Western and Central Pacific Fisheries Commission

TECHNICAL AND COMPLIANCE COMMITTEE
Fourth Regular Session
2-7 October 2008
Pohnpei, Federated States of Micronesia

WCPFC VMS
IMPLEMENTATION STATUS

WCPFC-TCC4-2008/08 Rev.1
9th September 2008

Prepared by the Secretariat

Introduction

1.   WCPFC Circular 2008/06 distributed on 22nd February noted that the WCPFC4 decision in relation to the adoption of the "Pacific" Vessel Monitoring System (VMS) model for the Commission's VMS at Guam had some implications for the advice and recommendations of TCC3 in relation to the Commission's VMS.

2.   Subsequently, the WCPFC Secretariat, with the assistance of the VMS consultant to TCC3 and WCPFC4, Mr Iain Hayes of Absolute Solutions, Mr David Marx ((New Zealand) in his role as Chair of the VMS Technical Working Group)), and the FFA Secretariat, prepared some supplementary information for the "Pacific VMS" based on the discussions of the VMS Costing Working Group, chaired by Mr Glen Joseph (Marshall Islands), at WCPFC4. This supplementary material was distributed to all CCMs as Circular 2008/10 in March 2008.

3.   The "Pacific VMS" became an option for the Commission VMS at WCPFC4 because of the high cost of developing a stand-alone VMS for the Commission and the completion of data hosting arrangements in November 2007 for the FFA VMS at the Macquarie Data Centre, Sydney. These developments were not in place at the time of the TCC3 meeting in September 2007 and as a result TCC3 was not able to take them into account in formulating its advice and recommendations to WCPFC4.

The "Pacific" VMS

4.   The "Pacific VMS" (**Attachment A**) provides for:
   - the provision of a "WCPFC VMS" service completely independent of existing FFA VMS services;
   - FFA registered vessels currently reporting to the FFA VMS to use their existing arrangements to report to the WCPFC without any additional registration charges; and
   - the full utilisation of existing, multiple VMS mobile communication service providers (Argos, Iridium and Inmarsat) for vessels not already reporting to FFA.

5.   The "Pacific VMS" will utilise IT VMS infrastructure and software owned by, and related services contracted to, the FFA within the Sydney-based Macquarie Data Centre. The FFA VMS platform within the Macquarie Data Centre in Sydney will be configured to service the needs of the "WCPFC VMS" independently of the requirements of FFA in respect of its own VMS.

6.   No "Pacific VMS" data will flow through Honiara or be available to the FFA Secretariat unless subsequently agreed by the owners of the data. All "Pacific VMS" data will all be received at and re-distributed from the Macquarie Data Centre under Service Level Agreements. For

WCPFC, this will be negotiated with FFA as a component of a proposed MOU between WCPFC and FFA for the use of the "Pacific VMS" to support the needs of WCPFC.

7.   The FFA VMS and the WCPFC VMS will reside on the same hardware platform utilising the same software. However, each will be isolated from the other with physical and electronic security so as to ensure the integrity and separation of each system consistent with the standards and expectations of the Commission for VMS data security and information management[1]. A draft document describing the standards, specifications and procedures to achieve this will be reviewed during TCC4 (WCPFC-TCC4-2008/09).

8.   WCPFC Secretariat staffing required to support the WCPFC VMS consists of one VMS Manager and two VMS operators. These staff will be based at the Commission Headquarters in Pohnpei, FSM.

The VMS Technical Working Group (TWG)

9.   WCPFC4 established a VMS TWG for the purpose of addressing many of the items identified at paragraph 7 of Conservation and Management Measure 2007-02. Specifically, WCPFC4 (paragraph 142 WCPFC4 Summary Report) requested the VMS TWG to develop draft standards, specifications and procedures (SSPs) for the Commission's VMS.   Under the chairmanship of David Marx (New Zealand) the VMS TWG worked electronically from January to July to finalise terms of reference (ToR) for the elaboration of the SSPs. VMS TWG consultations on the ToR included informal discussions among CCMs present in Nadi, Fiji for the Second Meeting of the Inter-sessional Working Group for the Regional Observer Programme. The ToR eventually used to support further elaboration of the SSPs, and distributed to all CCMs in July, is at **Appendix B**.

