3.3%	6.4%	11.6%
Overhead (excluding loan payments)	6.1%	6.2%	5.7%	6.2%	6.2%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>(12,176)</b>	<b>(13,677)</b>	<b>(29,984)</b>	<b>(29,259)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891	1,394	2,291	9,659	20,175
Government payments received (shrimp related)	8,046	4,891	7,047	9,570	13,169
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>(8,679)</b>	<b>(8,920)</b>	<b>(30,073)</b>	<b>(36,264)</b>
<i>Owner's vessel time</i>	6,790	5,378	6,164	6,649	10,072
<i>Depreciation</i>	15,520	4,209	5,387	19,183	45,907

Table 21: F&E Results: Averages for the Active Gulf Shrimp Fleet by Landings Volume

(in USD unless otherwise noted)	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		<50k lbs	<100k lbs	<150k lbs	≥150k lbs
	388	155	135	70	28
<b><u>Vessel Characteristics</u></b>					
Length (feet)	70	59	73	80	84
Gross tons	108	75	118	144	156
Horse power	527	387	518	735	826
Year built	1987	1982	1987	1995	1998
Hull material - Steel (%)	78%	54%	89%	100%	100%
Refrigeration - Freezer (%)	58%	30%	71%	83%	86%
Fuel capacity (gallons)	14,086	7,866	14,356	22,007	27,418
State - Florida (%)	14%	21%	13%	3%	7%
State - Alabama or Mississippi (%)	17%	15%	10%	29%	32%
State - Louisiana (%)	28%	25%	29%	30%	32%
State - Texas (%)	40%	37%	47%	39%	29%
<b><u>Balance Sheet (end of 2007)</u></b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>91,322</b>	<b>179,739</b>	<b>328,483</b>	<b>384,372</b>
<i>Original value of vessel (at purchase price)</i>	<i>299,193</i>	<i>115,130</i>	<i>304,457</i>	<i>521,478</i>	<i>737,022</i>
<i>Implicit permit value</i>	<i>22,308</i>	<i>13,583</i>	<i>23,099</i>	<i>31,879</i>	<i>45,227</i>
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>17,496</b>	<b>85,220</b>	<b>194,024</b>	<b>309,497</b>
<i>% of vessels with loan</i>	<i>51%</i>	<i>29%</i>	<i>59%</i>	<i>74%</i>	<i>79%</i>
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>73,826</b>	<b>94,519</b>	<b>134,459</b>	<b>74,875</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	<i>45% / 64%</i>	<i>14% / 20%</i>	<i>55% / 62%</i>	<i>77% / 80%</i>	<i>86% / 91%</i>
<b><u>Vessel Operation (2007)</u></b>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	49%	58%	38%	40%	71%
Shrimp landed (pounds)	71,380	25,334	75,477	121,702	180,721
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	2.93 / 2.83	3.00 / 3.03	3.07 / 3.06	3.01 / 2.98
Annual fuel use (gallons)	42,841	14,908	45,672	73,983	105,967
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.48 / 2.43	2.40 / 2.37	2.39 / 2.38	2.42 / 2.39
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	3.0 / 1.7	2.1 / 1.7	2.0 / 1.6	2.0 / 1.7
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	7.78 / 4.81	5.71 / 5.00	5.68 / 5.04	5.58 / 5.08
<b><u>Cash Flow (2007)</u></b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>76,566</b>	<b>236,272</b>	<b>387,207</b>	<b>555,692</b>
Shrimp landings	214,256	71,732	228,406	372,834	538,562
Non-shrimp landings	451	606	238	630	174
Government payments received (shrimp related)	8,046	4,228	7,628	13,743	16,956
<b>Outflow - Total</b>	<b>228,721</b>	<b>95,823</b>	<b>249,406</b>	<b>377,475</b>	<b>492,785</b>
Fuel	102,199	36,266	108,255	176,052	253,349
Other supplies	22,105	12,684	26,978	30,130	30,694
Crew & captain (hired)	49,268	20,238	56,100	79,937	100,361
Regular maintenance (vessel and gear)	19,480	12,731	23,334	25,331	23,628
Major repair and haul-out	4,702	2,933	5,616	5,871	7,161
Overhead (excluding loan payments)	14,277	6,895	15,836	23,491	24,594
Interest payments made (on vessel loans)	6,891	1,174	6,358	16,729	16,510
Principal payments made (on vessel loans)	9,698	2,807	6,842	19,793	36,380
New investments and upgrades (in vessel)	102	95	87	142	108
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>(19,257)</b>	<b>(13,134)</b>	<b>9,732</b>	<b>62,907</b>

Table 21: F&E Results: Averages for the Active Gulf Shrimp Fleet by Landings Volume, cont.

