

VESSEL MONITORING SYSTEM (VMS)

INSTALLATION AND MAINTENANCE STANDARDS

1. Overview

Fisheries, a business group within Primary Industries and Resources South Australia (PIRSA), operates a Vessel Monitoring System (VMS) with the primary objective of assisting in the efficient and effective management of selected South Australian fisheries. The VMS requires the installation of Inmarsat C transceivers (also known as VMS units or Automatic Location Communicators [ALC's]) which have been approved by PIRSA. These ALC's must be installed and maintained by agents that have been approved by PIRSA. The standards which must be applied in the installation of ALC's are specified in this document. Note that an independent marine surveyor may review installations to verify compliance with these standards. (A current listing of the approved units and approved installation and service agents is available by contacting the Birkenhead Fishwatch office on (08) 8347 6100.)

PIRSA seeks the cooperation of the approved agents in maintaining the integrity of the VMS and ensuring its ongoing viability as an effective tool for managing South Australia's fish resources.

In summary, the responsibilities of an installation and maintenance agent are:

- to assist with the development of standards for the installation and maintenance of the VMS equipment;
- to comply with the agreed standards for the installation and maintenance of the VMS equipment;
- to ensure all ALCs installed and maintained are, at all times, as approved by PIRSA;
- to report all faults and technical incidents to PIRSA;
- to cooperate with PIRSA and the equipment manufacturer in resolving technical faults and incidents;
- to have access to spare VMS equipment (also known as 'hot spares') to facilitate the replacement of faulty equipment as required within the standards set out below;
- to advise purchasers of equipment for VMS purposes of the PIRSA requirements for installation; and
- to assist PIRSA maintain the integrity of the system and report instances of suspected tampering with equipment to PIRSA.

Accreditation for an approved agent may be withdrawn if the above conditions are not met.

Notes:

- *The PIRSA installation standards do not require installation to full GMDSS standards. While equipment installed in compliance with these standards may be used for some GMDSS functions or may satisfy GMDSS requirements, PIRSA accepts no responsibility for the fitness for use of the installed equipment for GMDSS or any other safety purpose.*

- Depending upon the experience or specific requirements for a particular fishery the standards outlined in this document may be changed by PIRSA.

2. Installation Standards and Requirements

When installing ALCs on vessels, an approved agent must observe all relevant requirements of the equipment manufacturer, survey authorities, and PIRSA. It is expected that agents will observe normal best practice for carrying out such technical installations. PIRSA has additional requirements for some aspects of the installation due to the nature of the use of the system for fishery management purposes.

The following standards must be observed by authorised agents in installing Inmarsat C equipment onboard vessels to comply with State fisheries legislation and policy. It is recognised that the physical conditions on vessels vary considerably and, as a result, some discretion must be exercised by installers in some aspects of the installation work. Some items are mandatory and there is no room for use of discretion. These are indicated by the use of the word "**must**". Any installation problems in these areas **must** be referred to PIRSA for resolution.

Please note that an independent marine surveyor may review installations to verify compliance with these standards.

2.1 TRANSCEIVER ENCLOSURE

The casing containing the integrated transceiver and GPS **must** be sealed with PIRSA adhesive security seals, which break when they are removed. PIRSA will supply the seals.

- The seals **must** be applied to the casing such that it is not possible to open the casing without breaking one or more of the seals.
- Three security seals **must** be applied to the casing either over a screw or across a seam to achieve this purpose.
- Security seals should be positioned to avoid accidental damage.

2.2 TRANSCEIVER LOCATION

The transceiver **must** be located such that it:

- is readily accessible to the vessel operator in an emergency situation;
- is protected from the elements of water, wind and weather;
- is secure in the roughest of sea conditions;
- does not suffer interference from the operation of other equipment on the vessel; nor cause interference with other essential equipment onboard
- is not prone to accidental bumping; and
- does not interfere with the normal, safe operation of the vessel.

The transceiver must be bolted to the vessel superstructure or fittings which, by way of size or installation method, are not easily removed (for example, inbuilt walls or benches).