10.   Subsequently, Mr Robert Gallagher (Navigs sarl.) was selected to undertake the elaboration of the SSP (WCPFC-TCC4-2008/09). He will be available at TCC4 to work with CCMs to refine and further develop the draft SSPs prepared.

Further work

11.   The preparation of a draft SLA with the FFA requires the SSPs to be in an advanced stage of development. At this stage it is only possible to identify the high level elements of a possible SLA (**Attachment C**).

12.   Following consideration of the SSPs, the TCC is invited to discuss a means for the elaboration of the SLA between the TCC meeting and the Fifth Regular Session of the Commission (WCPFC5) in December. An option may be for the two Secretariats to provide CCMs with a draft SLA for review in advance of WCPFC5 so that, in consultation with FFA, it might be concluded in December.

13.   In addition TCC4 is invited to consider the need for further refinement of CMM 2007-02 to support the implementation of the WCPFC VMS. Such a revision might include commitments and obligations in relation to the Secretariat and CCMs that flow from the SSPs. Several additional tasks that remain. These include:
- Additional items identified at paragraph 7 of CMM 2007-02 including:
    a. Cost recovery, and
    b. Cost sharing.

---

[1] The development of rules and standards for the purposes of compliance and enforcement on the4 high seas, and the use of VMS data for scientific purposes provided for within the *Rules and Procedures for the Protection, Access to, and Dissemination of Data Compiled by the Commission*, as amended by WCPFC4. Consideration of this is being progressed through the AHTG [Data].

14.   TCC4 is invited to deliberate on these matters, progress them to the extent practicable during TCC4 and provide advice and recommendations in respect of any additional work that might be required in advance of WCPFC5 at Busan in December.

THE PACIFIC VESSEL MONITORING SYSTEM

What is the Pacific VMS?

1.   The Pacific VMS is the name used to describe the existing Pacific Islands Forum Fisheries Agency (FFA) VMS infrastructure which will manage a number of separate VMS systems and other maritime services, within it. It is not a number of complete, stand alone systems but rather an integrated IT architecture which collects and manages VMS data on behalf of a number of agencies and then feeds the data out to these agencies independent of one another. The Pacific VMS is one set of infrastructure which encompasses the FFA, Western Central Pacific Fisheries Commission (WCPFC) and FFA member country's national VMS[2] and has existing capacity to scale in terms of the number of vessels and VMS clients.

2.   The Pacific VMS is founded as an open architecture system with integrated services that uses Commercial off the Shelf IT infrastructure, software and data centre services. These services are based out the Macquarie data centre in Sydney, Australia. The Pacific VMS:

 ▷ is an extension of the existing FFA IT infrastructure to provide completely independently administered VMS services to RFMOs, including WCPFC and SPC
 ▷ provides managed co-hosting to FFA member country national VMS capacity and services
 ▷ provided both physical and electronic security layers necessary for VMS & MCS implementation
 ▷ provides for VMS implementation cost rationalization and economy of scale which avoids duplication of capacity
 ▷ provides for a reduction and rationalization of VMS operating costs to participating members
 ▷ a method to enable rapid implementation and scaling of capacity to support Pacific operations
 ▷ supports approved mobile Communication Service Providers (CSPs) such as;
   – Inmarsat C,
   – Inmarsat Mini C
   – Iridium
   – CLS Argos.
 ▷ supports approved Mobile Transmitter Units (MTUs) and Enhanced e-MTUs

What are the benefits of the Pacific VMS?

3.   The Pacific VMS co-hosted Data Centre services was fully implemented and commissioned for the FFA and its members in Q4/2007 and this infrastructure now provides a platform to scale and extend the access to this infrastructure at significantly lower deployment costs. This is achieved through the use of "Thin Client Architecture" and secure client authorization credentials that can make use of existing client workstations, or new PC connections, deployed over intranet or commercial ISP services to clients. Benefits of the Pacific VMS for members and clients utilising these services include:

 ▷ Always 'on' infrastructure (24 hours a day, 365 days a year)
 ▷ High level of physical and electronic security, redundancy and scalability.
 ▷ Integration and rationalization of technical support services
 ▷ Reduction in the installation cycle by 3-6 months over a typical turn-key, in house system
 ▷ Reduce IT and infrastructure capital expenditure costs
 ▷ Rationalization of operating costs across shared services
 ▷ Data back up services
 ▷ Full disaster recovery services
 ▷ Cost saving on civil engineering expenditure to build Data Center Infrastructure
 ▷ Cost saving on Redundant Utility and Physical Security systems

---

[2] The diagram inserted at **page 6** for an overview of the Pacific VMS infrastructure.