	Active Gulf Shrimp # of Observations	Active Gulf Shrimp Fleet			
		<50k lbs	<100k lbs	<150k lbs	≥150k lbs
	388	155	135	70	28
<b><u>Income Statement (2007)</u></b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	214,707	72,338	228,644	373,464	538,737
<b>Expenses</b>	<b>234,340</b>	<b>101,384</b>	<b>256,411</b>	<b>377,953</b>	<b>504,896</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>48.3%</u>	<u>52.7%</u>	<u>54.6%</u>	<u>56.3%</u>
Fuel	43.6%	35.8%	42.2%	46.6%	50.2%
Other supplies	9.4%	12.5%	10.5%	8.0%	6.1%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>24.5%</u>	<u>24.3%</u>	<u>23.3%</u>	<u>23.5%</u>
Crew & captain (hired)	21.0%	20.0%	21.9%	21.2%	19.9%
Owner's vessel time	2.9%	4.5%	2.5%	2.1%	3.6%
<i>Fixed costs</i>	<u>23.0%</u>	<u>27.2%</u>	<u>22.9%</u>	<u>22.2%</u>	<u>20.3%</u>
Regular maintenance (vessel and gear)	8.3%	12.6%	9.1%	6.7%	4.7%
Major repair and haul-out	2.0%	2.9%	2.2%	1.6%	1.4%
Depreciation	6.6%	5.0%	5.4%	7.7%	9.3%
Overhead (excluding loan payments)	6.1%	6.8%	6.2%	6.2%	4.9%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>(29,047)</b>	<b>(27,767)</b>	<b>(4,489)</b>	<b>33,841</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891	1,174	6,358	16,729	16,510
Government payments received (shrimp related)	8,046	4,228	7,628	13,743	16,956
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>(25,992)</b>	<b>(26,498)</b>	<b>(7,474)</b>	<b>34,286</b>
<i>Owner's vessel time</i>	6,790	4,583	6,333	8,043	18,070
<i>Depreciation</i>	15,520	5,054	13,960	29,098	47,038

Table 22: F&E Results: Averages for the Active Gulf Shrimp Fleet by Survey Quality

(in USD unless otherwise noted)	Active Gulf	Active Gulf Shrimp Fleet	
	Shrimp	Medium Quality	High Quality
# of Observations	388	71	317
<b><u>Vessel Characteristics</u></b>			
Length (feet)	70	73	69
Gross tons	108	117	106
Horse power	527	577	515
Year built	1987	1990	1987
Hull material - Steel (%)	78%	83%	77%
Refrigeration - Freezer (%)	58%	49%	60%
Fuel capacity (gallons)	14,086	15,711	13,722
State - Florida (%)	14%	14%	14%
State - Alabama or Mississippi (%)	17%	17%	17%
State - Louisiana (%)	28%	37%	26%
State - Texas (%)	40%	31%	43%
<b><u>Balance Sheet (end of 2007)</u></b>			
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>190,468</b>	<b>185,024</b>
<i>Original value of vessel (at purchase price)</i>	299,193	368,405	283,692
<i>Implicit permit value</i>	22,308	30,818	20,793
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>97,357</b>	<b>93,224</b>
<i>% of vessels with loan</i>	51%	51%	51%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>93,112</b>	<b>91,801</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	54% / 72%	43% / 62%
<b><u>Vessel Operation (2007)</u></b>			
Actively shrimping (%)	100%	100%	100%
Owner-operator (%)	49%	69%	44%
Shrimp landed (pounds)	71,380	84,755	68,385
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	2.78 / 2.85	3.03 / 3.04
Annual fuel use (gallons)	42,841	44,653	42,435
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.49 / 2.45	2.42 / 2.37
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	3.2 / 1.9	2.2 / 1.6
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	8.30 / 5.41	6.13 / 4.91
<b><u>Cash Flow (2007)</u></b>			
<b>Inflow - Total</b>	<b>222,753</b>	<b>250,158</b>	<b>216,615</b>
Shrimp landings	214,256	241,449	208,165
Non-shrimp landings	451	673	402
Government payments received (shrimp related)	8,046	8,036	8,049
<b>Outflow - Total</b>	<b>228,721</b>	<b>227,350</b>	<b>229,028</b>
Fuel	102,199	109,201	100,630
Other supplies	22,105	14,238	23,867
Crew & captain (hired)	49,268	43,073	50,656
Regular maintenance (vessel and gear)	19,480	19,672	19,436
Major repair and haul-out	4,702	3,197	5,039
Overhead (excluding loan payments)	14,277	18,101	13,421
Interest payments made (on vessel loans)	6,891	8,640	6,499
Principal payments made (on vessel loans)	9,698	11,134	9,377
New investments and upgrades (in vessel)	102	94	103
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>22,808</b>	<b>(12,412)</b>



Table 22: F&E Results: Averages for the Active Gulf Shrimp Fleet by Survey Quality, cont.

