

Dockside Monitoring Pilot Study Final Report, July 2009

Prepared For: Environmental Defense Fund and Gulf of Maine Research Institute

Prepared By: Arvidas Poshkus and Luke Szymanski, A.I.S., Inc., 89 N. Water St.,
New Bedford, MA 02740

Introduction

In May of 2009 the Environmental Defense Fund (EDF) and the Gulf of Maine Research Institute (GMRI) contracted with A.I.S., Inc (AIS) to develop and test a dockside monitoring system. The study was designed to field test the dockside monitoring system in order to document specific offloading scenarios and identify the potential cost for monitoring sectors. Specifically the study aimed to test roving monitor (RM) protocols and 100% dockside monitor (DM) protocols as outlined in the Sector Dockside Monitoring Program Standards (“strawman”). This document will be referred to as the “Standards Document” throughout this report. The Standards Document was developed over several months by NMFS and the Managers of current and proposed sectors.

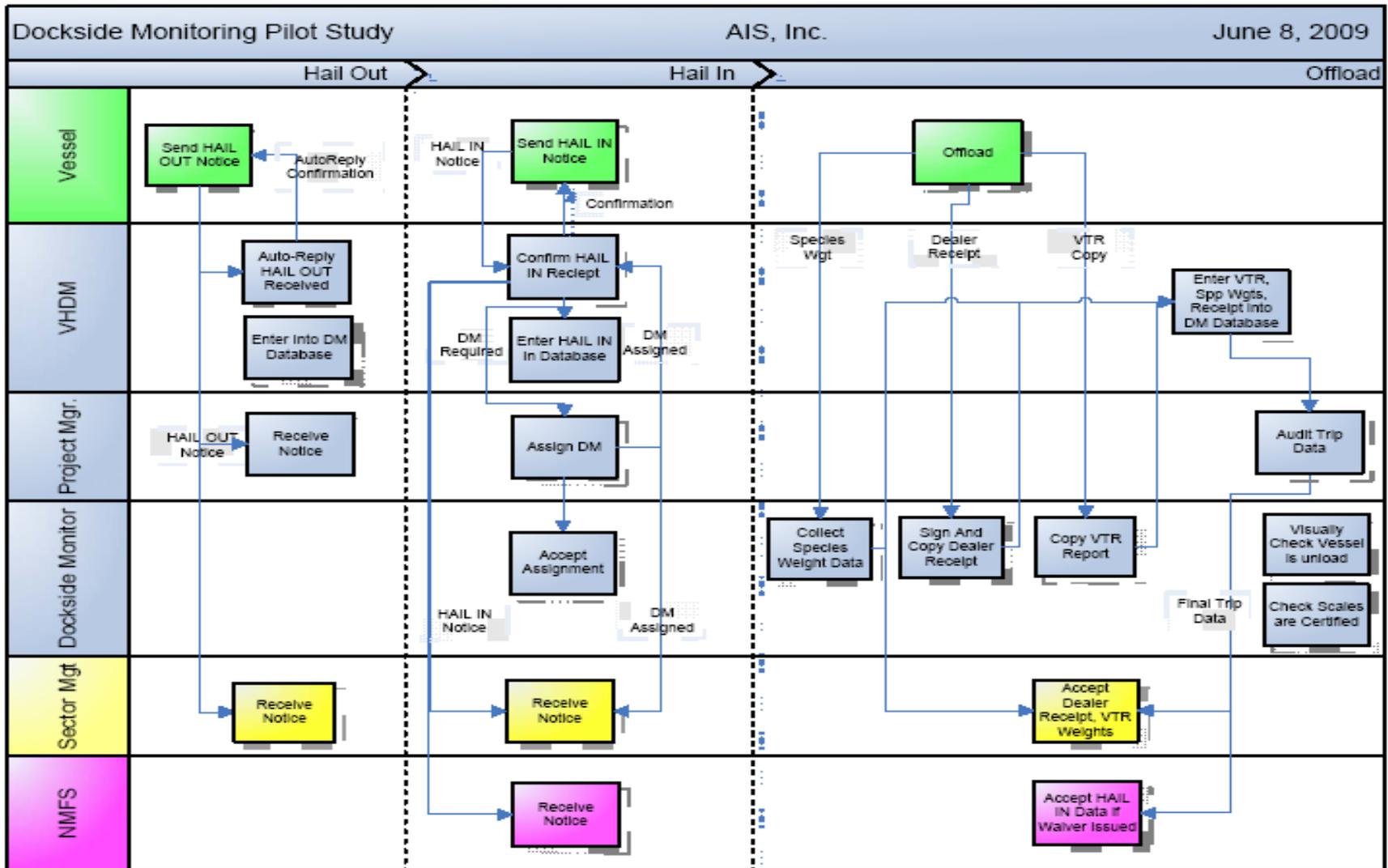
The study was funded in order to provide Managers of current and proposed Sectors, NMFS and other Fishing Industry Members with information to facilitate the development of Sector Operation Plans. The field sampling phase of the pilot study occurred from 17 June to 16 July 2009.

The AIS organization structure for the Dockside Monitoring Pilot Study consisted of a Project Manager (PM), a Vessel Hail and Data Manager (VHDM) and several Monitors. Mr. Luke Szymanski was selected as the PM for the pilot study. He was responsible for dispatching Monitors, ensuring that protocols were followed, and the overall performance of the program. Mr. James Litchfield served as the VHDM. In this role he managed the VMS hail reports, compiled dockside monitor weigh-out data and produced the daily and weekly reports. The Field Staff (Dockside Monitors) for the project was made-up of AIS employees, many of whom were Fisheries Observers for the Northeast Fisheries Observer Program. Utilizing trained and experienced field staff allowed us to test the protocol described in the Standards Document. Two full-time and three back-up Monitors were assigned to cover events in the Cape Cod area. Four full time and two back-up Monitors were assigned to Maine. Monitors were equipped with clipboards, photo ID’s, data forms, hand-held computers (IPAQs) and cell phones.

