SUPPORTING STATEMENT
ECONOMIC SURVEY OF GULF OF MEXICO (GOM) CAPTAINS AND CREW
ASSOCIATED WITH THE GOM GROUPER-TILEFISH INDIVIDUAL FISHING
QUOTA PROGRAM
OMB CONTROL NO. 0648-XXXX

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local governmental units, households, or persons) in the universe and the corresponding sample are to be provided in tabular form. The tabulation must also include expected response rates for the collection as a whole. If the collection has been conducted before, provide the actual response rate achieved.

The population of interest consists of approximately 1,000 individuals: 400 captains and 600 crew. These individuals include present or past captains and crew who participated in the GOM reef fish fishery before or after the implementation of the IFQ program in 2010. The survey strategy calls for a sample of this potential respondent universe obtained by referrals from pre-scheduled dealer interviews and canvassing nearby ports to intercept non-referred captains and crew. Canvassing for non-referred captains and crew will be structured such that a representative cross section of hired labor that inhabits each area associated with the pre-scheduled dealer interview will be intercepted. When canvassing ports for intercept interviews, we will visit each port at a different time (e.g., morning, evening) on multiple days to control for bias. Nearby ports will be randomly selected with probability proportional to the number of vessels landing GT-IFQ species categories (e.g., gag, red grouper, deep water grouper, shallow water grouper, and tilefish) at local dealers relative to the fishery as whole. Crew interviews will be obtained by asking captains for referrals, or by approaching crew on the dock as they unload catch. We anticipate that at least 30% of the population of interest for the labor survey (the "readily accessible population") is located near the 20 dealers to be interviewed in-person for the dealer survey.

A recent socio-economic aspects survey (SEAS) of commercial fishing crew in the Northeast[1] obtained a response rate of 38%. Several factors should lead to a much higher response rate on the GOM survey:
1. Interviewers will be introduced to captains and crew by dealers interviewed on the dealer survey, or nearby dealers in the same port. In SEAS, captains and crew were approached on the dock with no introduction. We believe that introduction by a dealer known to the captain will significantly increase response.
2. The SEAS survey took almost an hour to complete. By contrast, the GOM survey is only 30 minutes long on average.
3. Much of the SEAS interviewing took place on the docks in the Northeast winter. Many respondents were reluctant to answer questions while standing in the cold, especially given the length of the interview. GOM interviewing, on the other hand, will be

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[1] Henry, Anna and Olson, Julia. *An Overview of the Survey on the Socio-economic Aspects of Commercial Fishing Crew in the Northeast*, NOAA Technical Memorandum NMFS-NE-230 (September 2014)

conducted on the Gulf Coast in the summer of 2016. Also, GOM respondents will be given the option of participating by phone.

Given these factors promoting higher response, our goal is to achieve an unweighted response rate of 70% of the readily accessible population, resulting in approximately 210 completed surveys or sufficient partials.

Table 1 summarizes the key statistics about the proposed sampling strategy.

Table 1: Sampling strategy for hired captains and crew in the GT-IFQ Program.

Population Size	Target Sample	Expected Response Rate	Anticipated Sample
1,000	300	0.70	210

2. Describe the procedures for the collection, including: the statistical methodology for stratification and sample selection; the estimation procedure; the degree of accuracy needed for the purpose described in the justification; any unusual problems requiring specialized sampling procedures; and any use of periodic (less frequent than annual) data collection cycles to reduce burden.

One time, voluntary surveys will be used to elicit economic and attitudinal information from captains and crew associated with the GT-IFQ Program. Participants will be contacted via visits to dealers and local ports in the survey area. The contractor anticipates attempting contacting 30% of the universe of participants (approximately 300 individuals) using in-person or telephone interviews. Socioeconomic impacts of the GT-IFQ Program on captains and crew will be estimated using multinomial logit models. Logit models measure the effect of independent variables, such as race or ethnicity, on qualitative outcomes such as employment choices in fishing. Logit models will be fit using standard statistical packages such as STATA, LIMDEP or SAS.

3. Describe the methods used to maximize response rates and to deal with nonresponse. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses. For collections based on sampling, a special justification must be provided if they will not yield "reliable" data that can be generalized to the universe studied.

We plan to adopt the following plan to achieve high response rates.

First, we have drafted a respondent-friendly questionnaire which will take no more than 30 minutes to complete. Second, we will provide the option of a telephone interview to captains or crew who cannot be reached in person, or for whom an in-person interview is inconvenient or otherwise objectionable. Third, during contacts with potential respondents, we will stress the importance of the data to be collected to the management of the IFQ program, and the opportunity the interview provides to captains and crew to provide input to improvements to the program. Fourth, we will make clear the voluntary nature of participation. Finally, we will stress the fact that individual responses will remain anonymous and will not be released by NMFS.

In the event we receive less than an 80% response rate, we plan to incorporate a weighting adjustment method (e.g., post-stratification) to deal with unit non-response. Results may be stratified by the relative proportion of responding captains to responding crewmembers (if the proportion of captain to crew is significantly different from our assumed 400:600 ratio in the population) and GT-IFQ species categories.

Should the captains/crew sample differ significantly from the population (e.g., geographically or by vessel type) , standard methods of nonresponse adjustment described in statistical textbooks such as Cochran[2] and Lohr [3] will be employed to correct for potential biases.

4. Describe any tests of procedures or methods to be undertaken. Tests are encouraged as effective means to refine collections, but if ten or more test respondents are involved OMB must give prior approval.

In addition to sharing the survey instrument with NMFS and GMFMC staff, as well as experts in academia, the attached survey was pre-tested with hired captains and crew. Members of NMFS, GMFMC and industry provided suggestions to improve the content and clarity of the final survey.

5. Provide the name and telephone number of individuals consulted on the statistical aspects of the design, and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

Dr. David Cox is the President of QuanTech, Inc. and has extensive experience with survey design and implementation. For this project, he has supervised all aspects of survey design and planning for its implementation. He will also supervise the collection, storage, and synthesis of the collected information into a final deliverable product to the NMFS. Dr. Cox can be reached at 240-397-2993 or dcox@quantech.com.

Dr. Jacob LaRiviere from the University of Tennessee was hired by QuanTech, Inc. to design the survey instrument. Dr. LaRiviere can be reached at 865-974-8114

Dr. Assane Diagne is a staff economist for the GMFMC. He has reviewed the final questionnaire. He can be reached at 813-348-1630.

Drs. Larry Perruso, Michael Travis, and Michael Jepson, social scientists employed by the NMFS, were consulted on the statistical design. NMFS social scientists and GMFMC staff will also use the data for regulatory analysis. Drs. Perruso, Travis, and Jepson can be reached at 305-361-4278, 301-427-8549, and 727-551-5756, respectively.

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[2] Cochran, W. 1977. *Sampling Techniques*. 3rd Edition. Toronto. John Wiley and Sons.

[3] Lohr, S., 1998. Sampling: Design and Analysis. Duxbury Press.