# of Observations	Active Gulf Shrimp	Active Gulf Shrimp Fleet	
	388	Medium Quality 71	High Quality 317
<b>Income Statement (2007)</b>			
<b>Operating Activities</b>			
Revenue (from commercial fishing)	214,707	242,122	208,567
<b>Expenses</b>	<b>234,340</b>	<b>237,077</b>	<b>233,727</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>52.1%</u>	<u>53.3%</u>
Fuel	43.6%	46.1%	43.1%
Other supplies	9.4%	6.0%	10.2%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>22.9%</u>	<u>24.2%</u>
Crew & captain (hired)	21.0%	18.2%	21.7%
Owner's vessel time	2.9%	4.7%	2.5%
<i>Fixed costs</i>	<u>23.0%</u>	<u>25.1%</u>	<u>22.6%</u>
Regular maintenance (vessel and gear)	8.3%	8.3%	8.3%
Major repair and haul-out	2.0%	1.3%	2.2%
Depreciation	6.6%	7.8%	6.4%
Overhead (excluding loan payments)	6.1%	7.6%	5.7%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>5,045</b>	<b>(25,160)</b>
<b>Non-Operating Activities</b>			
Interest payments made (on vessel loans)	6,891	8,640	6,499
Government payments received (shrimp related)	8,046	8,036	8,049
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>4,441</b>	<b>(23,610)</b>
<i>Owner's vessel time</i>	6,790	11,134	5,816
<i>Depreciation</i>	15,520	18,461	14,862

Table 23: F&E Results: Averages for the Active Gulf Shrimp Fleet by Ownership Structure; and of the Owner-Operated Sub-Fleet by Captain's Share Structure

(in USD unless otherwise noted)	Active Gulf Shrimp	Active Gulf Shrimp Fleet		Own-Operator without Share	Act. Gulf Shr. with Share
# of Observations	388	Hired Captain	Own-Operator	139	50
		199	189		
<b><u>Vessel Characteristics</u></b>					
Length (feet)	70	72	67	67	67
Gross tons	108	119	97	95	101
Horse power	527	538	515	520	502
Year built	1987	1988	1987	1987	1985
Hull material - Steel (%)	78%	82%	74%	77%	64%
Refrigeration - Freezer (%)	58%	74%	41%	37%	52%
Fuel capacity (gallons)	14,086	16,099	11,967	12,240	11,206
State - Florida (%)	14%	15%	13%	9%	26%
State - Alabama or Mississippi (%)	17%	15%	20%	22%	14%
State - Louisiana (%)	28%	17%	40%	41%	36%
State - Texas (%)	40%	53%	27%	28%	24%
<b><u>Balance Sheet (end of 2007)</u></b>					
<b>Assets - Market value of vessel</b>	<b>186,021</b>	<b>201,906</b>	<b>169,295</b>	<b>168,615</b>	<b>171,187</b>
<i>Original value of vessel (at purchase price)</i>	299,193	331,156	265,540	268,805	256,462
<i>Implicit permit value</i>	22,308	23,167	21,311	21,444	20,912
<b>Liabilities - Loan on vessel</b>	<b>93,980</b>	<b>104,640</b>	<b>82,756</b>	<b>85,527</b>	<b>75,051</b>
<i>% of vessels with loan</i>	51%	59%	42%	41%	46%
<b>Equity - Owner's equity in vessel</b>	<b>92,041</b>	<b>97,265</b>	<b>86,540</b>	<b>83,088</b>	<b>96,136</b>
<i>Insurance coverage (% of vessels / % of assets)</i>	45% / 64%	50% / 67%	40% / 60%	39% / 65%	42% / 46%
<b><u>Vessel Operation (2007)</u></b>					
Actively shrimping (%)	100%	100%	100%	100%	100%
Owner-operator (%)	49%	0%	100%	100%	100%
Shrimp landed (pounds)	71,380	74,012	68,609	68,637	68,531
Shrimp price per pound (vessel basis / pound basis)	2.99 / 3.00	3.22 / 3.22	2.74 / 2.75	2.65 / 2.69	3.00 / 2.93
Annual fuel use (gallons)	42,841	49,703	35,615	36,861	32,151
Fuel price per gallon (vessel basis / gallon basis)	2.43 / 2.39	2.39 / 2.36	2.47 / 2.43	2.45 / 2.41	2.52 / 2.48
Fuel efficiency I (vessel basis / gallon basis)	2.4 / 1.7	1.9 / 1.5	3.0 / 1.9	3.1 / 1.9	2.7 / 2.1
Fuel efficiency II (vessel basis / gallon basis)	6.52 / 5.00	5.75 / 4.80	7.33 / 5.30	7.29 / 5.01	7.45 / 6.25
<b><u>Cash Flow (2007)</u></b>					
<b>Inflow - Total</b>	<b>222,753</b>	<b>246,904</b>	<b>197,325</b>	<b>193,176</b>	<b>208,860</b>
Shrimp landings	214,256	238,333	188,905	184,617	200,824
Non-shrimp landings	451	200	715	583	1,085
Government payments received (shrimp related)	8,046	8,370	7,705	7,976	6,951
<b>Outflow - Total</b>	<b>228,721</b>	<b>269,112</b>	<b>186,193</b>	<b>183,927</b>	<b>192,492</b>
Fuel	102,199	117,056	86,555	88,988	79,792
Other supplies	22,105	25,842	18,170	18,236	17,987
Crew & captain (hired)	49,268	60,796	37,130	33,300	47,778
Regular maintenance (vessel and gear)	19,480	24,268	14,437	13,138	18,049
Major repair and haul-out	4,702	5,938	3,400	3,084	4,278
Overhead (excluding loan payments)	14,277	15,993	12,471	12,750	11,695
Interest payments made (on vessel loans)	6,891	7,923	5,804	6,359	4,261
Principal payments made (on vessel loans)	9,698	11,192	8,125	7,984	8,519
New investments and upgrades (in vessel)	102	103	100	88	133
<b>Net Cash Flow</b>	<b>(5,967)</b>	<b>(22,208)</b>	<b>11,133</b>	<b>9,249</b>	<b>16,368</b>