Dockside Monitoring Pilot Study Process Flow

The process flow in Figure 1 depicts the three major events that are associated with dockside monitoring, hail-out, hail-in and offload. Figure 1 also indicates the group or individual and their associated tasks. The chart was developed to assist AIS in visualizing the entire Dockside Monitoring System

Figure 1 Dockside Monitoring Pilot Study Process Flow



Hailing Protocols and Incorporation into Dockside Monitor System

Vessel Hail System

An Automated Hail Response System was used for the pilot study. The system utilized email, MicroSoft (MS) Office software and the Internet to accept hail messages. We purchased an MS Office add-on called Auto-Reply that would screen incoming email to determine if the sender was participating in the pilot study and if the message was a hail-out or a hail-in email.

To accurately track vessel departures and landings we requested that Captains submit hails using their VMS to an email address specifically set up for the pilot program. The Auto-Reply software recognized the message by the sender's email address and sent a message back to the sender indicating that the email had been received. The hail reply messages were forwarded to the participating Sector Managers and NMFS Office of Law Enforcement. The hail system is essential to the DM System. In addition to helping track vessels as they depart and land, it is a key tool used by the PM to coordinate Monitors.

The information we requested in the hails differed from what was outlined in the Program Standards Document. We chose to deviate from the protocol as we determined that the requirements detailed in the Standards Document were greater than what was needed to accurately track the vessels. We also requested less information in order to minimize expense to vessel owners. The instructions concerning the hails, as shown below, were included in a letter that we sent to the participating Captains.

Hail-Out Procedures Instructions to Captains

The VMS hail out message should be sent to dmp@aisobservers.com when the trip begins and it should include the following information:

- Subject line should contain **only** the following text: **out**
- The text in the body of the VMS message should be in the following order and contain the following information:
- Estimated trip duration in total number of hours
- Current time

Upon receipt to the A.I.S. system your message will be forwarded to your Sector Manager. You will receive confirmation that the message has been received by the A.I.S automated system. The information will be used to log the trip, allow A.I.S. the opportunity to begin lining-up a dockside monitor, and to track the time it takes from the time your message is sent to the time it is received.

Hail-In Procedures Instructions to Captains

The VMS hail-in message should be sent to dmp@aisobservers.com six hours prior to landing and it should contain the following information:

- Subject line should contain **only** the following text: **in**
- The text in the body of the VMS message should be in the following order and contain the following information:
 - Estimated time of arrival
 - Expected port of offload
 - Estimated weight of total catch on board

Upon receipt your message will be forwarded to your Sector Manager and the National Marine Fisheries Service. You will receive confirmation that the message has been received by the A.I.S. automated system. The information will be entered into a report that will be sent to your Sector Manager. The hail will allow A.I.S. to deploy a Monitor to the proper port at the appropriate time of arrival. You will receive an email from A.I.S. containing the name and phone number of the Monitor who will meet you at the dock.

The information contained in Table 1, below, shows the total number of known trips that participating vessels made. It indicates the number of each type of hail that was received and notes the completeness of the hails. Complete hails are defined as hails where all of the information that was requested was included regardless of the format that was followed. It should be noted that the total trips indicated in the table does not correspond to the number of trips that were monitored. During the study we received hail-outs for 77% of the trips that were completed and hail-ins for 85% of the trips. Approximately 79% of the hail-outs received contained complete information and 88% of the hail-ins were complete. We were able to monitor 5 trips for which no hail-in was received as we occasionally sent a Monitor to a site in anticipation of a landing or a Monitor was already present at the landing location monitoring another vessel. Considering the initial problems with the hail system and the relatively short time we had to initiate the study we were quite pleased to receive hails from such a large percentage of the fleet. Based on this information we can conclude that sending hails through VMS is an effective way to monitor departures and landings and an essential tool for planning dockside monitoring effort.

Table 1 Total Trips and Hails Received

Sector Group	Total Trips	Hail-Outs		Hail-Ins	
		Total Received	Complete	Total Received	Complete
Cape Cod Fixed Gear Sector	92	63	49	80	76
Pt. Clyde Sector	58	53	43	48	36
Total	150	116	92	128	112

Hailing System Problems Encountered

During the first two weeks of the study we relied on the automated system to forward the hail information to the Office of Law Enforcement. Unfortunately the information that was being forwarded did not contain sufficient information to allow the Agency to respond accordingly. To address this issue the PM began sending the Agency emails from a Blackberry device as the

hails were received. The information in the emails contained the vessel name, landing location and estimated time of arrival. This new procedure addressed the problem to the satisfaction of the Agency.

A few of the vessels that participated in the study were equipped with VMS software provided by Stratos Global. Stratos Global required us to register as a user to the system and pre-pay for messaging service. It took approximately 15 minutes to complete the registration and several days to be added as a registered user. The price to register was approximately \$50 and messages cost between \$.80 and \$1.20 to send. One difficulty with sending messages through this system is that emails cannot be replied to automatically. In these cases the VHDM had to manually respond to each hail.

VMS messages from one of the participating vessels were blocked by our email security system which considered the message as spam. This was rectified as we were able to notify our Technical Support Vendor who adjusted the sensitivity of the filter.

Several Captains had difficulty using their VMS to send email messages. In some cases this was due to inexperience sending emails from VMS. Several site visits were made to the Maine region to help Captains use the system. One Captain opted to phone in his departure and landing for the duration of the study.

There were a few cases in which Captains were unable to send messages as they were not registered to send VMS messages to an email address. This was easily remedied as Captains phoned their VMS Service Provider to register.

Some Captains sent hails intermittently throughout the study. The lack of consistent hails from some of the Captains prevented us from optimizing monitor deployment. On several occasions we had to send Monitors to ports in anticipation of a landing for which no hail was received.