Note: *PIRSA may review these requirements with time. For example, depending on experience, it may subsequently be required that the transceiver is attached to the vessel structure by means of a security seal which must be broken to remove the transceiver.*

2.3 ANTENNA LOCATION

The antenna **must** be located such that it:

- has sky-wards access which is unobstructed by any part of the vessel;
- is the highest antenna where practical on any structure supporting other antenna;
- does not suffer interference from the operation of other equipment on the vessel; and
- does not interfere with the normal, safe operation of the vessel.

The antenna should be located such that it:

- is as far as possible unobstructed by any part of the vessel or its equipment, in the horizontal plane;
- is at the highest practical point on the vessel;
- does not suffer interference from the operation of other equipment; and
- does not require the use of scaffolding or lifting equipment to gain service access.

The antenna **must** be securely bolted to the structure of the vessel (for example, a mast or other substantial part of the vessel which is not easily removed).

2.4 CABLING

The antenna and the transceiver **must** be connected by a cable which:

- is protected by ducting, bulkheads or measures such that is not exposed to a high degree of accidental damage. Particular care should be taken with cabling which traverses open areas such as a deck or roof. If this cannot be avoided then conduit (preferably metal) which is of sufficient strength and quality to prevent accidental damage and ingress of water **must** be used;
- passes through at least one bulkhead of the vessel in an aperture of a size no greater than is required for the diameter of the cable. It **must** not be possible to remove the transceiver and antenna from the vessel without disconnecting the joining cable;
- is one continuous piece;
- is of a type and specification as recommended by the transceiver manufacturer and is listed in the transceiver documentation; and
- is of the highest quality especially relating to insulation and water proofing characteristics.

2.5 ANTENNA CABLE CONNECTORS

The Antenna Cable Connectors **must**:



- be of the standard and quality of the minimum requirements stated by the equipment manufacturer in the equipment installation specifications for that equipment;
- have the centre pins soldered to the cable. The pins must not be crimped;
- be protected where the cable connects to the Antenna by self amalgamating tape; and
- must have sufficient slack at the antenna end to allow easy maintenance of the antenna and discourage the build up of moisture on the antenna connector.

2.6 ELECTRICAL CONNECTION

The intention of these standards is that at **all times** adequate power to the ALC to allow normal operation **must** be maintained. It is the licence holders responsibility to ensure that the ALC will have adequate power at all times. The licence holder **must** take responsibility for ensuring that an appropriate charging regime and/or alternative arrangements (eg solar recharge) are in place.

Installers should advise licence holders on how they can best meet power requirements. Installers should clearly document any issues or concerns relating to the adequacy of power supplies on the installation certificate in the installation report section.

The transceiver should be installed to a power supply such that:

- the transceiver is not subject to large fluctuations in voltage that may cause a reset condition or damage the transceiver;
- the power supply **must** meet the manufacturers specification for electrical characteristics (eg voltage range, power consumption, ripple voltage, etc);
- there are two separate sources of power, one being an alternate power source;
- switching between two sources of power supply systems should occur automatically with minimal interruption to power; and
- The transceiver can continuously operate while the vessel is in port (other than while repairs are being made which disrupt the power supply). One of the power sources should have the capability of being supplied from shore based mains power where available, when the vessel is in port.

***Note:** In South Australia, survey requirements stipulate that VMS equipment can not be connected to batteries installed for radio, i.e. the radio batteries are dedicated to the radio only. Queries on this matter should be directed to Transport SA, Marine Group (phone 08 8347 5082).*

2.7 SOFTWARE ACCESS RESTRICTIONS (only applicable where data terminating equipment is installed)

The ability to disable a Data Network Identifier (DNID) or data reporting in general is normally available to a transceiver user through the attached PC known as the Data Terminating Equipment (DTE). This function **must** be removed from potential access by the vessel operator through configuration of the transceiver and its DTE, whether by password or other means. The installer **must** ensure that such lock out facilities are activated and that any

potential for the vessel operator to bypass such lock out facilities is minimised as far as possible.