- ▷ Cost saving on IT Network Hardware expenditure
- ▷ Cost saving on Disaster Recovery IT infrastructure costs
- ▷ Cost Saving on shared high bandwidth Data Center IP services
- ▷ Cost Saving on outsourced IT support resources and services
- ▷ Cost Saving to Facilitate Data Exchange with RFMOs using existing Data Centre services.

Separation and Security of the VMS

4.   The FFA VMS and the WCPFC VMS (or other agencies) will be maintained as separate data entities within the Macquarie Data Centre infrastructure. The separation of the VMS (but not IT infrastructure) includes:

- ▷ Separate linked databases so that relevant data can be exchanged, for example vessels reporting to the WCPFC through the FFA
- ▷ Multiple layers of client access security, where each step in the chain must be met before any access is granted.
- ▷ Macquarie security gateway services
- ▷ Macquarie Managed Firewall services
- ▷ Authentication of users at the Windows Operating System level
- ▷ Authentication of users at the Oracle database level.
- ▷ VMS application security, with snapshot data only being available.
- ▷ Data sharing arrangements between Commission members has yet to be determined; however this is being drafted by the WCPFC Ad-Hoc Task Group [MCS Data].
- ▷ No WCPFC specific data is available to FFA member countries (unless agreed to by Commission Members).

5.   An agreement will need to be developed between the FFA Secretariat and the WCPFC for the delivery of VMS services. This agreement would cover such things as; the contractual arrangements for costs, data security, confidentiality, roles, responsibilities and obligations of the parties.

The Pacific VMS infrastructure
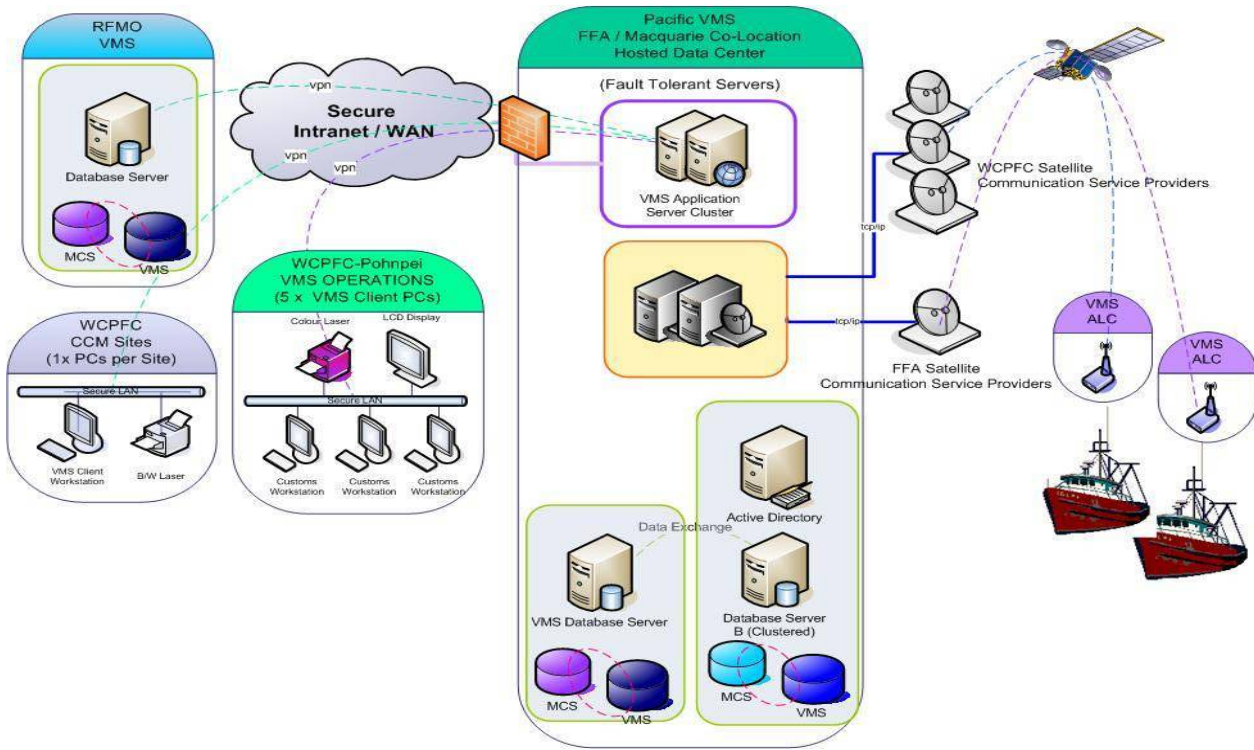
TERMS OF REFERENCE FOR THE ELABORATION OF STANDARDS, SPECIFICATIONS AND PROCEDURES FOR THE WCPFC VMS