One Captain opted not to send his hail upon departure as the information was readily available to the Sector Manager. In most of these cases the Sector Manager or a designee informed us that the vessel had sailed.

Recommendations for Hail System Improvement

- Industry outreach is recommended to ensure that Sector Members know how to use their VMS unit to send hail messages.
- Sector Members should review their VMS Service contract to make sure that they have the ability to send emails through the VMS unit.
- Sector Members should notify their VMS Service Provider and make sure the DM Vendor's email address is not blocked by the VMS spam filter.
- Hail requirements for the Captains should not duplicate current reporting effort whenever possible.
- We recommend that DM Vendors build a DM reporting database with web-based data entry.
- The hail requirements included in the standards document is greater than we found to be necessary. Once a DM Vendor receives a sector roster with the Captain's name, Vessel name, VMS address, permit number, and contact information, the Vendor will be able to link any hail information received from the VMS address for the duration of the fishing year. The primary method for hailing departure should be through VMS.

- DM Vendors should also be required to develop and maintain a secondary back-up system that can be used in the event of primary system failure. The back-up system might require additional hail information such as vessel name so that the hail can be adequately tracked.
- We recommend that the Captains hail-out using their VMS system and include only the estimated trip duration or estimated landing date and time.
- We suggest that Captains hail-in using their VMS to send their VTR number, offloading location, landing time, offload time if different than landing time, and the weight of each species on board.
- Prior to the study we requested 6 hours notification prior to landing. In most cases this did not occur due to the trip duration being less than 12 hours and vessels fishing near shore. During the study we were able to respond to most hails regardless of the lead time. However there were a few cases in which a Captain did not notify us that the vessel was returning to port. We suggest that the Sector manager, NMFS OLE and the DM Vendor determine the appropriate time prior to landing that a hail should be sent. This could be an element of the Sector Operations Plan.
- The DM Vendors should have a system to assign Monitors to trips based on 50% sampling by sector and gear the first year and 20% the next year. While this can be a simple system of selecting every other boat that hails out, care must be taken so that each gear type in a sector is sampled at 50% and that biases due to Monitor availability or remote landing sites are not introduced. It would be advisable for Vendors to have a database system to track the hails and be able to produce reports showing the vessels monitored by sector, gear, month, port and Monitor. These reports could be produced as proof that the sector was monitored fairly and without bias.

Procedures for Tracking, Storing and Reporting Hail Information

We created a spreadsheet using MS Excel and developed a system to track, store and record report-of-hail information. The spreadsheet offered sufficient flexibility to add additional fields when necessary. The spreadsheet was also used internally to track the receipt of data and hard copies associated with each monitored event.

Tracking and Storing Hails

The data from the hails were maintained by the VHDM. As hail information was received by the AIS system the VHDM entered the information onto the spreadsheet. Hail-out information remained in that status until a hail-in was received at which point the updated information was added and it was moved to “hailed-in” status. When a Monitor was assigned to witness a weigh-out the PM notified the VHDM. The VHDM then entered the Monitor’s name and the vessel information was moved to “assigned” status. Once it was confirmed that an offload was witnessed the vessel information was moved to “observed” status.

Reporting Hails

The information contained in the spreadsheet was updated several times daily. The VHDM sent the spreadsheets via email twice a day at approximately 1000 and 1600. The information was sent to the respective Sector Managers, NMFS OLE, the Project Manager and other AIS employees involved in the project.

Dockside Monitor Protocols, Offload Scenarios, Recommendations

Dockside Monitor Protocols

Upon Vessel Hail-Out

Each morning the Project Manager would review the hails that were received and notify the Monitors of what vessels could potentially need monitoring each day.

Upon Vessel Hail-In

The Project Manager monitored the hail-in system using a Blackberry Device. As hails were received the following information was forwarded to the Monitors: Vessel name, Captain Name, ETA of vessel, Port at which vessel will offload, Type of offloading event (RM, DM).

Once Monitors were assigned to witness an event the PM notified the VHDM who then updated the hail tracking spreadsheet and emailed the vessel with the Monitor's name and phone number.

Dockside Monitoring (DM) and Remote Monitoring (RM) Events

The Standards Document refers to two types of Monitors, Dockside Monitors and Roving Monitors. During the pilot study and throughout this report the field staff that witnessed weigh-outs and offloads were referred to as Monitors. In order to eliminate confusion we identified the event that was being witnessed rather than the individual that was witnessing the event. DM events can be defined as an offload and/or weigh-out completed by a licensed Dealer with a scale. These events can occur in remote ports where fish is offloaded from a vessel, weighed and then loaded onto a truck or at a Dealer's facility where catch is offloaded from a truck or vessel and weighed. The key element of these types of events is that fish is being weighed by a licensed Dealer using a scale. DM events are stand-alone events. Once the reporting requirements associated with the DM event are met, no further action is required from the Monitor.

An RM event is defined as any offloading from a vessel that occurs in the absence of a licensed Dealer regardless of whether or not a scale is used to weigh the catch. All RM events should be followed by a DM event where a Monitor witnesses a licensed Dealer complete the final weigh-out of the catch.