Any capability which allows the vessel operator to find out the programmed reporting time interval or the time of transmission of data reports **must** similarly be locked out from potential access by the vessel operator

When a password is used to lock out facilities from the vessel operator's access, the password **must** be kept confidential and **must** not be disclosed to the vessel operator or any person other than those authorised by PIRSA.

All alerts **must** be activated when unit is configured.

3. Commissioning and Installation Procedure

The commissioning, installation and programming of an Inmarsat C transceiver for VMS purposes involves interaction between the vessel operator, the equipment supplier/installer, PIRSA and Xantic. This can present co-ordination problems as a number of the steps involve significant time delays. The procedure outlined below is **mandatory** and steps 1 through 7 are performed in controlled circumstances at the suppliers premises prior to physical installation on a vessel.

1. Supplier to complete relevant sections of the "*Inmarsat Registration for service activation of Maritime Mobile Earth Station*" form (attachment 1) and forward it to the vessel operator to complete. The vessel operator should be advised to send or fax to Xantic Inmarsat-C Customer Service Centre to commission the transceiver.
2. Xantic will then contact you with your Mobile identification (Mobile ID)
3. Complete the "PIRSA Data Network Identification Number (DNID) download approval" form (attachment 2) and have purchaser sign it. Have purchaser complete the "Inmarsat-C Distress Alert Contact Details" form (attachment 3).
4. Supplier to power up transceiver and perform manufacturer and Inmarsat verification tests.
5. Send or fax "DNID Download Approval" and "Inmarsat-C distress Alert Contact Details" forms to the PIRSA VMS Officer.
6. Supplier to log the transceiver on to the Pacific Ocean Region (POR) and leave it powered on. Request DNID (and ENID for those that have a DTE) download via the PIRSA VMS Officer by phone or fax. Wait for the PIRSA DNID (and ENID) to be downloaded before proceeding to the next step. This should occur within 24 hours.
7. Wait for the PIRSA Vessel Monitoring System Officer to advise the supplier via phone or fax that the transceiver has been successfully programmed for data reporting to PIRSA. This will require completion of the PIRSA DNID and ENID download, advice from Xantic to PIRSA of download completion, programming by PIRSA and receipt of the first data report.
8. Supplier shall physically install the transceiver on the nominated vessel in accordance with PIRSA installation standards. Power unit on and perform test procedures in accordance with manufacturer's and Inmarsat requirements.
9. Ensure that access to all restricted menus is locked out from vessel operator access and that appropriate configuration and backup disks are provided.

10. For VMS equipment with DTE:

- Supplier shall ensure that the vessel operator is familiar with the ENID message procedure and the use of the transceiver in general. Have the vessel operator transmit an "installation complete" message to PIRSA's VMS Officer Fax.
- Supplier to ensure confirmation is received from the Vessel Monitoring System Officer that the message sent was received and that the operation of the transceiver is satisfactory and in accordance with PIRSA's requirements.

For VMS equipment without DTE

- If the vessel is not required to have a data terminal or personal computer installed with the transceiver then send an "installation complete" report by facsimile and contact the PIRSA VMS Officer to confirm that the transceiver is operating satisfactorily and in accordance with PIRSA's requirements.

11. Supplier shall complete the "PIRSA Installation Certificate" (attachment 4) ensuring that it is signed by both the installer and the vessel owner. A copy is to be sent or faxed to the PIRSA VMS Officer.

12. Inform master of the boat that **before** they leave port they **must** have authorisation from PIRSA that the unit has been installed correctly and that the unit is working.

CONTACT NUMBERS

Contact	Address	Phone	Fax
Justine Kenyon-Benson PIRSA VMS Officer	PIRSA Fishwatch PO Box 252 Port Adelaide SA 5015	(08) 8347 6100	(08) 8449 1646
Clare Speechley Information Manager	PIRSA Fishwatch PO Box 252 Port Adelaide SA 5015	(08) 8347 6100	(08) 8449 1646
PIRSA FISHWATCH (out of hours contact and messaging service)		1 800 065 522	
Xantic Customer Support		1 800 815 555	1 800 811 373

Note:

PIRSA's DNID and the member numbers of each mobile are to be treated as confidential and must not be divulged to any party other than PIRSA. Failure to observe this requirement and to take reasonable steps to secure this information may result in the withdrawal of PIRSA approval as a PIRSA installation agent.

