TECHNICAL AND COMPLIANCE COMMITTEE
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ANNUAL REPORT FOR THE COMMISSION VMS

WCPFC-TCC6-2010/11
3 September 2010

Introduction

1. The Commission VMS was activated on 1 April 2009 and utilizes FFA's existing Pacific VMS infrastructure that also supports the VMS for FFA members in their national waters (FFA VMS).

2. Paragraph 7.3.9 of the SSPs requires, in part, the Secretariat to monitor and report annually to the TCC the performance of the Commission VMS and its application. This paper has been prepared in compliance with this requirement.

Commission VMS Database

3. Paragraph 2.8 of the SSPs requires the Secretariat to administer a Commission VMS database. For each fishing vessel required to report to the Commission VMS the flag CCM is required to submit all necessary data to complete its data file in the Commission's VMS database.

4. All CCMs' flag vessels operating in the Convention Area are required to report to the Commission VMS are to complete, in full, a Vessel Tracking Agreement Form (VTAF). The VTAF is designed to collect the details of each vessel's Mobile Transceiver Unit (MTU)/Automatic Location Communicator (ALC) being used by vessels that will report to the Commission VMS, including those reporting through the FFA VMS. It also authorises the Secretariat to electronically monitor the unit and disseminate data from it in accordance with WCPFC policy. The VTAF can be downloaded from the Commission website - http://www.wcpfc.int/vessel-monitoring-system

5. The number of VTAFs by CCM that have been received by the Secretariat since the inception of the Commission VMS and the number of vessels by flag in the Commission VMS database is appended in Annex 1.

Outer Maritime Limits Data

6. To assist in implementing the Commission VMS the Secretariat requires coastal States to provide the coordinates for their outer maritime limits within the Convention Area.

7. The South Pacific Applied Geoscience Commission (SOPAC) has agreed to share with the WCPFC Secretariat the Pacific Islands' 200 nautical mile notional boundaries, the same data which was delivered to the FFA Secretariat on a "*without prejudice to boundary delimitation negotiations*" basis. An update of the data set was provided to WCPFC Secretariat in May 2010. This consists of publicly available data (UN), original FFA data and recently updated data from SOPAC's Maritime Boundaries Programme. This data describes the present state of the WCPFC Secretariat's data holdings on the geographical position of the 200nm outer limits for SOPAC member countries in WSG84 format.

8. It has been noted that some members and their fishers are using different EEZ boundaries and have questioned the Secretariat regarding these different outer limits.

Service Level Agreement with the FFA

9. Paragraph 7.3.3 of the SSPs requires, in part, the Secretariat to develop and manage a service level agreement (SLA) with the FFA for provision of VMS services. This SLA was signed by the Secretariats of the WCPFC and FFA in early December 2008. Since then the WCPFC Secretariat has met quarterly with the FFA Secretariat to monitor the delivery of SLA services in support of Commission VMS implementation.

10. This Agreement has been encountering difficulties in its implementation due to the requirement for the Commission to depend on a non-contracted, third party service provider via FFA (hereinafter called the third party service provider), for key system services, while the third party service provider is not bound by legal agreement to the Commission for the full functional operations and maintenance of the Commission VMS in a manner as determined by the Commission Members.

11. The Secretariat has relied on the annual VMS Security Audit (SSPs para 6.10) the first to be this year, to identify areas of concern and make recommendations as to how to move forward for a more effective and secure arrangement for the Commission VMS services.

Implementation of Client Access

12. The Commission VMS budget provides for the activation of ten (10) CCM client access registrations annually to the Commission VMS as authorized users of this service. By early August 2010 a total of ten (10) CCMs had been granted client access to the Commission VMS, enabling them to view the positions of their respective authorized flag vessels in the Convention Area.

Negotiation of Contracts with Mobile Communications Service Providers

13. Paragraph 7.3.5 of the SSPs requires the WCPFC Secretariat to enter into, and to maintain, direct contracts with mobile communications service providers for the provision of position (and other) data from the MTUs/ALCs to the Commission VMS. At the time of this paper's preparation the WCPFC Secretariat has entered into contracts with:

- Vizada – for Inmarsat DNID management; and
- Satcomms Australia - for Inmarsat C, D+ and Iridium services.
- CLS Argos – Argos MTUs (currently position reports are provided at no cost to the Secretariat,

These contracts will all expire in December 2010 and new contracts will be subject to negotiation based on the Commission's VMS Policy. A copy of the VMS Policy is appended in Annex 2.