Offload Scenarios and Gear Types

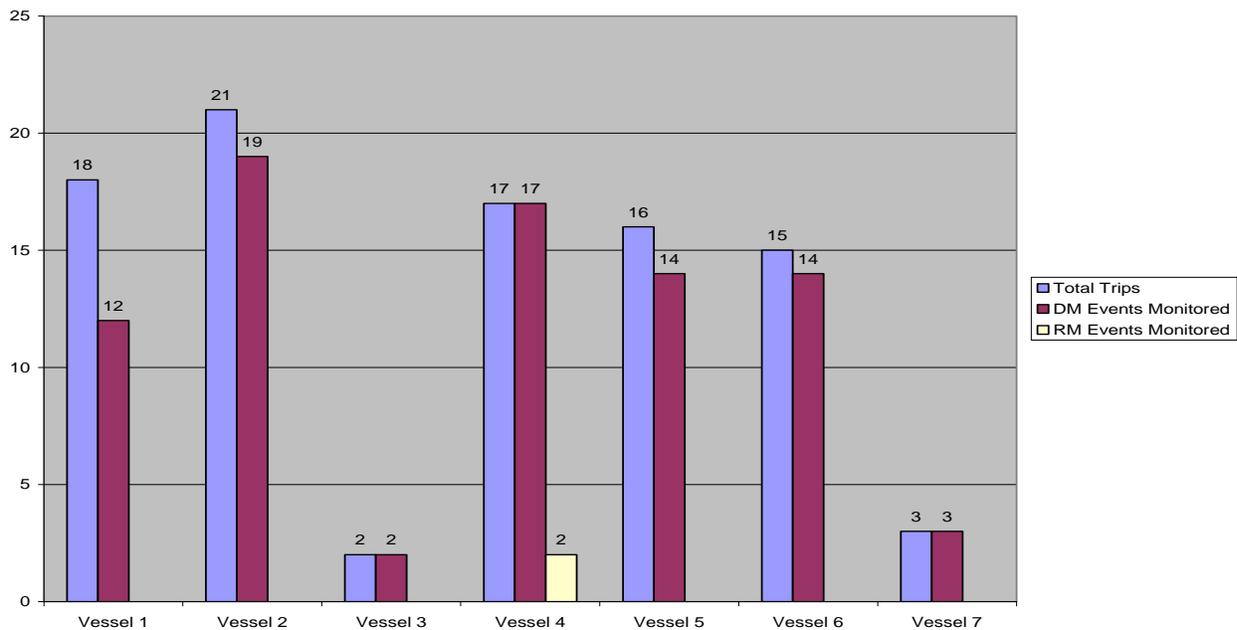
During the pilot study we monitored the offloads from vessels belonging to Sector Members of the Georges Bank Cod Fixed Gear Sector and the Port Clyde Community Groundfish Sector.

Georges Bank Cod Fixed Gear Sector

The Georges Bank Cod Fixed Gear Sector offered us an ideal group to test protocol outlined in the Standards Document, specifically, 100% dockside monitoring. Seven Sector members participated in the study. The vessels monitored during the study ranged in length from approximately 30 to 50 feet. The primary gear used by the Sector members from this group was sink gillnet gear. Trip duration among this group was primarily between 6 and 18 hrs. Five trips lasted longer than 24 hrs. Catch was offloaded to two fish Dealers at the Chatham Fish Pier in Chatham, MA. There were 4 offloads that occurred at the dock in Stage Harbor, located approximately 3 miles southwest of the Chatham Fish Pier.

The information in Figure 2 illustrates the number of known trips each vessel made and the number and type of monitoring event that followed each landing. During the pilot study the participating vessels were known to have made 92 trips. Of these trips we were able to monitor 2 RM events and 81 DM events. We were only able to monitor 88% of all trips due to a number of problems. Ten of the trips were not monitored as no hail-in was received from the participating vessels. We were not able to witness one of the landings despite receiving a hail-in due to miscommunication between AIS employees. In this case the Monitor misread the vessel landing time that the PM sent via SMS text message.

Figure 2 Total Trips by Vessel and Monitoring Events for the Georges Bank Cod Fixed Gear Sector



In the Chatham area, 79 of the trips resulted in stand alone DM events. In these cases, upon arrival at the Dealer, the Monitor met with the individual who would be offloading the vessel and weighing the catch. The Monitor checked the scale that would be used during the weigh-out to see if a certification decal was present. When the vessel arrived, the Monitor met the Captain and gathered information for the Dockside Monitor Weigh-out Report. While the catch was being offloaded or weighed the Monitor took steps to make sure that he/she did not interfere with the offload process while maintaining a clear view of the scale’s read-out display. The Monitor made sure that ice and box weights were tared before the catch was added. If the Dealer did not tare the box or ice, the Monitor subtracted an estimated weight (provided by the Dealer) from the total. As fish was being weighed the Monitor recorded the weight from the scale’s read-out display. The Monitor recorded the number of boxes per weight, species and market category on the Catch Worksheet. The species were either provided by the Dealer or identified by the Monitor. Market category was provided by the individual completing the weigh-out.

After all of the catch had been offloaded the Monitor checked the fish hold to make sure that all of the fish were offloaded and requested copies of the VTR and Dealer receipt. If these

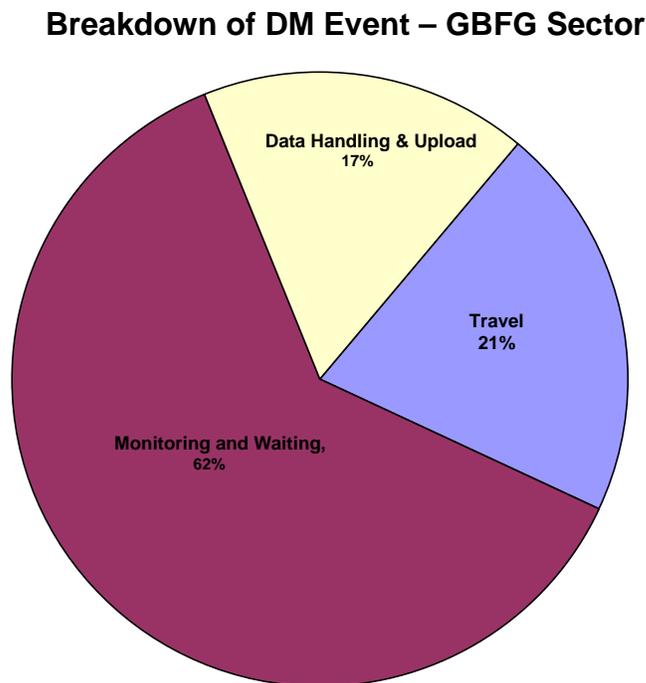
documents were not available or if the Monitor was unable to complete any of the fields on the data sheets he/she made a note in the comment section of the Catch Worksheet.

