COMMISSION
EIGHTH REGULAR SESSION
Koror, PALAU
5-9 December 2011

JOINT WCPFC-FFA REVIEW OF THE WCPFC VMS

WCPFC8- 2011/27
23 October 2011

Paper prepared by Consultant Team

ISSUES:

1. The WCPFC VMS was reviewed by a consultant team led by Robert Martinolich to assess the performance of the Service Level Agreement in providing an effective and efficient VMS for the Commission. The Consultant Team Leader presented the report to TCC7 and following initial discussions, the report was discussed within a small working group and a table prepared on the recommendations which is in WCPFC8-2011-36.

DECISIONS:

2. WCPFC8 is invited to consider the report and recommendations of the Joint VMS review along with the assessment and commentary from the Small Working Group from TCC7 (WCPFC8-2011-36).

TECHNICAL AND COMPLIANCE COMMITTEE
Seventh Regular Session
28 September - 4 October 2011
Pohnpei, Federated States of Micronesia

JOINT WCPFC/FFA VMS REVIEW

WCPFC-TCC7-2011/10
15 August 2011

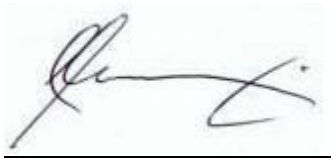
Paper prepared by Review Team led by Robert Martinolich

NOTICE OF RELEASE OF JOINT VMS REVIEW

12 August 2011

Contracting and Cooperating Non-Members of WCPFC:

It gives us great pleasure to release the Joint VMS review of the Pacific VMS that was commissioned by the WCPFC and FFA. This will be presented by the Team Leader of the Review, Robert Martinolich at TCC as paper WCPFC-TCC7-2011/10.



Professor Glenn Hurry
Executive Director
Western and Central Pacific
Fisheries Commission

Su'a N.F. Tanielu
Director General
South Pacific Forum Fisheries
Agency

Kaselehlie **Street,**
P. O. Box 2356,
Kolonia,
Pohnpei 96941,
Federated States of Micronesia.

Phone: +691 320 1992
+691 320 1993
Facsimile: +691 320 1108
Email: wcpfc@wcpfc.int

JOINT

Pacific Island Forum Fisheries Agency

(FFA)

&

WESTERN and CENTRAL PACIFIC FISHERIES COMMISION

(WCPFC)

VESSEL MONITORING SYSTEM REVIEW

Robert Martinolich

August 11, 2011

Acknowledgements

I would like to acknowledge and thank the members of the review team and the advisors for their effort and support throughout this process: Mario Alcaide, David Karis, David Marx, Glen Salmon, especially Terry Boone, who was able to travel with me during the field trip portion of the review and who volunteered on numerous occasions to assist with the preparation of this report and the two advisors, Lara Manarangi-Trott and Albert Carlot.

During the review the opinion of the team members, other members of WCPFC and commercial VMS service providers were sought, thank you all for your time and views.

The author would also like to thank Glenn Hurry, and the Commission staff for their guidance and support.

Robert Martinolich

August 11, 2011

1. ## Executive Summary

2. The WPFC has operated a Vessel Monitoring System in conjunction with FFA since 2009. In 2010 the WCPFC and the FFA agreed to the need to analyze the cost and structure of the current VMS services in the Pacific to ensure that the current arrangements were the best possible vehicle to provide VMS services to the members of both organizations.
3. This review is the first formal review by the WCPFC and FFA to accommodate the requirements of the WCPFC to review CMM 2007-02 and to review the costs and fees as outlined in paragraph 9.6 of the FFA/WCPFC SLA.
4. In order to conduct the review, Terms of Reference (TOR) were developed and approved by the WCPFC & FFA. The TOR identified that the consultants used in this study would be sourced based on their expertise and experience from member countries. Mr Robert Martinolich was chosen to lead the review team and coordinate the final report to the Commission. and FFA,
5. The team leader and those members of the review team who were able to travel visited 10 countries, interviewed 21 individuals representing 13 organizations/ministries who use the WCPFC and/or the FFA VMS and three commercial VMS service providers to assess other systems currently in place or being delivered.
6. The WCPFC and its members should be commended for getting such a large, complex VMS system up a running as quickly as the organization did—a truly remarkable feat.
7. The current WCPFC VMS is arguably meeting the basic needs for the WCPFC VMS by the relevant CMMs; however there were a number of serious concerns raised by members with the current services provided, particularly with the FFA's contracted service provider's apparent unwillingness to respond to concern/requests.
8. To meet the anticipated future needs of WCPFC and FFA they should explore expanding their respective VMS systems into an information management system which provides access to licensing/authorization data, vessel information, observer reports, catch data, vessel days, etc. CMMs such as closed areas, vessel day schemes, as well as integration of other ship based communications and reporting of onboard activities such as transhipment reports, observers reports, inspections reports , catch reporting etc. . Also Marine Stewardship Council Certification (MSC) and catch document schemes will place an increasing demand on the current system which it will not be capable of meeting this increased demand without further development/improvement.
9. FFA is currently reviewing the effectiveness and cost efficiency of the FFA VMS service provision to members, and it is likely that the future FFA VMS system will have greater integration with and provide greater support to national and sub-regional fisheries management activities.

