

Vessels Monitoring Systems (VMS) - Issues, Questions and Requirements

A work group from the Enforcement Consultants (EC) met on July 16, 2002 in Portland, OR. Representatives from USCG, NMFS, WDFW, OSP and PFMC staff discussed a vessel monitoring system (VMS) program.

Steve Springer from NMFS enforcement advised that Office of Law Enforcement (OLE) -Northwest Region has identified VMS as their number one priority for the next fiscal year. They are working with the intent of having a system in place by the second quarter of the federal fiscal year (Jan.-Mar. 2003). NMFS OLE has ordered the equipment for a monitoring system that is capable of monitoring up to 10,000 vessels. They have been authorized to hire a VMS program manager to set up and run the system.

Information provided by OLE shows that there are three (3) systems available. The prices range from \$1800.00 to \$5800.00 depending on the needs. The mid-range unit may need the addition of some type of computer, which raises the cost if a vessel is not already equipped with a PC. The EC is considering, as a starting point, recommending requiring VMS on all limited entry permit vessels, which is approximately 400 –500 boats. As the EC working group carefully considered each requirement in the NMFS OLE issue paper, it became clear that the INMARSAT-C is the system that best meets our requirements based upon its flexibility to add a message terminal or a PC. With this capability, vessels can provide notice or declarations when transiting the restricted area, changing from one fishery to another, and transmitting catch data in real, or near-real time. It also enables OLE to send messages to the vessel, which may prove very useful for special notifications of openings, closings, warnings of encroachments near or into restricted areas, etc. The cost of the unit is \$2500, and a computer required for two-way communication, would raise the costs to approximately \$5000 (\$2500 for the transmitter, \$500 for installation and \$2000 for a PC). 500 vessels at a cost of \$5000.00 dollars each places start up costs at

approximately \$2.5 million dollars. To require a similar system on all limited entry and open access vessels would cost approximately \$7.5 million dollars assuming there are approximately 1000 open access vessels requiring VMS.

***Questions and Responses from the Supplemental EC report
June 2002.***

1. Which fisheries and gear types will need VMS?

Initially we recommend VMS implementation focus on the limited entry trawl and fixed gear fleet. Once up and running, the Council may wish to include all vessels capable of taking groundfish, either directly or incidentally.

2. How many vessels are in each fishery?

Information from Permit office:

Coastwise

LE Trawl total	231
LE Fixed	172
Open Access	1413

There was some discussion about if this really represented all the commercial vessels. The EC was unsure if all Salmon vessels or exempted fisheries vessels would be included in these numbers.

3. What are the sizes?

Trawl 45' to 90' in length

Fixed 25' to 90"

Open 19' to 50'

This question was asked to determine configuration and project whether adequate electrical systems would be present on the vessels. It appears that a vast majority of the fleet will be able to accommodate the power and superstructure needs of the VMS hardware.

4. **Electrical power capabilities of the vessels?**

Varied, most will have some kind of generator capacities or batteries.

5. How will restricted areas be defined?

Current regulations and proposed regulations do not define these areas as “traditional” restricted areas; instead they rely on a zone management system based on gear type. However the zones proposed for VMS will be described using latitude and longitude.

VMS is most often used in other parts of the nation to exclude fishers from entering specific areas. Under the proposal being considered here, VMS will be used for zone management. Two-way communication and messaging capability will be necessary for vessels to declare their intention when entering a restricted zone, leaving a restricted zone or returning to port, etc.

6. If the closure is continuous along the entire west coast, how can we use VMS to monitor transiting through restricted areas?

Can VMS be used or is it exact enough for minimum speeds while transiting? Do we need transit lanes? Can we use a declaration from the boat they are transiting?

This discussion evolved around creating a declaration process transmitted through VMS. Operators would notify OLE through the VMS that they were leaving on a trip and what gear they intended to use. Areas/Zones would be identified where the fishing was to occur. The operator could also advise OLE when he was transiting through a prohibited area. Upon reaching the fishing area he would notify that he was now fishing. After fishing, the operator could then send a message that he would again be transiting through a restricted area.

Through this declaration process vessels would be free to switch gear types and fisheries from one trip to the next. We discussed having gear codes and zone codes to limit the amount of time required in making declarations.

7. Will there be season openings and closings?

See above discussion. It was also mentioned that restricted periods to all fishing has the potential for reducing enforcement costs.

8. How much consideration should be given to VMS requirements in other Pacific Ocean fisheries?

Will these other systems work for us, what are their capabilities? Are the Alaska and the pelagic longline systems the same?

First we have to design a system to meet our needs. Then we could look at these other systems to see if they might work for us. However, if we were limited by a certain system's capabilities we may be forced to look at different management measures [ex. Restricted areas/no transit zones]

9. What will the requirements be regarding leaving the power and VMS unit on while vessels are in port?

There are many things to be considered in answering this question. If we have a system that with messaging capability and requires a declaration, then the system could be turned off when at port or perhaps when participating in a fishery which does not require VMS or in other non-fishing activities. This issue and related questions require further analysis. We would request a rule making it a violation for any vessel to fish in a VMS-required fishery without an operating VMS. Fishing without an operating system would be a separate offense and a major penalty would be applied. By allowing systems to be turned off the operating costs of the system would be less.