There were two instances in Chatham where a vessel landed in Stage Harbor and offloaded to a truck. In these cases a licensed Dealer was present to complete the weigh-out and the Monitor treated the offload as a DM event.

There were two RM events that occurred in the Cape Cod area when weather forced one of the Captains to land in Stage Harbor after completing a day gillnet trip. In these cases the catch was offloaded to a truck owned by a local fish Dealer in the absence of a scale. The Monitor treated the initial offload as a RM event. After the offload the Monitor followed the truck to the Dealer facility where the fish was immediately culled and weighed. The Monitor witnessed this process and followed the DM protocol to record the weigh-out.

Figure 3 shows a breakdown of the average amount of time a representative Monitor spent on travel, data handling and upload, and monitoring and waiting while witnessing DM events for the Georges Bank Cod Fixed Gear Sector. More than half of the total time was spent waiting and monitoring. This is due to the fact that once a Monitor responded to the first landing of the day he/she typically stayed in the area to wait for subsequent vessels.

Figure 3 Average Time Spent per DM Event for Georges Bank Cod Fixed Gear Sector



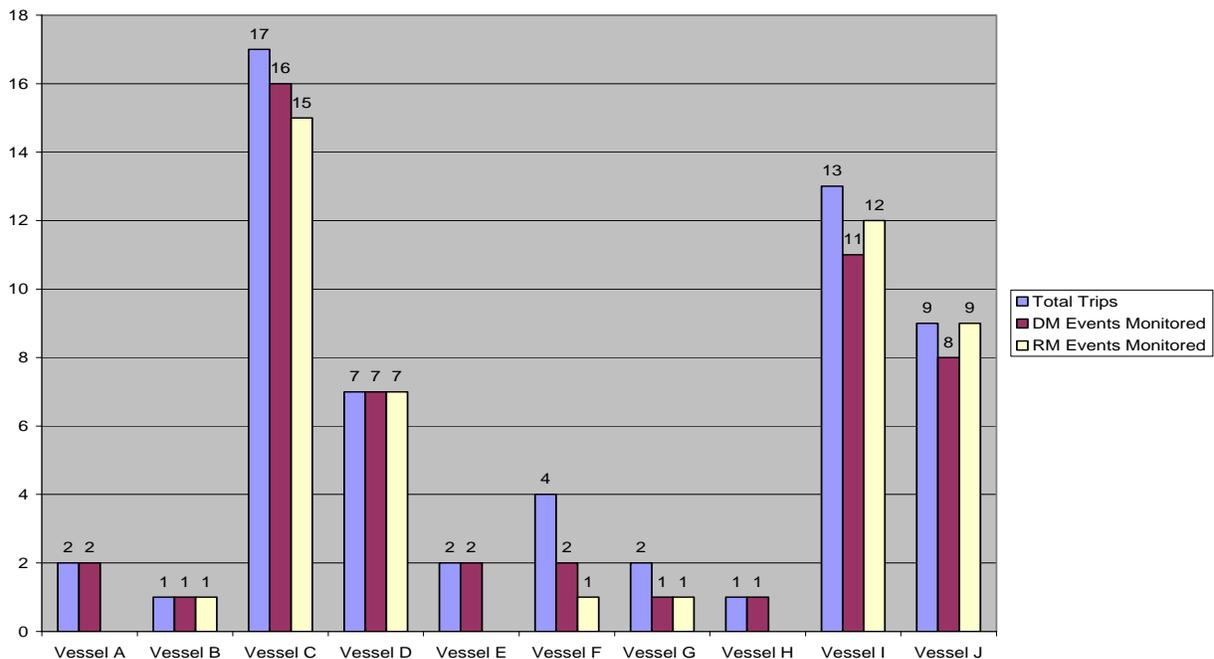
Port Clyde Community Groundfish Sector

The goal of monitoring this sector was to test the RM protocol. Offload events were monitored for 11 vessels from this Sector. The vessels ranged in size from 40 feet to 60 feet in length. Four of the vessels monitored utilized bottom otter trawl gear and seven fished using gillnet gear.

Trip duration among the trawl vessels varied from approximately 36 to 96 hours. The gillnet vessels completed day trips that lasted between 6 and 18 hours. Offloads were monitored at the following ports: Kennebunkport, Cape Porpoise, Camp Ellis, Sebasco, Portland and Port Clyde.

Figure 4 depicts the number of known trips each vessel made and the number and type of monitoring event that followed each landing. There were a total of 58 trips that were completed by the vessels in this Sector. Approximately 88%, (51), of all trips had an associated DM event and 79%, (46), of the trips had RM events. It should be noted that we monitored one DM event for vessel C for which the corresponding RM event was not witnessed. This was possible because a Monitor was present at the Dealer facility when the catch was processed. We were unable to witness a remote offload for vessel E as no hail-in was received. However, we were able to witness the final weigh-out of the catch from the trip when it was processed by the Dealer (DM event). Two of the landings made by vessel F were not monitored as no hail was received. The landing from one of vessel G's trips was not monitored as the hail-in was received after office hours and the Blackberry device that was used during the study was inadvertently not properly monitored at that time. One of the landings was not witnessed as the Monitor misread the SMS text message with the vessel landing time. Traffic prevented a Monitor from witnessing two other offloads that would have been RM events. Following the Standards Document, we attempted to complete DM for every trip that a RM event was witnessed. We were unable to do this in two cases due to poor communication between the Monitor and the weigh-out facility crew. The Dealer facility where the DM events were witnessed was capable of processing catch from multiple sources at the same time. In one case a DM event was missed as the facility crew culled the catch from two of the study vessels at the same time and only one Monitor was present to witness the event.

Figure 4 Total Trips and Monitoring Events for the Port Clyde Community Groundfish Sector



In the Maine area the majority of the offloads were RM events that occurred in Kennebunkport, Cape Porpoise, Camp Ellis, and Sebasco, Maine.