4. Maintenance Standards and Requirements

Inmarsat-C transceivers are highly reliable but it is also recognised that genuine equipment failures will be experienced. Authorised agents are to deal with maintenance issues as per normal best practice for maintenance of this type of equipment. PIRSA has additional requirements for some aspects of the maintenance of the equipment due to the nature of the use of the equipment for fishery management purposes. The maintenance of the equipment should be conducted in a manner to reduce vessel downtime and such that it does not unduly interfere with the normal fishing activities of a vessel.

The following standards **must** be observed by authorised agents in maintaining PIRSA approved Inmarsat C equipment aboard fishing vessels to comply with State fisheries legislation and policy. Mandatory items are indicated by the use of the word "**must**". Any problems in these areas **must** be referred to PIRSA for resolution.

4.1 REPLACEMENT EQUIPMENT

Each approved supplier must hold at least one PIRSA approved transceiver and antenna as a 'hot spare' for every one hundred vessels, or part thereof, fitted with VMS. 'Hot Spares' must be held in a vicinity of no longer than 24 hours delivery from all major ports. Further maintenance transceivers may be required depending on failure rates. The transceiver(s) must be fully commissioned and have the PIRSA DNID already downloaded so that it is ready for immediate use as a replacement for a suspected faulty transceiver.

Replacement transceivers must have their casing sealed with PIRSA adhesive labels as for newly installed transceivers.

4.2 TRANSCEIVER INTEGRITY

Agents performing maintenance on vessels equipped with PIRSA approved transceivers **must** inspect the transceiver for indications of tampering in the field, including inspection of PIRSA security seals for signs of breakage. Any indications of tampering **must** be reported immediately to PIRSA.

Transceivers can be opened in the field with the evaluation of the transceiver left to the discretion of the agent as to whether the transceiver is maintained and replaced immediately or the complete transceiver is replaced. At all times there should be minimal inconvenience to the vessel operator. Any repairs must be completed by an authorised agent.

4.3 TRANSCEIVER REPLACEMENT PROCEDURE

This procedure assumes that a replacement transceiver held by the authorised agent is to be installed and that initial steps required for configuring the transceiver have been completed as per the Installation and Commissioning Procedure.

1. Physically install transceiver on vessel in accordance with PIRSA installation standards. Power unit on and perform test procedures in accordance with manufacturers and Inmarsat requirements.
2. Fax PIRSA VMS Officer (08 8449 1646). Message must contain the following information.
 - Original transceiver Owner's Name, Business Name, Address, and Contact numbers
 - Original transceiver's Mobile Number
 - Replacement transceiver's Mobile Number and PIRSA DNID member number.
 - Vessel Name
3. Fax Xantic Customer Service (1800 811 373) with the same details to enable them to invoice the boat owner for the transmission costs

4. Ensure confirmation is received from PIRSA VMS Officer that the operation of the replacement transceiver is satisfactory and in accordance with PIRSA's requirements.

These replacement procedures also apply when the original equipment is being reinstalled on the vessel. All steps 1 through 4 **must** be followed.

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4.4 FAULT AND INCIDENT REGISTER

PIRSA maintains a centralised register of faults and incidents relating to the performance of the VMS. Fault and incident reports should include any incident which relates to non reporting by a transceiver or which could impact the integrity of the PIRSA VMS reporting. Details of all incidents, diagnostic action, workarounds and solutions **must** be provided to the PIRSA VMS Officer either directly by the installer/maintainer staff or preferably co-ordinated through the head office of installation and maintenance agents within 7 days.



ATTACHMENTS

CONTENTS

1. Inmarsat Registration for Service Activation of Maritime Mobile Earth Station
2. PIRSA Data Network Identification Number (DNID) Download Approval
3. Inmarsat-C Distress Alert Contact Details
4. PIRSA Installation Certificate