This revised draft was prepared by David Marx, Chair of VMS Working Group, after receiving written comments from Australia, European Community, Japan, New Zealand, Solomon Islands and the United States of America, and in addition after an informal meeting of the VMS Working Group on the 11th July 2008 in Nadi.

The document aims to serve as a basis for the preparation of actual standards, specifications and procedures for the TORs not previously worked on or agreed to by WCPFC4.

1. Methods to ensure ALCs comply with standards set in Annex 1 of CMM 2007 02

- CCMs are obligated to ensure that ALCs comply with the minimum standards as set out in Annex 1 of CMM 2007 02.
- To assist CCMs, the Secretariat shall prepare and publish an initial list of ALC's that comply with the minimum standards as set out in Annex 1 of CMM 2007 02. Noting that most national and regional VMS have existing ALC approval processes, CCMs may assist the Secretariat in the task of compiling this list.
- The Secretariat will need to update this list if ALC standards are amended by the Commission
- By submitting the make, model and serial number of ALC units to WCPFC , CCMS take responsibility to ensure that the unit is on the list provided by the Commission Secretariat above, or has been tested sufficiently by the manufacturer to the satisfaction of the Secretariat that it meets the minimum standards as set in Annex 1 of CMM 2007 02 and as such will be included on future lists.
- In the instance where the Secretariat feels that the make and model of ALC unit submitted above does not meet the minimum standards, the Secretariat shall work with the CCM concerned to ensure the integrity of the WCPFC VMS system.
- CCMs shall ensure that a representative sample of ALC's are randomly and periodically audited (it is suggested annually) to verify that the minimum standards as set out in Annex 1 of CMM 2007 02 are being met. In order to determine the number and nature of audits, costs/benefits/logistical and practical aspects need to be taken into account.
- CCMs shall take responsibility for ensuring that those conducting audits for the purpose of verifying such standards are appropriately qualified to do so – it is suggested that auditing parties should be representatives or agents for instrument manufacturers certified by the Secretariat to conduct such audits

- Reporting processes need to be developed so that information about the results of these audits is provided to the WCPFC Secretariat and Commission to advise compliance/non compliance of ALCs. One suggestion has to be to use the part II component of CCMs annual report to the Commission.
- The Secretariat or an appointee of the Secretariat will have the capacity to periodically audit a sample of ALCs from any CCM to independently verify that standards are being met. Reports of such examinations are to be made available to the Commission through the TCC. It has been suggested that Risk assessments may help guide this process

2. ALC inspection protocol

- In order to ensure that ALCs have not been tampered with, ALC, connections and aerial must be made available for inspection where so directed by an authorised fisheries officer/inspector during a boarding and inspection of a vessel required to report to the WCPFC VMS either at sea or in port
- Such inspections to be conducted in accordance with national laws and/or relevant Western and Central Pacific Fisheries Commission Conservation and Management measures.
- Inspection protocols to be developed by Commission Secretariat should include a training guide and checklist for inspecting officer/inspector to use when conducting inspections.
- Report of each inspection to be submitted to CCM to whom vessel is flagged and Commission by inspecting CCM
- procedures need to be developed in case a fisheries officer/inspector/or other person or organisation deemed to be authorised to do so is denied access to ALC, connections and aerial for the purpose of inspection whilst on board the vessel.