In these cases the Captain of one of the study vessels landed and offloaded the catch to his truck in the absence of a licensed Dealer and certified scale. The Monitors that responded to these types of offloads followed the RM protocol outlined in the Standards Document and completed the Remote Offload Worksheet.

Upon landing, the Monitor met the Captain and completed the header information at the top of the Remote Offload Worksheet. As fish were being offloaded the Monitor asked the Captain the species and market category of each lot of fish. In most cases fish were offloaded in standard fish totes or large Xactic vats. Each box that was offloaded was assigned a number which was recorded on the Worksheet. Most of the fish boxes contained only one species of fish. When a box held multiple species the Monitor either recorded “multi-species” in the species field or broke down the species by estimated weights for each box. For the majority of the offloads the Captains provided the Monitor with an estimated weight for each box of fish. These weights were recorded as estimated weights on the Worksheet. One Captain that participated in the study used a platform scale to weigh the catch. In these cases the Captain tared the box weight before weighing the fish. These weights were recorded as actual weights.

Following the remote offload event the Monitor checked the vessel to make sure that all of the fish had been offloaded. The Monitor also checked if the fish totes were labeled and if a driver’s manifest was maintained. The Monitor also checked the labels and manifest for completeness. If labels were not present and/or a manifest was not complete the Monitor noted this in the comment section of the Remote Offload Worksheet.

At the conclusion of an RM, the Monitor notified the Project Manager who told him who the Monitor would be to witness the final weigh-out. In most cases the Monitor that completed the RM phoned the Monitor that would witness the final weigh-out and provided box counts and the Trip ID number and an estimated time that the fish would be at the site for the final weigh-out.

The protocols followed by Monitors witnessing the weigh-out of catch that had a corresponding RM were similar to the DM procedures that were previously described. When the Monitor entered a Dealer facility he provided the General Manager or the Floor Manager with a list of names of the vessels for whose catch he/she needed to witness the weigh-out. The Monitor then located the lots of fish in the facility’s cooler and counted the boxes of fish to see if the total matched the number that had been reported by the RM. If the number did not match, the Monitor noted the discrepancy in the comment section of the Dockside Monitoring Weigh-out Report. The Floor Manager informed the Monitor when they were going to cull and weigh catch from one of the participating vessels. As catch was being weighed the Monitor followed the DM protocols.

There were 5 trips from this area that resulted in only DM events as the catch was offloaded to a licensed Dealer. These occurred in Port Clyde and Portland.

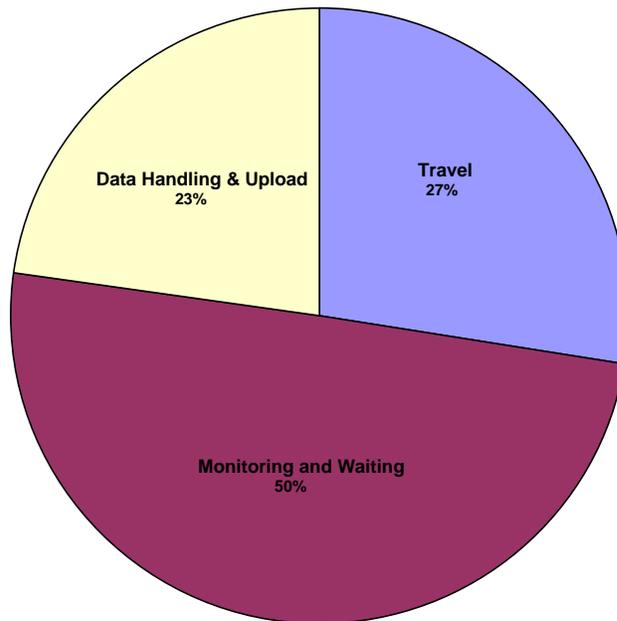
We also encountered 3 RM events out of Port Clyde. In these cases a trawl vessel landed after completing a groundfish trip of between 24 and 96 hours. These offloads were unique to the study in that the vessel offloaded part of the catch to a licensed Dealer and offloaded another part

to a truck that was owned and operated by an independent trucking company. In these cases catch was delivered to two licensed Dealers on separate occasions. The portion of the catch that was received by the local Dealer was treated as a DM event. The portion of the catch that was loaded on to the truck for delivery to another Dealer was treated as a RM event. The fish that was witnessed as a RM event in Port Clyde had an associated DM event for the portion of the catch that was sent to Portland.

Figure 5 shows the breakdown of the average amount of time a representative Monitor spent traveling, handling and uploading data, and monitoring and waiting for RM/DM events for the Port Clyde Community Groundfish Sector. Nearly 50% of the Monitor's time was spent monitoring the event. Although the RM portion of each event required relatively little waiting time there was a significant amount of time spent waiting at the Dealer facility where the associated DM event occurred. The waiting time was due to the way the fish Dealer handled the fish. On many occasions the Monitor waited several hours as the Dealer processed fish from other vessels.

Figure 5 Average Time Spent per RM/DM Event for Port Clyde Community Groundfish Sector

Breakdown of DM Event – PCCG Sector



Monitoring Problems and Recommendations

- Three vessels landed different parts of their catch on separate days. The Monitors responding to the initial offload completed the data forms to account for the fish that was actually offloaded and commented on the amount of catch that was retained on board. The Monitor that responded to the second offload documented all of the fish that were landed and commented on the estimated weight of fish that had been from the previous trip.

Recommendation: A separate field on the data forms should be developed to document

these types of situations. The additional field would help Managers track the fish from each landing and make sure that fish is not being under-calculated or over-calculated.

- Monitoring weigh-outs at facilities that accepted fish from vessels as well as trucks was often difficult. This was mainly due to the facilities ability to sort multiple lots of fish at the same time. To prevent missing the final weigh-out of catch that had an associated RM we often had to place two Monitors at the facility.