Elaboration of Standard Operating Procedures

14. Paragraph 6.9 of the SSPs states that a set of Standard Operating Procedures (SOPs), elaborated by the Secretariat was approved by the Commission at its annual meeting in Papeete. The approved set of SOPs is available on the website - http://www.wcpfc.int/vessel-monitoring-system

15. Paragraph 2.6 of the SSPs states that in preparing the initial list of approved ALCs, the WCPFC Secretariat will take into account lists approved by existing regional and sub-regional VMS programmes and lists approved by CCMs. Paragraph 7.3.7 of the SSPs requires the WCPFC Secretariat to administer the list of ALCs approved for use in the Commission VMS. An updated list of approved ALCs and posted it on the WPCFC website - http://www.wcpfc.int/vessel-monitoring-system

ALCs Comply with WCPFC standards

16. Paragraphs 2.9 and 2.13 of the SSPs state that CCMs are to carry out a periodic audit of a representative sample of installed ALCs. The results of these audits will be provided to the Commission by CCMs in the Part 2 component of their respective annual reports to the Commission and those results compiled by the Secretariat into a VMS Audit Report Document. At the time of preparation of this paper no audit reports had been included in Part 2 Annual Reports received by the Secretariat.

Preparation of a List of Non-Compliant ALCs

17. Paragraph 7.3.10 of the SSPs state that the Secretariat will include in its annual report (6.3.9) on the operations of the Commission's VMS to the TCC, all details for non-compliant ALCs detected in the previous 12 months. The TCC may consider recommending appropriate sanctions to the Commission as a means of deterring non-compliance. The WCPFC Secretariat is able to report that no non-compliant ALCs have been detected during the period that the Commission VMS has been operational.

Log of manual reporting

18. The Secretariat maintains a log of all vessels placed on manual reporting consistent with paragraph 5.6 of the SSPs. The manual reports are also entered in the Commission VMS database. To date, since the initial activation of the Commission VMS, 89 vessels have reported manually until the MTUs have been inspected in port.

Commission VMS Security and Data Integrity

19. Paragraph 7.3.2 of the SSPs requires the WCPFC Secretariat to provide a stable, reliable, fully maintained and supported Commission VMS that conforms to the security standards set out in the Commission's ISP. The WCPFC Secretariat requested that this is reviewed as part of the audit review. The findings are presented in the auditor's report.

20. Paragraph 6.10 of the SSPs states that the integrity of the Secretariat's VMS data will be verified annually by qualified personnel, exterior to Commission Secretariat staff. Quick Access Computing was the successful bidder for the auditing process. The consultant's report will be presented in a separate paper.

Review of CMM 2007-02

21. Para. 10 of CMM 2007-02 [Commission Vessel Monitoring System] states,

> *"After two years of implementation, the Commission shall conduct a review of the implementation of this Conservation and Management Measure and consider further improvements to the system as required."*

22. A review of CMM 2007-02 will take place in 2011.

SSPs – Resolution of issues relating to bracketed text and proposals for modification

23. In their current form, some sections of the SSPs constrain the WCPFC Secretariat from effectively managing the Commission VMS. These sections include bracketed text in paragraphs 5.4 and 5.5 of the SSPs, part of paragraph 5.3 and the need for an additional paragraph (7.3.11).

24. At the WCPFC6, CCMs including the US and FFA members who have been working on this issue, reported several outstanding issues remain to be settled. Although it was recommended that CCMs work to resolve issues relating to bracketed text in paras 5.4 and 5.5 of the VMS SSPs, the Secretariat has not been advised of any such resolution.

25. At present the WCPFC Secretariat is hampered in its management of the Commission VMS because it does not have administrative rights/privileges that would enable it to better manage the system. To remedy this constraint it is proposed that a new section (7.3.11) is added to the SSPs, as follows:

"The WCPFC Secretariat shall have administrative rights/privileges to all Commission VMS hardware, software and data in order to effectively manage the system."