Table 23: F&E Results: Averages for the Active Gulf Shrimp Fleet by Ownership Structure; and of the Owner-Operated Sub-Fleet by Captain's Share Structure, cont.

	Active Gulf	Active Gulf Shrimp Fleet		Own-Operator	Act. Gulf Shr.
	Shrimp	Hired Captain	Own-Operator	without Share	with Share
# of Observations	388	199	189	139	50
<b>Income Statement (2007)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	214,707	238,533	189,620	185,200	201,909
<b>Expenses</b>	<b>234,340</b>	<b>266,459</b>	<b>200,521</b>	<b>197,008</b>	<b>210,288</b>
<i>Variable costs - Supplies</i>	<u>53.0%</u>	<u>53.6%</u>	<u>52.2%</u>	<u>54.4%</u>	<u>46.5%</u>
Fuel	43.6%	43.9%	43.2%	45.2%	37.9%
Other supplies	9.4%	9.7%	9.1%	9.3%	8.6%
<i>Variable costs - Labor</i>	<u>23.9%</u>	<u>22.8%</u>	<u>25.5%</u>	<u>23.3%</u>	<u>31.2%</u>
Crew & captain (hired)	21.0%	22.8%	18.5%	16.9%	22.7%
Owner's vessel time	2.9%	0.0%	7.0%	6.4%	8.5%
<i>Fixed costs</i>	<u>23.0%</u>	<u>23.6%</u>	<u>22.3%</u>	<u>22.3%</u>	<u>22.3%</u>
Regular maintenance (vessel and gear)	8.3%	9.1%	7.2%	6.7%	8.6%
Major repair and haul-out	2.0%	2.2%	1.7%	1.6%	2.0%
Depreciation	6.6%	6.2%	7.2%	7.6%	6.1%
Overhead (excluding loan payments)	6.1%	6.0%	6.2%	6.5%	5.6%
<b>Net Revenue from Operations</b>	<b>(19,633)</b>	<b>(27,926)</b>	<b>(10,901)</b>	<b>(11,808)</b>	<b>(8,379)</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	6,891	7,923	5,804	6,359	4,261
Government payments received (shrimp related)	8,046	8,370	7,705	7,976	6,951
<b>Net Revenue (before taxes)</b>	<b>(18,477)</b>	<b>(27,479)</b>	<b>(8,999)</b>	<b>(10,190)</b>	<b>(5,689)</b>
<i>Owner's vessel time</i>	6,790	0	13,938	12,543	17,816
<i>Depreciation</i>	15,520	16,566	14,419	14,968	12,893