Peer Review Report of the
NCRPP Pilot Study Fleet – Electronic Logbook Program
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1. **Program Overview and Execution.** Comment generally on IT system development and cost estimates for future phases.

   The Study Fleet project provides a solid basis for gathering some types of information that might be useful for improving current stock assessment and management processes. These types of information principally include tow-by-tow catch data, area of catch, temperature at depth and self-reported landings on a near real-time basis.

   Several NE fisheries are currently managed based on self-reported information gathered from fishing vessels on a trip basis. This means that multiple units of effort (hauls or sets of gear) and to some extent multiple management areas are combined in the trip-level data. The Study Fleet electronic logbook (ELB) program allows real-time collection of self-reported fishing data at a much finer spatial and temporal resolution (tow-by-tow, exact locations) as well as collection of additional, value added data (environmental data). The additional data collected is easier for fishermen to collect, more accurate, and more useful in the effective management of the fisheries.

   In addition, a well-developed onboard user interface allows fishermen to minimize the amount of information that must be routinely entered or coded.

   Given the problems experienced with the contractor meeting delivery schedules and the costs of contracting, the decision to bring development in-house after development Phase II was wise. In-house development provides better control over the final product and is more cost effective at this phase. The debate over whether the application was designed as a scientific collection tool or a management tool is irrelevant as it is applicable under both.

   The resources assigned to Phase III of the project seemed reasonable in light of the objectives for this phase of the project.

2. **Data Characteristics and Utility from Phase I & II.** Evaluate the accuracy and precision of measures of fishing location, effort duration, and catch (landings and discards) estimates as they relate to use in stock assessments and management analyses and if possible, recommend additional analyses of these data (Note: a technical manuscript review is not part of the TOR – the emphasis is on what the analyses reveal about the data characteristics).

The comparative analysis of the Study Fleet ELB and other data collection systems seemed well thought out and the results were clear and useful in demonstrating the strengths and weaknesses of this data collection system.

Comparisons with observer-collected data indicate that the improvement in accuracy of reporting is a significant improvement over the current FVTR data collection program for fishing location, effort duration and landings data. Future comparisons to exemplify the benefits of the system should include clear, quantifiable measures of improvement, carefully planned collection protocols, and should be statistically sound to ensure results are truly comparable. However, a detailed, complex comparison study is most likely not necessary to demonstrate the significant advantage of the new, detailed collection system.

The spatial and temporal information on fishing activity at the haul level is of high quality, and is unavailable from any other source. VMS data do not provide the same level of spatial resolution and fishing activity must be inferred from vessel speed, which is prone to error. Observer data provide haul start and stop times, and location (an average position) but are available only from the small number of vessels carrying observers and do not provide the detailed vessel track available from the SF logbook system.

Information from the temperature and depth sensor is unique among the available data collections, and, in conjunction with the haul-specific fishing information could prove very useful in analysis as well as providing additional, useful information to the fishermen, which increases the system's appeal to them.

Comments from NEFSC scientists indicated uncertainty about specific application of the Study Fleet information. This may be because they have not considered how to best incorporate the additional available data in the context of existing assessment models and analytic frameworks. This indicates that additional thought needs to go into how to apply the Study Fleet information.

3. **NEFSC Phase III Initiative.** Evaluate recent activities, review software (functionality and data collection only) and evaluate the design of a proposed study to assess efficacy of catch self-reporting protocols. Provide a prioritized list of suggested changes.

   The software functionality and data collection seem adequate to support the intended purpose of the program. The system does have a limitation related to fixed-gear fisheries, as fixed gear is sometimes deployed on one trip and retrieved on a subsequent trip. The software does not allow a trip to be closed and exported if there are open effort records. A modification to remove this limitation would provide enhanced capabilities for study fleet applications for lobster and gillnet fisheries, if subsequent analysis shows a reasonable cost for the modifications.

   The comparative analysis indicated significant problems in the accuracy of self-reported retained catch and particularly discarded catch. Although levels of reported discards for the Study Fleet were higher than those reported on FVTRs, the Study Fleet underreported discards in terms of both species and quantities when compared

to the observer program (NEFOP). This is consistent with findings in other fisheries about the accuracy of self-reported data, and it may simply not be possible to improve self-reported data to the same quality level of observer data. These limitations should be carefully considered and addressed before further effort is expended on collecting discard data through the study fleet.

However, there may be value in some situations of knowing the self-reported discard amounts to provide a minimum value, or a qualitative ranking of the degree of discard for different species. This could be used, for instance, to identify fisheries (or components thereof), which should receive a high priority for improved, discard estimates. The data might be useful over a series of years to indicate trends in bycatch and discards, even if the absolute amounts cannot be determined.