3. Rules on polling and reporting of non-polling ALC units

- Vessel masters must ensure that the WCPFC Secretariat is receiving reports from their ALC prior to leaving port
- Vessel must be on WCPFC Record of Authorised fishing vessels, linked to a registered ALC unit with a unique identifier
- Secretariat to maintain a register of registered ALC units.
- WCPFC Secretariat to develop monitoring agreements that will enable ALCs on fishing vessels to report to the WCPFC VMS. This may include a DNID download agreement where appropriate.
- WCPFC VMS must be capable of being able to display data received from vessels in near real time;
- ALCs that comply with the standards listed in Annex 1 of CMM 2007 02, but <u>cannot</u> be remotely polled, must have a communication mechanism (voice–radio/satellite

phone or data-telex/fax/email) that will allow the WCPFC monitoring authority to contact the vessel in real-time and in English
- WCPFC monitoring authority procedures need to be established so that vessel positions can be accurately verified if they cannot remotely polled
- Procedures need to be established for vessels that do not comply with polling rate/reporting frequency standards as set by the Commission

4. Vessel reporting including position reporting frequencies

- Paragraph 3 of WCPFC-CMM 2007-02 Attachment L Annex 1 states that "ALCs fitted to fishing vessels must be capable of transmitting data referred to in paragraph 1, hourly".
- Vessel reporting frequencies may need to increase or decrease depending on alternative standards set by the Commission. These standards may vary by management measure applied, fishery, method used or for monitoring, control and surveillance purposes

5. Measures to prevent tampering

- General requirement not to tamper or interfere with in any unauthorised way ALCs, connections and aerials, the data route or the Commission VMS

ALCs
1. Physical security features including, but not limited to, ensuring that the unit automatically and independent of any intervention on the vessel can communicate the data set out in Annex 1 of CMM 2007-02 (may include mechanical measures such as tamper resistant seals, secure housings, non removable GPS chips, firmware protection, and no provision for external input/output devices)
2. Electronic security features
3. Periodic Auditing and inspection processes (as described in part 1 and 2 of this paper)

Data route to the Commission VMS
4. Need to ensure that data route to WCPFC VMS through the Pacific VMS is secure and that sufficient standards are in place to physically and electronically protect the integrity of the data transmitted/received
5. Auditing processes to ensure such standards are being met

Commission VMS
6. Physical security features
7. Electronic security features
8. Auditing processes

6. Obligations and roles of fishing vessels, CCMs, the FFA Secretariat and the Commission Secretariat.

Fishing vessels
- Shall register, carry and continuously operate an ALC in accordance with the standards set in CMM 2007 02 and any other standards, specifications and procedures agreed by the Commission;
- The master of a fishing vessel shall immediately comply with requests to allow the ALC, associated connections and aerials to be physically inspected by authorised fisheries officer/inspector/or other person or organisations, in accordance with relevant national or high seas boarding and inspection provisions or whilst in port;
- Shall, if carrying an ALC type that meets WCPFC standards set in 2007-02 but is not able to be remotely polled by the WCPFC monitoring authority, carry aboard and monitor 24 hours a day a readily available, two way communication device (voice–radio/satellite phone or data-telex/fax/email) that allows real time communication with the vessel operators should the WCPFC monitoring authority need to do so to verify the vessels position;
- The master, officer and crew of a fishing vessel, or any other unauthorised person, shall not tamper with, alter or interfere with any part of the WCPFC ALC, connections or aerials in such a way that affects the integrity of these components, or the data stored or transmitted from them to the WCPFC VMS;

CCMS
- Shall take responsibility for ensuring compliance by their vessels and operators with CCM 2007-02 and all WCPFC VMS standards, specifications and procedures including those that may be established in relation to the management and use of VMS data;
- Shall conduct and report ALC, ALC connection and aerial inspections in accordance with procedures established by the Commission for that purpose;
- Shall utilise the Commission VMS in accordance with the Commissions conservation and management measures and any of the standards, specifications and procedures agreed by the Commission;
- Shall report in part II of their Annual Reports to the Commission a list of all ALC inspections conducted by flag and vessel name, along with the date of the inspection and outcomes.
- Shall report to the Commission Secretariat any registered ALC, ALC connections and aerials and associated vessels (by name and flag) and vessel masters that appear not to be in compliance with CMM 2007-02 and/or the standards, specifications and procedures agreed by the Commission
- Shall take timely action to remedy non-compliance and report actions taken and any sanctions applied to ensure future compliance with CCM 2007-02 and/or the standards, specifications and procedures agreed by the Commission