Processes for Monitoring High Seas Activities

26. Key activities of the Commission include its requirement to monitor the high seas closures as well as the FADs closures. The Commission VMS is the only agency approved to view and monitor the VMS tracks of all registered vessels on the high seas. Logically, it then falls on the Secretariat to note anomalies or suspect activities that appear not in compliance with the CMMs. The Convention and the CMMs are silent as to the action the Secretariat is to take if an "anomaly" or "suspect activity" is monitored. In light of the lack of direction, the Secretariat has been notifying the flag state of the vessel in question of the event with copies of the VSM information to assist the flag state in the control of their vessels in accordance the UNFSA, WCPFC Convention and CMM 2009-01. There have been 15 such instances this year with 14 responses of which 8 are still under investigation and 6 resolved. The Secretariat would welcome the endorsement or direction from the Commission as to what action it should take in such instances and follow up actions in case of no response from the flag State. Options that could be considered include:

1. Relying on the flag State to take appropriate action and report in its Annual Report Part 2.
2. Secretariat document incidents and responses for TCC
3. Secretariat pass all such incidents to the Chair of CCMM for action

Provision of High Seas Data for MCS Operations

27. WCPFC data rules allow for CCMs undertaking MCS operations to request from the Secretariat high seas vessel position data up to 100 nautical miles adjacent to, and outside its Exclusive Economic Zone. Five CCMs have requested and received VMS vessel position data for a total of 17 different MCS operation.

Process for suspect activities in the WCPFC and IATTC overlap area

28. Certain vessels were observed carrying out suspect activities on the high seas of the Convention area which overlaps with IATTC area. The Secretariat advised the flag state of these activities, but the flag state advised that they had the right to operate in that area which was under IATTC jurisdiction. The Secretariat seeks guidance from the Commission as to its role in this area and appropriate steps to address this emerging management concern.

Advice and Recommendations

29. TCC6 is invited to provide advice and recommendations to the Commission on:

a) the performance of the Commission VMS since its activation, in accordance with the requirements set out in the SSPs; and

b) to resolve outstanding issues (Bracketed text) in the SSPs;

c) proposed modifications of the SSPs, as above;

d) direction as to actions by the Secretariat with respect to paras 26 and 28 above.

Annex 1.

Number of VTAFs by CCM that have been received by the Secretariat since the inception of the Commission VMS and the number of vessels by flag in the Commission VMS database.

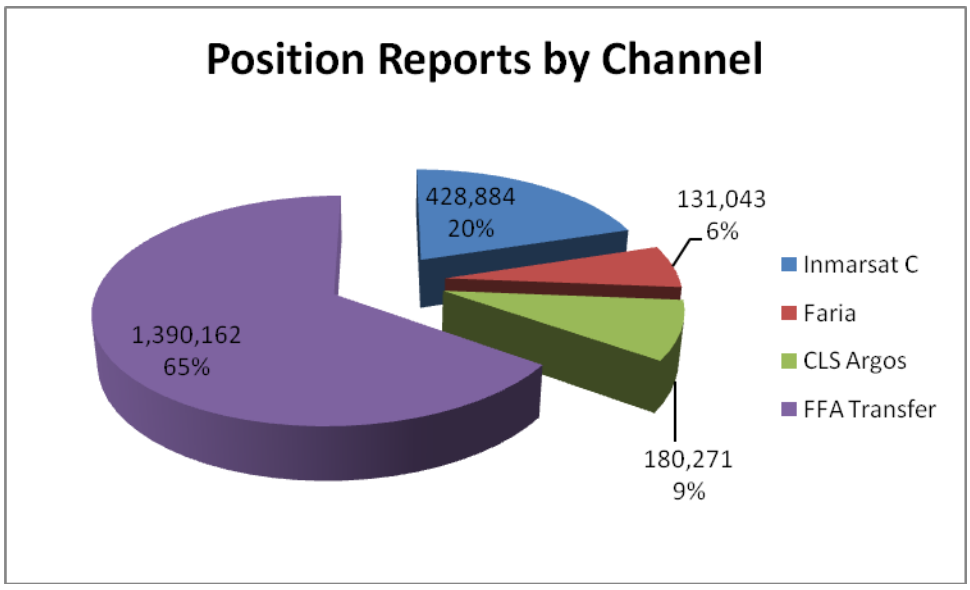
CCM	N°. Authorised Vessel	VTAF Received	VMS Database
Australia	89	11	1
Bahamas (Non CCM)	1		
Belize	8	5	5
Cambodia (Non CCM)	3		5
Canada	**1**		
China	350	214	258
Chinese Taipei	1,937	749	951
Cook Islands	25	25	29
Ecuador	10	8	10
El Salvador	2	1	2
European Union	119	30	31
Fiji	76		50
French Polynesia	**95**		
Honduras			1
Indonesia	405	3	4
Japan	1,338	779	787
Kiribati	33	13	32
Korea	273	103	165
Marshall Islands	27	3	28
Micronesia (Federated State of)	34	31	30
New Caledonia	27	14	20
New Zealand	7	7	7
Panama (Non CCM)	59	11	67
Papua New Guinea	32	9	7
Philippines	607	4	39
Senegal		2	
Sierra Leone (Non CCM)	2		3
Singapore (Non CCM)	6	1	6
Solomon Islands	2		1
Thailand (Non CCM)	5	2	5
Tonga	**6**		