Recommendation: Improved communication and cooperation from the crew at Dealer facilities could address this. Facilities should not be able to process catch that is selected to be monitored without a Monitor being present. Outreach needs to be completed to make sure that all Dealers are aware of the monitoring requirements.

- On several occasions a Monitor reported to a facility to witness the weigh-outs of catch from a couple of vessels and had to wait several hours before the lots of fish were culled.

Recommendation: Improved communication and cooperation from fish Dealers could increase the efficiency of the program and lower the cost. Vessel landings from trips that are scheduled to have the catch monitored should receive higher priority over catch that is not scheduled to be monitored.

- Two vessels made several trips, retaining catch from each day aboard the vessel and offloaded all of the catch on the same day. This was treated as one offload event. The Captains in these cases provided the Monitor with multiple VTR numbers.

Recommendation: Catch should be kept separate from each day of fishing and should be offloaded and recorded as individual events.

- On one occasion a Captain landed from a trip with more dogfish than he could fit on his truck. The excess fish was eventually discarded at sea. The Monitor noted this in the comment section on the Remote Offload Worksheet.

Recommendation: Monitors should be trained in sub-sampling and estimation techniques so that the estimates can be ascertained by the Monitors witnessing this type of occurrence.

- Obtaining VTRs was not always possible.

Recommendation: If this element is going to remain in the Standards Document we recommend that the current VTR books be produced to include a carbon copy to be given to the Monitor.

- Two of the five Dealers that accepted catch from participating vessels used at least one scale for which a Monitor was unable to locate a certification decal.

Recommendation: We suggest that language be included in either the Standards Document or Sector Operation Plans to instruct the Monitor on the course of action to be taken in the event that a certification decal is not located on a Dealer's scale. We also recommend outreach to inform the Dealers of the DM protocols and encourage them to make sure scales are certified.

- Monitors may be unwilling to enter fish holds due to safety reasons or for fear of being perceived as enforcement. Monitors could also be unable to perform this task without delaying the vessel Captain from performing another duty such taking on fuel or ice. At many ports as soon as the catch is removed from the hold the vessel must depart to make way for another boat. The majority of the vessels monitored during the study were equipped with fish holds that were above the deck of the vessel. In these cases the Monitors were able to ensure that fish had been offloaded from the areas where fish had been stored. Only 5 of the vessels sampled during this study used traditional fish holds to store catch. For 4 of the vessels the Monitor witnessing the initial offload was reluctant to enter the fish hold due to safety issues associated climbing down a slippery ladder.

Recommendation: We recommend that this requirement be removed from the Standards Document. We suggest that the Monitors be required to verify that all catch has been offloaded by asking the Captain. A field can be added to the data forms indicating that this was performed.

- Monitors did not sign copies of the Dealer receipt as this was determined unnecessary for the purposes of the study. In two of the ports Dealer receipts were not generated. One facility produced detailed production reports that were very useful and another produced no receipt at all. It may be ineffective to require Monitors to sign Dealer receipts until outreach is completed explaining the necessity for this. One point to consider is that in many cases the Dealer receipt was not generated until a period of time after the offload event. This time between offload and the completion of the Dealer receipt could be anywhere from ten minutes and several hours. Many Dealers complete rough tallies of the fish as it is being weighed and then generate a receipt with limited information to provide to the Captain. A final receipt is not completed in many cases until the fish is sold and a dollar amount is added. Retaining copies of the Dealer receipts could also prove difficult.

Recommendation: If outreach was completed and receipts were generated promptly after the completion of the offload then there are several solutions that would enable Monitors to receive copies of the receipts. Monitors could be equipped with hand held scanners or another type of copying device, Dealer booklets could produce an additional carbon copy of the original, or Monitors could retain the initial receipt that is given to the Captain.

- Throughout the many RM events that were witnessed and fish was trucked there were only a few cases that fish boxes were labeled. In the cases when labels were used the information on the labels did not contain the same detail outlined in the Standards Document.

Recommendation: We recommend outreach and possibly the creation of a tagging system similar to the one used in the shellfish fishery.

- The Monitors of the remote offloads noted that driver's manifests were rarely maintained.

Recommendation: Outreach needs to be complete to inform the Fishing Industry of the requirements to complete detailed manifests for trucked fish. We suggest that standard manifest books be produced and that carbon copies are available for the Monitors to collect.

Data Procedures, Reporting and Storage

DM Data

Three data forms were developed for the Monitors to use to record the catch information from the offload events and to document the different scenarios they encountered while witnessing DM and RM events. The forms were designed based on the requirements set forth in the Standards Document and through consultations with the Sector Managers and NMFS. The purpose of the forms was to keep track of vessel landings that were monitored, to track monitoring activities, to document scale certification, provide a total weight of each species of catch that was offloaded per market category and to link the information to Dealer receipts and VTR reports. The Monitors were required to send the data forms via Fed Ex to the AIS office at the beginning of each week. Once the data forms were received they were compared against the electronic datasheets.

Dockside Monitor Weigh-Out Report

The Dockside Monitor Weigh-Out Report was used in conjunction with the Catch Worksheet. The form was used for DM events when catch was offloaded at a port and weighed by a licensed

Dealer. A licensed Dealer may have conducted the weigh-out at either a large dockside facility or at a remote site utilizing a truck and a certified scale. This document served as a cover sheet to the Catch Worksheet and included a summary of the total weights per species that were tallied on the Catch Worksheet.

Catch Worksheet

The Catch Worksheet was designed to be used as a tally sheet to track fish as it was being weighed. The Monitor used this form to record the weights of each species and market category of fish as it was being weighed. The information was then totaled and entered on to the Dockside Monitor Weigh-Out Report.

Remote Offload Worksheet

The Remote Offload Worksheet was developed to track RM events. Information from this worksheet was often provided to the Monitor assigned to witness the corresponding DM event. This included; trip number, VTR number, number of boxes and estimated weigh-out time.