10. The most important finding of the review are:
    - There are no clear objectives set for the existing VMS system other than a statement that the WCPFC will have one. WCPFC and FFA must identify what they want VMS to do for them from a usability perspective then build a system to meet those needs.
    - The current SSPs, the SLA and CMM which implements these SSPs, overly constrains the flow of necessary information, negatively impacts the WCPFC VMS Manger's ability to do his job and member countries' ability to conduct MCS activities within their EEZs, which may negatively impact the highly migratory fisheries resource the VMS is implemented to protect and may be hiding or supporting IUU activities in the Convention Area.
    - There were a number of areas identified during the review where costs could be reduced almost immediately.
11. The Review Team makes the following recommendations
    - Given that the information needs and the fishing fleets are so similar, the Review recommends that the FFA and WCPFC continue to work cooperatively and collaboratively and continue to improve this relationship to sustainably manage the highly migratory fishery resources in the western and central Pacific.
    - WCPFC and FFA must identify what they want their respective VMS to do from a usability perspective, defining what they want their systems to do and linking it to management measures themselves e.g. 2008 01 etc. They could potentially prioritise the use of the system around priority measures – which also may have the benefit of reducing costs. Review team's suggested objective: to support fisheries management, including combatting IUU activity.
    - The current VMS should be expanded into a fisheries information management system similar to what Papua New Guinea (PNG) has developed for their VMS/vessel day scheme
    - A clear statement of work needs to be developed and approved by FFA and WCPFC for the implementation and maintenance of the centralized data base system, and a public tender process be conducted based on the statement of work
    - FFA and WCPFC develop one central data base or "Cloud computing " system to store all original VMS data received with a goal of eliminating redundant, separate satellite transmissions (and associated costs) to multiple entities. This centralized data base system would then provide the data which would be directly accessible automatically, securely and near-real-time by both agencies, and as appropriate, discrete portions of the data would be

directly accessible automatically, securely and near-real-time by member countries and authorized vessel owners

- In order to protect the integrity of the data, ideally this centralized data base system would receive the data directly from the Land Earth Stations/Gateways receiving the data from the satellites. However, in some cases, it may be more practical for the data to be retrieved from the Land Earth Station/Gateway by the member countries' VMS with the data replicated securely, near-real-time, automatically, "machine-to-machine" (with no human intervention) to the WCPFC/FFA database.
- If the centralized data base system or ("Cloud computing") is implemented, then the current SLA should be replaced with joint legal agreement (contract) that is signed by all parties accessing the data, this legal agreement would clearly identify each parties respective roles, responsibilities, the information they will receive and a means of holding each signatory responsible.
- Aspirationally (i.e., longer term), WCPFC & FFA may want to seek opportunities to move more ongoing/routine responsibility for VMS management from the commercially-contracted Service Provider to competent, trained WCPFC /FFA technical staff, and seek to move from essentially a "rented" software platform to an "owned" software platform, using examples and lessons learned from mature systems like Chinese Taipei's VMS and newer innovations like Papua New Guinea's VMS.