There may also be value in knowing which species occurred in the haul, and whether they were retained or discarded, even though the absolute amounts are in question. In the North Pacific, for instance, relative catch composition is used to identify a "target" for the fishing activity, which can be used to improve discard estimates for the fishery by more closely matching the observed vessels with the set of similar unobserved vessels prior to expanding the observed discard rates.

The ELB provides a data collection platform that could be used to collect any data element at either the trip or the haul level. Future Study Fleet applications should not be limited by the current set of data elements collected. For example, the ELB could be useful in collecting data for economic analysis.

The general comparison between FVTR and observer data was the only study to determine the efficacy of collecting catch/effort at the haul level. There appears to be confusion as to how exactly the improved data collection can improve stock assessments, as the study fleet data cannot directly substitute for observer data. However, improving a stock assessment may not be the best example of the new tool's large-scale benefits. The enhanced collection of effort and discard data is a value-added feature of the system that may be useful to augment observer-collected data on bycatch and discards.

4. **Phase IV Study Fleet Deployment Options.** Evaluate the merits of alternative deployment strategies. If possible, provide advice on fisheries, or specific research questions, which would benefit from Study Fleet data.

   Possible applications include:

   a. Improving the tilefish assessment through more detailed information on effort. The tilefish fishery was used as an example of a fishery where nearly all of the total landings and trips could be covered with the study fleet system. There is potential for a significant improvement of a stock assessment through implementation of the Study Fleet ELB.

   b. Analyzing location, temperature and depth data to look for correlations with bycatch rates in certain fisheries that might prove useful in future regulations or voluntary application by the fleet to reduce bycatch.

c. Analyzing haul specific species occurrence information for possible application to improved management measures.

d. Gaining more information about fleet encounters with small yellowtail flounder that could inform management measures to protect the next recruiting year class and further rebuilding objectives.

e. Using the ELB in the multispecies fishery to obtain better information on catch by area within multiple area trips.

Further work is needed to identify specific fishery science or management problems that are not being adequately addressed by current methods and data, to evaluate if the Study Fleet can provide information to address the problem. More specific information on how the project resources would have to be scaled to meet various information requirements could help project managers and reviewers evaluate how the study fleet concept might be applied to information needs in the future. A thoughtful evaluation of specific information requirements of management and stock assessments would help determine how the project resources should be scaled to meet those information requirements. Evaluation of the costs of scalability can be done during phase IV as the SF ELB is further tested in fisheries using gears other than trawls.

It would be shortsighted to consider application of the data collection system developed for the NE Study Fleet as limited to the Study Fleet itself. The electronic logbook system and the associated protocols for collecting detailed, within trip vessel location data and temperature-depth data (catch/effort and environmental data) could find broad application in both management and science applications throughout NMFS. The questions of how to apply the Study Fleet in the NE, and how to obtain the greatest benefit from the agency's investment in the data collection tools should both be considered.

The Study Fleet ELB has demonstrated its ability to collect more catch/effort data faster, better and cheaper than the current FVTR system. In addition, the concurrent collection of environmental data is a significant value-added product that has an immediate, direct benefit to the fishermen. As such, it should be made available to the fisheries where it has been established as a useful data collection tool. Since the enhanced collection of fisheries data continues to fulfill fishery management requirements (e.g. FVTR data), NMFS should consider endorsing the product and making it available to fishermen. Consideration should be given to providing the system to other fisheries in a more generic, simplified version (not necessarily the complete system with laptop, DT recorders, etc). Future implementation strategies need to consider and include the additional resources that will be required to deploy the study fleet system on more vessels as well as the resources needed to process (receive, review, edit, archive) the increased amount of data that will be collected.

Additionally, and although not a project objective, the Study Fleet project has done a lot of work that can be applied toward and possibly be an integral part of electronic vessel trip reports in the Northeast. This work should be used to the extent possible rather than duplicated in a separate initiative. Documentation of the system development and “lessons learned” should be done (as available resources allow) and

made available for other agency programs following similar directions (i.e. electronic reporting and data collection).

Consideration should be given to incorporating the ELB program with the observer program to allow observers and captains to record fisheries information using same/similar protocols. This would make the collected data more comparable. It would also alleviate the resource requirement for training vessel captains in the use of the ELB (observers could provided training rather than hiring more technicians). Combining agency resources to implement the additional collection system is much more cost-effective.

In Conclusion

The Review Team commends the Study Fleet team and the NE Fisheries Science Center for the well-organized and informative review workshop. We hope this report provides insight and advice that will help improve the Study Fleet and the ELB system and advance the usefulness of these tools in U.S. fisheries science and management.