10. What is the reporting intervals i.e. 30 min., 1 hour, 2 hours, 4 hours, 12, 24, etc?

The EC working group agreed that 1-hour reporting intervals appear adequate. If more frequent polling is required, that request can quickly be accommodated through a computer command made at the base terminal if using the INMARSAT C transceiver. This polling feature is not available with the Argos system.

11. How much lag time is acceptable?

All systems are acceptable. However, the INMARSAT C system, with only a 5 to 10 minute lag time, is clearly the best. If enforcement resources were available to respond to an apparent infraction in near real time, this system may be the best choice.

12. Is random polling a requirement?

The EC working group considered polling to be an important requirement. The Argos system does not allow for polling. The other systems provide random polling through a computer command initiated at the Monitoring Workstation. This feature allows the VMS manager or technician at the Monitoring Workstation to remotely

increase the position reporting intervals on individual vessels or groups of vessels as they near restricted areas or for other reasons.

13. **Do we want to establish buffer zones around the restricted areas and initiate more frequent polling (like every 15 minutes) as vessels approach a restricted area (2 miles, 1 mile, several hundred yards)?**

Buffers are not necessary, see polling answers above.

14. Costs of transmitting position reports varies from one system to another, ranging from \$1.00 per day to \$5.00 per day. Over time, this can be a considerable financial burden.

Requiring special message reporting will increase the costs to slightly over \$1.00 per day for the INMARSAT system and would not affect the cost of \$5.00 a day charged by Argos. The lower INMARSAT cost of \$1 per day will off set the initial cost of the Argos system in approximately 2-4 years, depending on the cost of a messaging terminal or PC and the increased cost of special messages.

15. How much consideration should we give, up front, to those costs?

The costs of a VMS program may be small or insignificant if the alternative is a complete closure of the fishery.

16. **The position data generally comes from the GPS and is accurate to within about 50 meters. If GPS malfunctions on an ARGOS system, the standard Doppler positioning capabilities will initiate and is accurate only to about 300 meters. Boatracs is also only accurate to about 300 meters. Is the backup capability ARGOS provides important?**

The systems being proposed have a very reliable track record. The initial experiences EC members have had working with Council committees, state representatives and industry members to convert fathom curves to straight lines indicate there are many areas off the west coast where unlawful fishing incursions into the restricted areas could occur over very short distances, with potentially devastating

impacts to the resource. Therefore, the EC recommends a system that uses and relies on the accuracy of GPS.

17. Do we want course and speed calculated through the transceivers GPS or the base station? The base station is simpler but less accurate.

The base station is acceptable.

18. Will the Council or NMFS require electronic logbooks now or in the future?

The Science Center is interested in exploring combining electronic logbook reporting with VMS in the future. If large-scale reporting of catch data over the VMS is anticipated, it becomes a requirement to consider when selecting a VMS. This issue is currently being researched and evaluated.

19. **If a vessel required to have a VMS is allowed to change fisheries, either to another fishery where VMS is required or one where it is not, what is the notification procedure? Can this notification be made by VMS?**

Messaging capabilities, two-way communication and declaration would allow this activity to occur over the VMS.

20. **Do we foresee a need for sensor data i.e. water temperature, depth, air temperature, engine temp, engine rpm, etc.? Some of these capabilities are “off the shelf” and some if truly important enough could be developed given the time, money and resources.**

We did not identify any at this time. INMARSAT is the only system that allows for addition of sensors.

21. Different systems have different coverage capabilities.

INMARSAT and Argos are essentially global systems. Boatracs uses satellites positioned over the U.S. with a “footprint” of the continental U.S. out to about the 200-mile EEZ. For seamounts beyond the EEZ, vessels fishing in the Bering Sea, Gulf of Alaska and high seas of the North Pacific beyond 200 miles, there is no coverage with Boatracs. More discussion may be needed on this question. Coverage is needed from the US/Canada border to Mexico, but coverage may need to extend beyond 200 miles. Issues involving the highly migratory fishery, the Seattle-based Alaska fleet and the need to monitor the far offshore fishery that transits the EEZ and lands in U.S. ports needs to be evaluated.

The rest of the questions we did go over at this meeting, most are not critical to the system but were designed to encourage further thought about what we wanted in the future, or some advantages that may be gained by having VMS.

Value Added Services

22. Email?
23. Internet access?
24. News services?
25. Communications with owner, family, parts and supplies, shipyards, etc?

COSTS

26. Who pays?
27. The transceivers?
28. Communications?
29. Installation?
30. Maintenance?
31. Replacement?
32. Sensors?
33. Hardware and software for electronic log books?