

MEMORANDUM

TO: Council, SSC, and AP Members

FROM: Chris Oliver *Chris*
Executive Director

DATE: September 30, 2002

SUBJECT: Vessel Monitoring Systems

ESTIMATED TIME 6 HOURS all B items
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Chairman Dave Benton appointed the Vessel Monitoring System Committee in June 2002 (Item B-6). The Council charged the committee with reviewing the current VMS system and potential new systems and discussing current and future uses of technology for monitoring fisheries and enhancing vessel safety in a cost-effective manner. The committee convened on August 30, 2002 and received reports from a number of VMS hardware and software vendors. The committee will reconvene on Monday evening, September 30, 2002 to finalize its recommendations to the Council. The committee is recommending that the Council provide recommendations for revisions to the National VMS Steering Committee, which will be meeting in October 2002, and that NMFS evaluate additional satellite technology for certification for use in North Pacific fisheries.

VMS Committee

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Prepared by Jane DiCosimo October 1, 2002

**VMS Committee Meeting
Draft Minutes
August 30, 2002 and
September 30, 2002**

Committee chairman Earl Krygier, CAPT Rich Preston, Al Burch, Bob Mikol, Lori Swanson, Ed Page, and Guy Holt were in attendance for both meetings. Fourteen individuals representing seven vendors attended the August 30th meeting held in Juneau. Staff for the August meeting were Jane DiCosimo, Garland Walker, and Alan Kinsolving.

For the September 30th meeting staff included Jane DiCosimo and NMFS enforcement representatives Ken Hansen and Gary Galbreath. Two representatives from the public also attended this meeting.

The NPFMC charge to the Committee was to review the current VMS system and potential new systems, and explore current and future uses of technology for monitoring fisheries and enhancing vessel safety in a cost-effective manner. The Committee focused on national standards for VMS and regional issues and further discussed the National Standards of the Magnuson-Stevens Act and took note of the following standards:

“Conservation and management shall, where practicable, minimize costs and avoid unnecessary duplication.”

“Conservation and management measures, shall to the extent practicable, promote the safety of human life at sea.”

The Committee discussed how VMS systems that provide two-way communications could aid compliance with fisheries regulations and maritime safety. In order to help evaluate the various transponder systems available, the Committee developed a list of performance factors important for serving as an approved VMS for Alaska fisheries. These factors included:

- (1) The meeting of NMFS Requirements and Performance Standards
- (2) The operation and cost of the systems
- (3) Safety of Life and Property Factors
- (4) Efficiency of Maritime Operations.

A copy of the evaluation matrix is attached.

The Committee proposed the following performance standards for certification for future systems:

- Modification of the position reporting period, presently every 30 minutes, to allow for variable reporting relative to vessel proximity to areas of concern which reduces operating costs
- Using "comprehensive coverage" as the performance standard for VMS as opposed to "seamless" that is the present requirement.
- Requiring future VMS to provide for 2-way communications capability to help reduce negative impact on protected resources and enhance maritime safety.
- Reliability of VMS hardware
- Backup systems, hardware or software based, as an alternative to a secondary VMS

The Committee received presentations from NOAA Fisheries Enforcement on the current vessel monitoring requirements and a comparative field test and study of satellite and EPIRB technology in the Aleutians by the Marine Exchange of Alaska. The Committee also heard briefings from seven private vendors of satellite transponder systems and software technology. Vendors were also invited to supply a written presentation to address the performance factors identified in the attached evaluation matrix.

Reviewing and certifying two-way VMS technologies would meet the Magnuson Stevens Act National Standards to enhance maritime safety and minimize costs. Upon review of the information presented, the Committee deemed Inmarsat C and Iridium satellite technology provides comprehensive VMS coverage for the Alaska Region. Additionally, these systems can integrate into the current NMFS software that will be shared with the USCG through a single interface.

In the event of a VMS failure, the Committee supported the approval of cost effective hardware or software technology back-up systems that would allow a fishing vessel to complete its current voyage and still meet NMFS' basic security and reporting criteria (geographic coverage, tamper resistant, encrypted data exports for tracking analysis, 30 minute poll rate, and vessel specific).

The Committee recommended that the National VMS Steering Committee, which will meet in October 2002 review and incorporate the Committee's proposed changes to 50 CFR 679 and consider the attached evaluation matrix as a possible strawman for consideration. In addition, the Committee seeks Council direction on whether it should continue as a committee to address operational and enforcement issues related to VMS once its task is completed or if NMFS/Council should resolve these issues outside of the committee process.

Encl: (1) VMS Evaluation Matrix
 (2) Proposed changes to 50 CF 679

NMFS Requirements & Performance Standards	
1	Is the equipment presently approved by NMFS?
1a.	If so which regions?
2	Can the equipment and system meet the NMFS technical requirements?
3	What is the coverage area of the System?
3a.	Is communications with the satellite system always available?
3b.	Are there shadow areas? If so, where and how extensive?
4	What is the reliability of the system?
5	Can the system notify a vessel of a pending or actual incursion to aid compliance with applicable environmental regulations?
6	Is the system tamper-resistance?