12. **Data Sharing**
    - Amend the current data sharing rules to permit VMS Managers, VMS operators and technicians of FFA, WCPFC and Member countries with EEZs in the Convention Area to have full access to all the data under very strict confidentiality guidelines. Violations of the strict confidentially guidelines should be dealt with harshly and swiftly.
    - Members of distant water fishing nations and all vessel owners should also have access to the data although limited to their flagged vessel or, their own vessels data.
13. **ALC/MTU**
    - WCPFC adopt the FFA ALC/MTU approval process and the FFA list of approved ALCs/MTUs, perhaps with a "sunset clause" (date after which previous type approvals are terminated) to allow for orderly transition
    - It is recommended that the non-polling ALCs/MTUs be deliberately phased out, perhaps in conjunction with the adoption of the FFA ALC/MTU approval process and the FFA list of approved ALCs/MTUs as outlined above.
14. **Cost Reduction**
    - To reduce costs the amount of information transmitted should be reduced to one packet size

- Polling rates should be monitored, to ensure vessels are polling at the correct rate
- Reducing the polling rate to a less frequent polling interval when a vessel is more than 200NM out the Convention Area.
- Review and eliminate situations where the same data is being sent to Land Earth Stations/Gateways more than once (see Recommendation (Para. 11) & Appendix I).

Service Level Agreement

- If the SLA is to be continued, the SLA should be reviewed for deliverables, responsibilities and cost on an annual basis by representatives of WCPFC and FFA.
- The current SLA should be amended to permit WCPFC to liaise directly with the FFA's contracted service provider taking into account the potential impact for an increase in cost and the overlap between the infrastructure supporting both the FFA and WCPFC VMS systems.

Background:

15. **Vessel Monitoring System (VMS) Overview**
16. VMS was first introduced in 1990s to combat Illegal, Unreported and Unregulated fishing (IUU). The technology today used in most major fisheries worldwide. In countering IUU activities, VMS is a management tool that provides an overview of known vessels – those with permits/licenses and transmitting position, helping decision makers determine where to cost-effectively send their air and marine MCS assets.
17. The international legal basis for VMS is the United Nations Convention on the Law of the Seas (UNCLOS), which came into effect in 1994. The Convention provides Coastal States with primary responsibility for managing all marine resources located within their 200 NM Exclusive Economic Zone (EEZ)
18. There is increasing use of VMS to monitor high-seas fishing beyond EEZ limits, with cooperative agreements by member states forming Regional Fisheries Management Organizations (RFMOs) VMS has emerged as a major component within catch traceability regimes. VMS can combine GPS location with real-time catch documentation. When integrated with dockside landings, this forms the basis of a documentation chain that supports catch traceability from "ocean to dinner plate".
19. The FFA has been successfully operating a satellite-based vessel monitoring system (VMS) for its 17 members in the western and central Pacific since 1993. The VMS has been primarily used to monitor foreign fishing vessels licensed by FFA members to ensure that these vessels comply with national and FFA regulations designed to promote the sustainable management and development of the fisheries resources within FFA waters, and thus to protect the livelihoods of local small-scale tuna fishermen as well as to ensure FFA members are receiving economic returns from fishing occurring in their waters. A key feature of the FFA VMS is that all foreign fishing vessels are required, as a condition of their fishing license, to install and operate an ALC which meets FFA-type approval standards. FFA recovers costs of airtime from vessel operators through an annual vessel registration fee. A recent review of FFA VMS, described the FFA VMS as being a significant factor in controlling levels of unlicensed fishing in FFA members waters. Currently the FFA VMS monitors approximately 1,400 vessels operating in FFA member's waters.
20. WCPFC is required by the Convention to establish cooperative mechanisms for effective monitoring, control, surveillance and enforcement, including a vessel monitoring system. WCPFC Article 24(8) further specifies that the VMS shall be for all fishing vessels that fish for highly migratory fish stocks on the high seas in the Convention Area. The Commission is to receive VMS information directly from vessels, and the flag State can also receive the VMS information simultaneously, although the Commission may choose to have VMS information provided through an organisation designated by the

