

Vessel Monitoring System Report for
Pacific Fisheries Management Council
June 14-18, 2004

As of January 2004, the NOAA Fisheries, Office for Law Enforcement (OLE) is electronically monitoring Limited Entry Permit vessels fishing in State and Federal waters off the West Coast of the United States. Moreover, OLE has also implemented a call-in telephone declaration system for vessel owners to declare the gear type their vessel will be using while engaged in authorized fishing activity with a Rockfish Conservation Area (RCA).

Electronic monitoring of vessels through the OLE Vessel Monitoring System (VMS) is achieved through a five step process.

- Mobile Transceiver Units (MTU's) installed on fishing vessels derive their latitude and longitude position from Global Position Satellites (GPS).
- These GPS positions are then sent to an orbiting communications satellite.
- The communications satellite forwards the position report to a Land Earth Station (LES).
- The Land Earth Station (LES) forwards the position report to the OLE VMS.
- The OLE VMS processes the data received from the LES.

Mobile Transceiver Units

Vessel position reports are generated and delivered to a communications satellite via an MTU purchased by the vessel owner. Currently, there are four MTU's type approved by NOAA Fisheries, Office for Law Enforcement for the Pacific Coast Groundfish Fishery. The MTU Type Approval process ensures that approved units meet minimum technical requirements for accurate operations.

The four type approved units are;

Satellite Network	Manufacturer	Model Number
Inmarsat C	Thrane and Thrane	3022D-NMFS
Inmarsat C	Thrane and Thrane	3026-NMFS
Inmarsat D+	Satamatics	SAT 101 NMFS/PCG
Orbcomm	Stellar	2500G-NMFS

** Argos MTU's have been "grand fathered" into the West Coast Groundfish Fishery for those vessels that also fish in Alaska, and are required to have an active type approved VMS unit for Alaska fisheries. **

Communications Providers / Land Earth Stations

Depending on the MTU purchased by the vessel owner, several communications providers are available to provide “air time”. The “air time” component of VMS is comparable to the purchase of a cell phone, where the user purchases a cell phone (hardware) and minutes per month (air time). Similarly, the VMS system requires an MTU (hardware) and messages from the MTU (air time) that take the form of position reports or other message traffic such as email. The various communication providers sell “air time” in two ways, by the message, such as by position report, or by a monthly flat fee which provides a set amount of “air time”. The communications providers approved for the Pacific Coast Groundfish Fishery are;

Communication Provider	Satellite Network	MTU's
Telenor	Inmarsat C	TT3022D, TT3026
Xantic	Inmarsat C	TT3022D, TT3026
Satamatics	Inmarsat D+	SAT 101
Skymate Wireless	Orbcomm	Stellar 2500G

Equipment Performance

Since the rollout of VMS for the West Coast Groundfish Fishery, OLE has received consistent position reports from most MTU's. However, OLE has observed and encountered the following issues and/or anomalies regarding some type approved MTU's.

The MTU that we have experienced the majority of issues with is the Skymate / Stellar 2500 G. The reason the majority of all issues encountered are with the Skymate unit is, that the Skymate unit accounts for 83% of all new MTU's sold for the West Coast Groundfish Fishery. Even when accounting for Argos units that have been “grand fathered” in for vessels from Alaska, Skymate accounts for over 70% of all MTU's in the fleet.

Skymate has provided us with the following breakdown for all MTU issues that they have encountered.

- Approximately 85% of all issues encountered by Skymate are a result of MTU self installs. Skymate indicates that the most common self install issues are;
 1. Poor placement of MTU hardware. Placement of antennas is especially critical, so that the MTU can properly “see” the satellite. Installing an antenna that is blocked by an obstruction, or is installed too close to like frequency antennas (VHF) that can interfere with the proper functioning of the MTU antenna.

2. Cables that have been damaged or kinked during installation.

- Approximately 15% of issues encountered by Skymate are a result of firmware anomalies (i.e., computer programming issues) on the MTU. One issue concerned vessels that did not have computers connected to the Skymate MTU. As Skymate messaging to and from the MTU is sent in the form of an email message, vessels that did not have a computer connected to the MTU experienced an inbox overflow error. The immediate solution was to reboot these units when errors were encountered, clearing the inbox. The permanent solution is to re-program the MTU firmware to eliminate the error. Re-programming of the MTU firmware has been accomplished and has been installed on test vessels. The upgraded firmware will be installed on all Skymate units in the fleet (at no cost to vessel owners) by July 1, 2004.

Other day to day issues encountered are more basic, including;

- Vessel owners that have purchased and installed units, but have failed to activate them.
- Vessel owners that fail to make new declarations when they change fisheries.
- Interpretation of groundfish regulations

Currently the OLE NW Division VMS has 270 activated units out of a potential pool of approximately 360 platforms. Position reports currently exceed 700,000.

Declaration System

Running in tandem with the VMS system is the Pacific Coast Groundfish declaration system. The declaration system was established in conjunction with the VMS regulations to provide vessel owners a method to declare their intentions to fish in a conservation area consistent with the requirements of the regulations, and to specify the gear type their vessel will be using. The declaration system is a complimentary tool to VMS and assists Law Enforcement personnel in determining if a fishing vessel is in a proper location relative to a conservation area.

To date, NW OLE has received 540 declarations reports. The predominant number of declaration reports have fallen into the following categories; crab or lobster gear, limited entry bottom trawl gear, and limited entry fixed gear.

Future Projects

The MTU's type approved for the Pacific Coast Groundfish Fishery are two way messaging capable, that is, the units are able to send and receive messages. Two way messaging capability will enables future fisheries projects to be undertaken in addition to vessel position reporting. Future projects may include; catch and effort reporting and at sea declarations via e-mail

Expansion

The NOAA Fisheries Office of Law Enforcement (OLE) reports that the Pacific Coast Groundfish VMS is online and operating as intended. The declaration system is working well in tandem with VMS. At the November 2003 PFMC meeting, the Ad Hoc VMS Committee advised the Council that future expansion of the VMS Program should begin with the Directed Groundfish Open Access Fleet, a fleet comprised of approximately 1,200 vessels. The OLE is confident that VMS expansion can be accommodated under the current system and is prepared to move forward with expansion if the Council chooses this course of action.