Tuvalu	4	2	3
USA	498	159	177
Vanuatu	108	91	110
Total	**6,189**	**2,277**	**2,834**

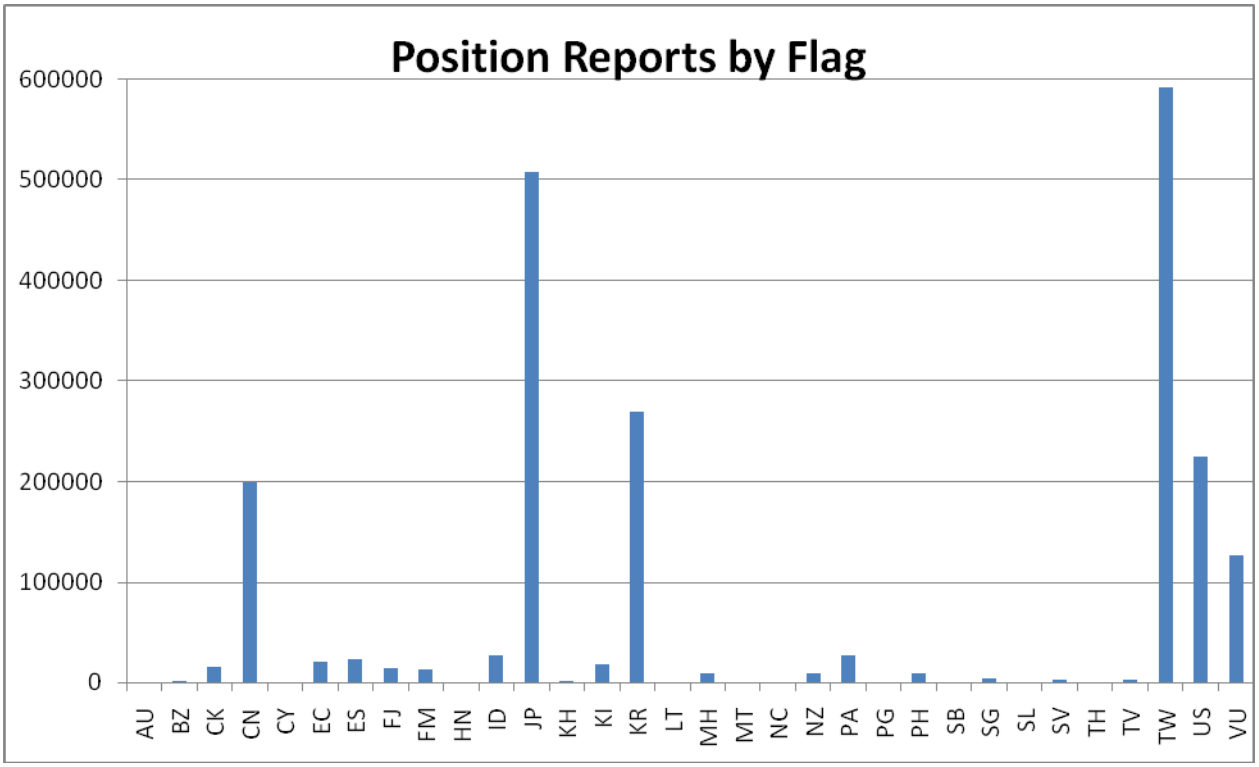
Number of vessels by gear type in the Commission VMS database.