The WCPFC Secretariat

- Shall ensure that data forwarded to the WCPFC VMS, or data forwarded from a vessel to the WCPFC VMS via the "Pacific-VMS" is not altered, accessed, manipulated, copied, interfered with or used by anyone other than those authorised to do so, as prescribed in standards developed by the AHTG (data) and agreed by the Commission,
- Shall provide to CCMs a stable, secure, reliable, fully maintained and supported WCPFC VMS system;
- Shall develop and present a draft service level agreement to ensure the utilisation of the Pacific VMS as described in WCPFC Circular 2008/10 for the consideration of the TCC and if appropriate, agreement by the Commission;
- Shall utilise the Commission VMS consistent with the Convention, the Commissions conservation and management measures and any of the standards, specifications and procedures that they may contain or refer to;
- Shall compile and circulate to all CCMs a list of ALCs by vessel and flag reported to the Commission in compliance/non compliance with CCM 2007-02 and/or the standards, specifications and procedures agreed by the Commission
- Shall monitor and annually report to the TCC, the performance of the WCPFC VMS and its application and as necessary, make recommendations for improvements or modifications to the system, standards, specifications or procedures established to support it in order to ensure the WCPFC VMS functions as a stable, secure, reliable, cost effective, efficient, fully maintained, supported system.

Draft Elements of a Service Level Agreement between the Western and Central Pacific Fisheries Commission and the Pacific Islands Forum Fisheries Agency (FFA) for the provision of Satellite Vessel Monitoring System Services

1. Scope of Agreement

This Service Level Agreement (SLA) will constitute the Agreement between the Western and Central Pacific Fisheries Commission (WCPFC) and the Pacific Islands Forum Fisheries Agency (FFA) in respect of the implementation of the WCPFC Satellite Vessel Monitoring System (VMS). The Agreement will cover: -

- The nature and extent of software products and support services to be offered by the FFA
- The obligations of the WCPFC and conditions under which these services shall be delivered by the FFA;
- Cost structure associated with the delivery of these services.
- Formulae for price revision and adjustment
- Administrative arrangements
- Settlement of disputes between the WCPFC and the FFA, and
- Final clauses.

2. Responsibilities of the FFA

The responsibilities of FFA (which may require the technical details to be described in an Appendix) may include:

- Maintenance and Support services to WCPFC in respect of the VMS software;
- Resolution of network problems;
- Diagnosis of hardware faults;
- Provision of software assurance product upgrade and updates;
- Assignment of the resources to provide the agreed level of maintenance and support;
- Provision of MTU (ALC) management services (such as DNID downloads and front line MTU management);
- Maintain a record of all support calls from WCPFC including tracking number, problem description, action taken to resolve the problem and the final resolution action recommended to rectify the fault.
- Ensuring security and confidentiality of VMS data and information to an agreed standard (to be elaborated in the agreement) – including the extension of Commission-acceptable levels of security to FFA staff and FFA-contracted VMS service providers required to support the WCPFC VMS – to the satisfaction of the Commission.
- Development work as needed.
- Provision of training to WCPFC staff

3. Responsibilities of the WCPFC

The responsibilities of the WCPFC may include:
- Accommodating support access to the VMS;
- The capability to receive appropriate information to enable the monitoring of a unit;
- Determination of user access and data sharing arrangements;
- Payment of specified charges and fees to the FFA and payment schedules;
- Contractual arrangements for the provision of satellite communications services.

4. Price review and adjustment
- Price review and adjustment processes to be defined

5. Administration
- Designation of contact points for WCPFC and FFA

6. Dispute Settlement
- Dispute resolution process.

7. Final Clauses
- Duration of Agreement
- Entry into force
- Termination Clause
- Applicable law