Commission. In respect of areas under national jurisdiction, members are to ensure that their vessels operate VMS in accordance with the Standards, Specifications and Procedures (SSPs) determined by coastal States when fishing within national waters. Article 24(8) gives members the option of requesting that waters under their national jurisdiction be included within the area covered by the Commission VMS. Article 24(9) obliges members to cooperate to ensure compatibility between high seas and national VMS systems. In 2006 and 2007, in response to these requirements, the WCPFC adopted measures to establish and implement a VMS system in the High Seas within the Convention Area which is referred to as WCPFC VMS. SSPs for the WCPFC VMS were adopted by the Commission in 2008, and recognizing the need for WCPFC and FFA to cooperate, consult, and collaborate, a Service Level Agreement (SLA) with FFA for the provision of the WCPFC VMS services was created. The WCPFC VMS came into operation on April 1, 2009. The contracted system that provides VMS information to the FFA VMS and the WCPFC VMS systems is referred to as the "Pacific VMS". The WCPFC has approximately 1,500 WCPFC-registered vessels that report to the WCPFC VMS through the Pacific VMS. In addition the WCPFC VMS receives, through the SLA with FFA, high seas VMS information relating to FFA-registered vessels.

21. Paragraph 10 of WCPFC Conservation and Management Measure 2007-02 states that: "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. Paragraph 9.6 within the Memorandum of Understanding signed between the FFA and the WCPFC notes that "The financial arrangements and fees in this agreement shall be reviewed on an annual basis unless otherwise agreed by the parties".
23. At WCPFC4 the decision was made to intricately link the "WCPFC VMS" to the FFA VMS, thus making the FFA the sole provider of the Commission's VMS services. When considering any changes to the current process the decisions made at WCPFC4 will also have to be considered.
24. In 2010 the WCPFC and the FFA agreed to the need to analyze the cost and structure of the current VMS services in the Pacific and assess whether that the current arrangements are the best possible vehicle is to provide VMS services to the members of both organizations.
25. This review is the first formal review by the parties to accommodate the requirements of the WCPFC to review CMM 2007-02 and to review the costs and fees as outlined in paragraph 9.6 of the SLA.
26. In order to conduct the review, Terms of Reference (TOR), see appendix III, were developed and approved by the WCPFC & FFA. The TOR identified that the consultants used in this study would be sourced based on their expertise and experience from member countries. The TOR proposed that the consultants would have skills consistent with those listed in the TOR and be acceptable to both the FFA and WCPFC. Mr Robert

Martinolich was chosen to lead the review team and coordinate the final report to the Commission and FFA.

27. Final team members were as follows:
28. Glen Salmon, Manager Foreign Surveillance and Response, Australia Fisheries Management Authority
29. Mario Alcaide, Fisheries Inspector, DG Mare, Maritime Affairs and Fisheries European Commission
30. David Karis, VMS Supervisor, National Fisheries Authority, PNG
31. David Marx, Senior Advisor, Ministry of Fisheries, Strategy and Policy International, NZ
32. Terry Boone, Vessel Monitoring System (VMS) Program Manager, NOAA Fisheries Office of Law Enforcement, Pacific Islands Division, USA
33. There were also two advisors identified: -
34. Lara Manarangi-Trott, Coordinator and Policy Adviser – WCPFC, Pacific Islands Forum Fisheries Agency (FFA)
35. Albert Carlot, Vessel Monitoring System Manager, Western and Central Pacific Fisheries Commission VMS.
36. The team leader reported to Glenn Hurry, Executive Director of the WCPFC Secretariat, and Mark Young, Director Fisheries Operation Division, FFA who was delegated by the Director-General of the FFA.
37. The objectives of the joint FFA/WCPFC Pacific VMS Review as identified in the TOR are as follows:
    - To assess the WCPFC VMS and the services currently provided within the SLA and provide options for improvements in its operations to meet current and future requirements. Consider if the current VMS arrangements are the most appropriate arrangements to meet the Commission's future VMS requirements.
    - To assess FFA VMS services currently provided within the SLA and provide options for improvements in its operations to meet current and future requirements.
    - To assess and recommend the most operationally effective mechanisms to strengthen cooperation between the WCPFC and FFA (and where possible, their respective contracted service providers) in the implementation of the WCPFC VMS within the requirements of the current arrangements. These requirements include SLA, SSPs, CMMs and general best practice standards for the provision of high quality cost effective and timely data to support fisheries management.
    - Consistent with paragraph 9.6 of the SLA, review the current cost structure of the SLA and determine if there are avenues to reduce the overall cost impact of VMS for members and the potential costs to industry of any proposed changes to the system.