Vessel Type	Total Number
Bunker	38
Fish Carrier	152
Harpoon	1
Longline	2,277
Mothership	3
Multipurpose Vessel	5
Other / Line Vessel	1
Pole and Line	87
Purse Seine	241
Research - Training Vessel	23
Support Vessel	1
Troll	5
	2,834

Number of position reports in the high seas by Channel.



Number of position reports in the high seas by flag.



ANNEX 2.

3 May 2010

DRAFT VMS POLICY

Ref: WCPFC Convention; CMM 2007-02; VMS SOPs; VMS SSPs, VMS Security Guidelines.

INTRODUCTION:

The Western and Central Pacific Fisheries Commission has been place since 2004 and the VMS has been operational since April 2009. The current system is operated through the South Pacific Forum Fisheries Agency and their service level agreement with Absolute Software in Sydney. The Commission and FFA VMS reside at the Macquarrie Data centre in Sydney Australia. There is a need for an overall policy for the Commission VMS for reference in future directions.

OBJECTIVE: Cost effective VMS coverage of all fishing vessels active on the high seas in the WCPFC Convention Area, and those EEZs that choose to access the Commission VMS inside their Zones.

PRINCIPLES:
The Commission VMS is to:

1. remain as a standalone VMSs, but create links to promote harmonization within the region and minimize costs;
2. reduce storage and equipment duplication in the Commission for cost effectiveness;
3. maintain independent, offsite redundancy data storage backed up daily;
4. be auditable, on an annual basis, for operational costs and quality of service for reporting to the Commission annual meetings;
5. Efficient and secure access for authorized representatives from the Commission and CCMs.

SCOPE AND TASKS - to be included in all planning and contract exercises (Details attached as Annex A)

1. **Cost ramifications** of changes in ISP policy to be identified
2. **VMS Data Quality Assurance (QA) included** as a defined VMS function assigned to a specific role
3. **QA role functions defined**
4. **Quality Control (QC) functions by client and service provider defined**
5. **Data Assurance Policy developed**
6. **System Security developed**
7. **Standard approach to defining availability adopted**
8. **VMS High Availability Design developed**
9. **System Availability defined and linked to System Security**
10. **End User Availability requirements defined**

11. **Risk Assessment for system use defined**
12. **System Documentation developed and updated**

Annex A

SCOPE AND TASKS TO BE INCLUDED IN ALL PLANNING AND CONTRACT EXERCISES

1. **Cost ramifications** of changes in ISP policy to be identified

2. **VMS Data Quality Assurance (QA) included as a** defined VMS function assigned to a specific role

3. **Define the QA role functions**
    - Nomenclature; standard naming conventions for data
    - Establishing concise data definitions
    - Specifying business rules governing the derivation of information
    - Security and privacy policies for the data
    - Specifying data retention criteria
    - Organizing resolution of known data quality issues on a prioritized basis
    - Resolving integration issues relating to data sharing between systems
    - Defining and agreeing on ownership of key elements of data for the systems
    - Developing data quality monitoring programs

4. **Define the Quality Control (QC) functions** (*also requires client role assignment*)

    4.1. Client QC Role
    - Define QA procedures and methodology to identify problems
    - Define the primary source used to trouble shoot a VMS problems:

    4.2. Service Provider QC Role
    - Define QA procedures and methodology to identify problems
    - Define the primary source used to trouble shoot a VMS problems:
        - Original raw format data from the vessel
        - Transcripts of all exchanges between the VMS and other system
        - components (i.e. flat files with the data from the satellite providers).
        - Windows Event Log~ (Application Log) where we write processing and
        - status messages (i.e. session completion status and number of messages
        - transferred).
        - Oracle database audit using Oracle Log Miner Tool to determine who
        - performed what transaction(s) at what time on the database.

