

Vessel Monitoring System

General information sheet on VMS for South Australia

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Introduction

A Vessel Monitoring System (VMS) has the potential to greatly enhance fisheries information and management in South Australia. VMS is a computer-based system that allows the position of vessels, which are equipped with the necessary technology, to be automatically monitored and analysed from shore. Latest interstate and overseas experience with VMS technology indicates potential benefits for fisheries managers, industry and individual fishers.

This information sheet has been prepared to provide a basic introduction to VMS. More detailed information can be obtained by contacting PIRSA Fishwatch.

Broad ranging applications

VMS has been in widespread use throughout Australia and internationally since 1993 and, like most technology platforms, it has been deployed on an evolving range of computing hardware. Using satellite communications, it is now a well-proven and standardised technology that will continue to develop to the benefit of fisheries and fisheries management.

There are numerous applications for VMS technology. It can assist fisheries managers in monitoring, control and surveillance of fisheries, particularly where fishing activity is confined to certain areas or zones or when it is important to know where and when vessels are landing their catch. With appropriate equipment it can also be utilised by fisheries businesses to:

- ✦ establish (at sea) internet communications for marketing and other purposes;
- ✦ gather more cost effective electronic catch and effort data; and
- ✦ monitor the operations and safety of vessels within their fleet.

A world wide trend

VMS is increasingly being utilised in a range of fisheries in many countries around the world, including New Zealand, the United States, the European Union, Russia, Morocco, French Polynesia, New Caledonia, Argentina, Japan, Chile, Peru, South Pacific Forum Fisheries Agency (FFA) member countries, and South Africa where it has been mandated for all commercial vessels.

The European Union (EU) operates the world's most extensive VMS program. EU countries are required to monitor each of their flag bearing vessels in excess of 24 metres. In total, about 7000 vessels are subject to VMS.



Within Australia, VMS application is broadening. The Australian Fisheries Management Authority (AFMA) already has approximately 300 vessels fitted with VMS units. The Queensland Department of Primary Industries has an expansive VMS with more than 600 vessels.

VMS operates on over 150 vessels in Western Australian fisheries, and in more than 100 vessels in Tasmania in the rock lobster, giant crab and scallop fisheries. It is anticipated that VMS will be introduced on abalone mother boats in Tasmania in the future.

New South Wales is evaluating VMS for introduction into its fisheries, primarily in the ocean prawn trawl, followed by the trap and line fishery.

What is happening in South Australia?

PIRSA Fisheries has established a VMS base station using Smart Trac software. Smart Trac software is used by a number of overseas agencies including the National Oceanic and Atmospheric Administration in the United States and the South Pacific Forum Fisheries Agency. AFMA also uses the system, and does New Zealand, Malaysia, Taiwan and Thailand.

VMS has been adopted in this state by the Northern Zone Rock Lobster fishery in association with implementation of a quota management system to assist in cost-efficient and effective monitoring of catch landings.

How does VMS work?

VMS enables the position of vessels to be automatically monitored, analysed and presented to the vessel owner or an approved third party (eg PIRSA). For VMS to determine the location of a tracked vessel, an Automatic Location Communicator (ALC) is installed on the vessel. The units are about the size of a car radio-cassette player and consist of an integrated GPS unit and Inmarsat-satellite unit (see photographs in next column).

VMS uses two satellite systems to track vessels. Location and time are resolved by the ALC through the Global Positioning System (GPS). This position and time is then reported through the Inmarsat system. An ALC can be programmed to report at regular intervals or on request.

A personal computer (PC) can be connected to the ALC to provide the operator with secure



Above: control module
Below: antenna



communication, including e-mail, and safety features. With an appropriate home or office set-up, owners can also receive and view position reports from their own vessels.

For information about how VMS technology can be used to assist your business with communications and marketing opportunities and enhanced at-sea safety, please contact the Fishwatch office.

Compliance, research and monitoring

VMS offers a transparent accountability mechanism to assist in demonstrating industry and government commitment to the long-term sustainability of our fisheries.

The initial objective of PIRSA in implementing VMS is to improve the effectiveness of existing compliance monitoring programs.

The ability to know the precise location of vessels in 'real time' allows catch landings to be monitored and rapid identification of any suspicious or illegal fishing activity. VMS, therefore, enables more targeted use of compliance resources.

For the few who might consider breaching fishery regulations, VMS can act as a deterrent, as they are aware their position is being monitored. The first major prosecution based entirely on vessel tracking data gathered by VMS recently occurred in the United States.

VMS also offers the potential to quantify previously unknown compliance and non-compliance rates. This offers distinct advantages in assessing risk and how to best allocate available resources.

Fisheries authorities interstate and overseas have found that VMS can also offer benefits in fisheries management and research, which may be explored for future application in South Australia.

VMS can provide the opportunity for fishery managers to adopt alternative management strategies that would otherwise be cost prohibitive using conventional monitoring and surveillance methods. One example is variable closures (as opposed to blanket closures), where certain areas can be closed once a pre-determined level of effort has been reached.

Another benefit of VMS is the potential for enhanced fishery stock assessment. The ability to analyse accurate and timely catch and effort data (captured electronically and transported via VMS) offers significant advantages in decision making processes. The technology offers the potential for cost effective accurate data collection for use in

stock assessments, with the ability to change fishery management from a reactive approach to a proactive process involving decisions based on real time fishery data.

Security to protect professional interests

PIRSA Fisheries guarantees an ongoing commitment to security and confidentiality of VMS data, as required under provisions set out in the *Fisheries Act 1982*. PIRSA Fisheries has developed and implemented integrity measures and specifications in consultation with other Australian fisheries agencies and technology suppliers. The VMS computer system is stored in an access-restricted area within PIRSA Fisheries, and it is password protected as an additional level of security. VMS has proven itself as a secure technology when properly deployed. With VMS, PIRSA Fisheries guarantees a continued commitment to security and confidentiality in terms of information collected.

Do you need more information?

For further information on VMS or for a purchase and installation information packet please contact:

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