- To assess whether the current arrangements allow sufficient access and control by each organisation to address their respective mandate with respect to responsible fisheries

38. **Review Process:**
39. The team leader and those members of the review team who were able to travel visited the following places to interview users of the WCPFC and/or the FFA VMS and to assess other systems currently in place or being delivered:
40. The Australian Fisheries Management Authority, the Australian Border Protection Command's Operations Centre, Absolute Software and CLS-Argos in Australia.
41. PNG's National Fisheries Authority and Quick Access Computing, in Papua New Guinea.
42. The FFA Director Fisheries Operations Division, the FFA VMS Manager, and FFA Coordinator and Policy Advisor – in Honiara, Solomon Islands. The team was also able to tour the FFA Regional Fisheries Surveillance Center (RFSC) and was able to observe their daily RFSC operations briefing by RFSC director, CDR Martin Campbell. This RFSC operation offered a very impressive showcase of the great potential international, inter-agency VMS cooperation can provide in responding to and deterring IUU activity.
43. Also while the team was in Honiara, the FFA member countries were having a Management Options Workshop. The team took this opportunity to meet with delegates from the Cook Islands, Marshall Islands, and PNA. The team also met with the WCPFC VMS manager in Honiara (as he would not be available when the team got to Pohnpei).
44. In Pohnpei, the team met with the FSM VMS and compliance staff.
45. The team also met with the WCPFC Secretariat Executive Director, the Compliance Manager, and the two VMS Operations Officers.
46. The team leader then went on to Hawaii where he met with the VMS manager and operators for NOAA and the US Coast Guard (USCG) VMS operators and MCS staff.
47. The team leader ended the field trip in Brussels Belgium where he met with the Senior Fisheries Inspector, a Fisheries Inspector, and two International Relations Officers for the European Commission's, Directorate-General for Maritime Affairs and Fisheries, The team leader was then taken to a Fisheries Monitoring Center in Holland to see their VMS system in operation.
48. The review team also corresponded via email with the Fisheries agency of Chinese Taipei with respect to their Government's developed VMS system.
49. As part of the review, the team leader also reviewed:
50. Convention On The Conservation And Management Of Highly Migratory Fish Stocks In The Western And Central Pacific Ocean, Article 24(8) (9) & (10)
51. Rules and Procedures for the Protection, Access to, and Dissemination of High Seas Non-Public Domain Data and Information Compiled by the Commission for the Purpose of Monitoring, Control or Surveillance (MCS) Activities and the Access to and

Dissemination of High Seas VMS Data for Scientific Purposes. (adopted by WCPFC6 2009)

52. Rules and Procedures for the Protection, Access to, and Dissemination of Data Compiled by the Commission (as revised by WCPFC4 2007)
53. MTU/ALC Type Approval list as provided by CCMs, 26 August 2010
54. Standards, specifications and procedures (SSP) for the fishing vessel monitoring system (VMS) of the Western and Central Pacific Fisheries Commission (WCPFC) 8-12 December 2008 Busan, Republic of Korea
55. Commission VMS Standard Operating Procedures (SOPs)
56. CMM 2006-06 Commission Vessel Monitoring System CMM 2006-06
57. CMM 2007-02 Commission Vessel Monitoring System
58. FAO Technical Guidelines for Responsible Fisheries - Fishing Operations - 1 Suppl. 1 - 1. Vessel Monitoring Systems
59. WCPFC7 Decision for application of the Commission VMS to national waters of CCMs

60. # Findings:

61. **Current System(s)**

62. The current WCPFC VMS is arguably meeting the basic needs for the WCPFC VMS by the relevant CMMs; however there were a number of serious concerns raised by members with the current services provided, particularly with the contracted service provider's apparent unwillingness to respond to concern/requests, and the current data sharing arrangements which are significantly limiting the Commission VMS manager's ability to manage and use the system. To a lesser extent, but still significant, the current data sharing restrictions are also negatively impacting Member countries' abilities to conduct MCS activities in their EEZ. The current VMS operating costs are also a major concern for WCPFC.
63. The current VMS was implemented very quickly over a large, diverse vessel population and huge geographic region and utilized time-proven software which has been tailored/ customized over many years of use. On the negative side the current system has very high recurring costs, primarily for redundant satellite transmissions of position reports to various entities (WCPFC, FFA, flag states, vessel owners, etc.). It has inefficient service cost layers (services provided to entities who in turn provide services), to WCPFC and it is heavily reliant on a single service provider for performance
64. From a user perspective, data availability is dependent on proprietary commercial software from a single vendor and the current software interface is arguably not user friendly. A number of users complained about software performance
65. The WCPFC VMS has the capacity to complement the existing national and sub-regional VMS in the Pacific by tracking vessels that are not licensed in a coastal State but which are reporting directly to the WCPFC VMS, because these vessel's activities would otherwise be invisible to these national MCS authorities through their national VMS.