Procedures for Processing and Reporting Catch Information

Dockside Monitoring Datasheet and Remote Offload Datasheets

Two spreadsheets were created to organize and store the data from the DM and RM events. Each trip was assigned a unique trip ID number that was composed of the vessel permit number, the year, month and the day that the vessel landed from the trip. This ID number was the key that linked all of the data pertaining to individual offloads. Prior to the study each Monitor was emailed copies of each of the datasheets.

The Dockside Monitoring Datasheet was used to store the information that the Monitors had collected while witnessing DM events. The information was taken directly from the Dockside Monitor Weigh-out Report and the Catch Worksheet and contained the fields from each form.

The second spreadsheet developed was the Remote Offload Datasheet. It was used to organize and store data collected by Monitors witnessing RM events. The spreadsheet was based on the Remote Offload Worksheet and contained the fields included in that form.

Data Processing

The Monitors were required to complete and email the Datasheets within 6 hours of the final monitoring event witnessed each day. The Datasheets were sent to the Sector Manager and AIS. Once the data was received from the Monitors, the VHDM added the data to the master spreadsheets for each sector and performed an initial proofing of the data. The Dockside Monitoring and the Remote Offload Datasheets were both loaded onto IPAQs for the Monitors to enter the data; however the Monitors found this method to be very cumbersome and most used their home computers to enter the data.

Reporting

The datasheets were updated with the electronic data from Monitors on a daily basis. Once the hard copies of the data were received, the data in the datasheets was verified and marked as edited. The corrected spreadsheets along with the Dealer receipts and VTRs were sent to the Sector Managers via email and fax each Friday.

Man-Hour and Cost Estimates Based on Pilot Study

The pilot study totaled 180 DM events broken out as 97 events for the Port Clyde sector and 83 events for the Chatham based sector. Based on the number of Monitors used, support staff hours worked, equipment costs, travel costs, and estimated overhead and profit, we were able to determine a price per monitored event which could be used with similar sectors for estimating costs for monitoring. It is very important to note that the following price estimate applies to these two particular sectors. Other sectors with different logistical situations may be more or less expensive than the rates shown and would require more information to estimate their costs. For example, Monitors stationed at major fishing ports will be able to monitor multiple offloads during the day and travel costs will be less for them at these major offloading ports such as New Bedford, Gloucester and Point Judith than travel costs where Monitors have to travel to get to more remote ports e.g. Stonington, ME, Martha's Vineyard, Provincetown, etc. Our price estimate includes the cost of DM data handling and storage as described previously in this report. If this data handling were done entirely by the sector, the price could be reduced. This would mean the data would be uploaded directly to the sector by the Monitor instead of to the DM Vendor as was done in this study.

Based on our calculation of effort used in this study, an average of 2.5 Monitor hours per DM/RM event was spent for the total offloads. We estimate the price per DM event should be approximately \$190 for sectors similar to the two in the pilot study. The hourly rate would thus be approximately \$76 per hour for Monitor hours charged to a sector. This would include charging for all the Monitor's time e.g., traveling between home and the DM/RM event, handling and uploading data, witnessing a DM event and waiting for a vessel to arrive after being assigned a particular time and place of offload. It also includes the cost of the necessary support structure to execute the program.

Industry Feedback

- Throughout the pilot study and following the field sampling phase we gathered feedback from all project participants. Several Captains welcomed the opportunity to have the weigh-out of the catch monitored. Not only did the reports provide verification of the Dealer reports but it eliminated the Captain's need to keep an independent tally.
- Some captains used the information gathered by the Monitor to complete the VTR's.
- Many of the Captains stated that the Monitors were unobtrusive to the offload system. This sentiment was reiterated by several of the Dealers and other workers at the offload facilities.
- Several Captains mentioned that good communication between the Monitor and the Captain was essential and made everything run smoothly.
- Many participants mentioned that they preferred to see the same Monitor rather than a different Monitor each day.
- The Monitors also agreed that it was preferable to cover the same vessels each day.
- Many of the Captains noted that while the VMS hails were easy to complete they were easy to forget to send. They did not look forward to yet another thing that they would be required to do before they could go fishing.
- Two Captains informed their Sector Manager that they noticed that the Monitors occasionally lost focus and may not have paid attention to the scale. It was suggested that this could be a loop hole that could be exploited. We recommend that the PM conduct Captain interviews periodically.

- Two Captains suggested that fish tags should be provided to make it easier for the Monitors to tally the totes as they are offloaded.
- It was noted by a few Captains that checking the fish hold and other containers on deck was very important.
- Many of the Captains that offloaded at remote locations voiced concern with the method that their landings would be applied to their TAC. The major concern was that if the weight was taken from the Monitor's estimate at the dock then they would lose TAC and money when the fish is weighed at the Dealer facility
- Two of the Monitors felt that remote offloads went much smoother than monitoring weigh-outs at a facility.
- One Dealer suggested that the dockside monitoring requirement is not necessary due to the strict reporting guidelines that Dealers are mandated to follow.
- Two Captains suggested that Monitors should be assigned to portside facilities and maintain regular hours during the times vessels typically offload. They felt this would make sure that all scheduled monitoring occurs regardless of whether a hail-in is received.
- One Captain expressed concern with the way discards will be applied to the TAC in the event that the discard has been mostly consumed by hagfish.

Recommendation for Future Research

We recommend that a larger pilot study be completed to encompass a larger geographic region, a greater number of ports, and more vessels to include a wider range of trip duration and gear types. The study would address the issues that pertain to a broader population of the fishing community including larger ports and larger vessels making longer trips.

Acknowledgements

AIS wishes to thank the Vessel Owners and Captains of the Georges Bank Cod Fixed Gear Sector and the Port Clyde Community Groundfish Sector whose participation made the pilot study possible. We would also like to thank the National Marine Fisheries Service, Sector Managers and Fish Dealers and their crews for their cooperation and assistance.