Operation & Cost	
1	What is the cost of the equipment?
2	What are the operating costs; 24 hrs, positions every 30 minutes?
3	How is or can the system's proper operation be validated to allow for fishing?

Safety of Life & Property	
1	Can the system provide immediate notification of an emergency to the CG and the Owner/Operator?
2	Can the system receive emergency information?
3	Can the system receive weather reports?

Efficiency of Maritime Operations	
1	Can the system transmit catch reports?
2	Can the system receive fishing notices?
3	Can the system send and receive Email? If so what is the cost?
4	Can the system send vessel position info to the vessel owner & operator? What is the Cost?

50 CFR 679
VMS Requirements

The NPFMC VMS Committee reviewed NMFS draft VMS regulations for Alaska and recommended the following changes to provide for two-way communications that can better prevent negative impact to resources in Alaska and aid maritime safety.

Note:

Normal text represents draft NMFS regulations

Bold Italics text reflects VMS committee comments

Bold, underlined italics text represents proposed language for NMFS

The VMS Approval Process

A VMS consists of a NMFS-approved VMS transmitter that automatically determines the vessel's position and transmits it to a NMFS-approved communications service provider. (***Recommend VMS "transmitter" be changed to "transceiver" to reflect the equipment can both send and receive communications.***) The communications service provider receives the transmission and relays it to NMFS. On March 31, 1994, NMFS published standards for the use of VMS (59 FR 15180). NMFS will use the criteria described below, which are based on the 1994 standards, to approve VMS transmitters and communication service providers.

1. The VMS transmitter must be tamper-proof and it must be impossible for the vessel operator to input false position information; (***Recommend change "impossible" to a more realistic standard, i.e. "The VMS transceiver must be tamper-resistant and designed to prevent the vessel operator to input false position information"***)

2. The VMS transmitter must be able to determine, store and transmit vessel position;

3. The VMS transmitter must allow for regular as well as random automatically generated position reporting. The interval between position reports must be programmable;

4. Each position report must include: (a) the vessel location, accurate within 400 m; (b) a transmitter identifier that is unique to that transmitter; and (c) the date and time that the vessel position was taken;

(Recommend higher accuracy standard to reflect today's current technology in providing accurate position reports to 100 m vs 400 m. Accurate information will help determine if a vessel is actually inside a protected area.)

5. The VMS transmitter must be equipped with an onboard alarm system that will alert the vessel crew if the unit malfunctions or is not able to transmit;

6. The VMS transmitter, in conjunction with the VMS communication service provider, must provide seamless and transparent communications from any location within the exclusive economic zone off Alaska;

The objective of VMS is to ensure comprehensive coverage of protected areas and the timely detection and notification to NMFS to aid compliance and enforcement of applicable fisheries regulations.

The present "seamless" requirement implies seamless geographic coverage (currently available) as well as seamless communications connectivity, (which is not presently available).

In light of the above, the Committee recommends this

section read: "The VMS transceiver, in conjunction with the VMS communications service provider, must provide comprehensive coverage of

all regulated fishery areas and their approaches in Alaska that ensures any incursions into protected areas are detected and communicated to NMFS within a period determined to be timely by NMFS in consideration of existing available technologies."

7. The transmitter must be able to fix the vessel's position at least once every 20 minutes and be able to store those positions in local, non-volatile memory until they can be transmitted to, and received by, the communication service provider;

(This section implies the equipment must take positions every 20 minutes at all times. In practice, a vessel operating 50 miles from a protected area need not provide positions every 20 minutes and doing so imposes an unnecessary communication cost to the owner/operator. NMFS policy should allow for variable polling rates depending on where a vessel is operating ranging every 12 hours when not underway or in the same geographic area within 100 m, to every 2 hours when underway greater than 3 miles from a protected area, to every 20 minutes when within 3 miles of a protected area including operating in a protected area. These standards would reduce VMS costs by 1/2 and still meet NMFS VMS objectives.)

8. In addition to regular position reports, the VMS transmitter must be capable of transmitting a specially identified status report giving the vessel position whenever the transmitter is powered-up, powered-down, is unable to determine vessel position or has its antenna disconnected;

9. It must not be possible for the vessel operator to determine when the VMS transmitter is transmitting or taking a position for later transmission;

10. Transmissions from the VMS transmitter and the communication service provider must be secure, and it must not be possible for unauthorized parties to intercept vessel location information.

Comments: Recommend a new paragraph one be inserted to address the two way communications standards desired to better meet the Magnuson-Stevens Act National Standard #10 that reads "Conservation and management measures shall, to the extent practicable, promote the safety of life at sea"

1. Approved VMS equipment shall have accurate and near real time position finding capability and provide reliable and near real time two way communications capabilities to aid compliance and enforcement of fisheries regulations and maritime safety. The VMS equipment shall have the capability to alert vessel operating personnel of an important incoming message.