5. **Develop a Data Assurance Policy**
    - VMS equipment, communications and software providers affirm that their
    - components support the necessary level of data assurance and chain of custody.
    - VMS system components in general experience issues that are typical of
    - most IT systems, including bugs in firmware, and software, satellite network outage, and terminals being switched where the administrative side has not caught up to document the change, Such problems create anomalies with the data.
    - An internal policy on software assurance/upgrades is required

6. System Security

- Confidentiality is the principle that information and information systems and only available to authorized users, that that they are only used for authorized purposes, and they are only accessed in an authorized manner. Confidentiality also determines information disclosure authority and conditions; unauthorized disclosure or disclosure of confidential information could be harmful or prejudicial. The official definition of confidentiality is: Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.
- Integrity is the principle that safeguards reliability, accuracy, and completeness of information assets. Integrity safeguards ensure modifications are not made by unauthorized users and that unauthorized modifications are not made by authorized users. Integrity controls also ensure information is current and has not been altered or damaged. The 'official' definition of integrity is: Guarding against improper information modification or destruction, including ensuring information non-repudiation and authenticity.
- Availability is the principle that means that information assets an: available and usable by authorized users when and when: they need them. It is primarily used in the context of system availability. The 'official' definition of availability is: Ensuring timely and reliable access to and use of information.

7. VMS High Availability Design

- VMS would not have a single point of failure. (the Macquarie infrastructure itself is now that point of failure so we are backing their services metrics on that at this point)
- This architecture and design reflects best practices to implement "high availability".
- Failover Definition

8. System Availability

- Define System Availability (99.5% based on 4hrs per month, that should be common to all clients)
- VMS Clients need to establish availability metrics to monitor and manage VMS and end user expectations. Clients should identify end to end requirements to establish a system view of availability and metrics for individual components within the VMS system boundary described in the System Security Plan. Availability requirements should flow down into contracts to ensure VMS performance.
- Define other systems (VDS) that have a critical dependency on System Availability (possibly that also needs to be reflected in the VDS Functional Specification and would be a factor in Managed Services metrics / performance that we should be looking at in SLA performance criteria and define other dependencies not under our control, or mitigation rick management around potential issues such as position reporting latency, incorrect data [registry] etc?)

9. End User Availability

- System Uptime and System Availability are not synonymous; VMS can be running but not available because of a network outage or failure of collection from an end user point of view.
- Latency is calculated for each position

- Latency is defined as the delay from time of GPS acquisition (calculated on-hoard the vessel) until insertion of tile position report into the VMS database, therefore includes all aspects of the VMS data path, including performance of ship equipment, Mobile Communication Service Providers (MCSPs), Client WAN infrastructure, Servers, Application Processes, and the VMS Oracle Database.
- When the VMS is performing correctly, latency is less than one hour for at least 90% of the position data.
- This metric needs to be based on the MCSP contracts, both for current approved MCSPs (i.e. Iridium. Inmarsat, CLS and legacy MCSPs (i.e. Argos).
- Define issues and constraints around Data Replay processes and relationship to real-time systems (again VDS is a point in case)

10. Adopt a standard approach to defining availability

- Operational availability is the availability that the customer actually experiences.
- Operational availability is a measure of the "real" average availability over a period of time and includes all experienced sources of downtime, including administrative downtime and maintenance. Availability calculations provide a historic look back at how available a system was over a given period of time.
- Adopt the common formula for Availability

11. Risk Assessment

- Requires clients provide a Risk Assessment document
- The system contains information, evidence, and provides services which should be available at all times to meet mission requirements.
- It is critical that the system is available the majority of me time (24 hours, 7 days a week).
- System down time for maintenance purposes only are kept to a minimum (4 hours or less per month).
- Odd hours are required by the compliance and enforcement staff. Remote access to VMS data, other investigative information, email, and other network services is a critical factor in completing their job responsibilities.
- If system availability was compromised, it would result in inconsistent enforcement of regulations at best, requiring personnel at each closed / restricted area to monitor vessels and enforce fisheries laws and regulations.
- Furthermore, if the system is occasionally used to assist in Search and Rescue Operations, a loss of availability could result in delay in locating a vessel in distress, possibly endangering human life.

12. System Documentation

- VMS documentation must be developed to document all processes and procedures necessary to operate and maintain the system. Particular mention should be paid to data quality.