However, due to the current SSPs limiting the WCPFC VMS to high seas waters of the Convention Area, the WCPFC VMS system and Manager are unable to "see" these vessels in national waters, and the process may actually hide likely IUU activity from coastal State MCS authorities and WCPFC staff. The current arrangements for the WCPFC VMS, essentially is resulting in charges to the WCPFC relating to the airtime costs of WCPFC-reporting vessels, even when the vessels are not able to be "seen" by the WCPFC VMS (when they move into coastal State jurisdiction). It is the view of the team leader and some members of the team that WCPFC is spending a large portion of its budget for this unutilized VMS capacity that could otherwise be spent on other areas (such as expansion of the Observer Program) to substantially improve MCS of its Conservation and Management Measures.

66. During the VMS review, anecdotal examples of probable hidden IUU activity were related by the Commission VMS manager and the US VMS manager (and others, including AFMA, confirmed similar activity without providing specific examples). From the WCPFC VMS manager's perspective, except for limited circumstances where a country has voluntarily entered into an optional agreement with the Commission for tracking vessels inside its zone, the VMS positions of vessels tracked "directly" by WCPFC's VMS are not visible to any WCPFC staff --not even the VMS manager --when inside EEZs. The WCPFC VMS manager said he has seen numerous cases (approximately 16) where vessels fishing on the High Seas conducted fishing patterns up to the EEZ boundary, then disappear from the WCPFC view (because current data security rules "quarantine" this data from all parties except the VMS commercial software provider who is not authorized to share it with anyone).
67. The US VMS manager related a specific example of using spreadsheet data emailed in an Excel table daily by WCPFC VMS staff for the 100NM buffer (around the US EEZ), and converting it to Google Earth format in order to see foreign vessels fishing just outside the Northwest Hawaiian Island chain. In at least two cases, foreign fishing vessels engaged in longline fishing patterns approached the remote northern boundary of the US EEZ, then disappeared for many hours (presumably inside the US EEZ) and emerged later on the far side of the EEZ boundary. The pattern/timing was analyzed and found to be inconsistent with normal straight-line transit, so the information was relayed to the US Coast Guard. Because it would have cost $US100, 000 for the Coast Guard to dispatch a C-130 to this remote area, and because the flying distance to this location was so great that their on-station loiter/search time would have been limited, it was deemed essential to have near-real-time VMS position reports for the vessel inside the US EEZ in order to have any realistic chance of detecting any IUU activity and apprehending the vessel.
68. Another tactic of vessels that engage in IUU fishing is to temporarily disable their VMS (bucket over the antenna, removing power, etc.) while conducting IUU fishing, and the Pacific VMS is currently ill-equipped to support enforcement authorities in detecting this activity. Typically, such vessels may report in VMS normally while conducting legal

activities, then “go dark”(that is disappear from the VMS systems) just before they cross boundaries or conduct activity which is prohibited. Unfortunately, the phenomenon of a VMS unit “going dark” is currently a “normal” feature for the WCPFC VMS, because when a vessel crosses outside the High Seas boundary, it “goes dark”, and the WCPFC VMS staff (and any coastal state enforcement authorities who may view WCPFC VMS data) are left to wonder whether the vessel went dark because of the non-high-seas-data “quarantine” rules or because the vessel operator disabled the VMS.

69. Currently, two Commission members have requested that the WCPFC VMS include their waters under national jurisdiction, and have separate bilateral agreements to implement this. At WCPFC7, the Commission took a decision on the application of the Commission VMS to national waters of CCMs. At the time of writing, a standardised template agreement which was developed by the WCPFC Secretariat is being considered intersession ally by Commission members. This Template is proposed for use by other Commission members who choose to exercise the option of including their waters under national jurisdiction being covered by the WCPFC VMS. Once the template is adopted and implemented by the Commission, it will provide a means for the Commission VMS to provide coastal members a means to “see” WCFPC directly reporting vessels when they are within their national waters. The area of viewing of WCPFC-registered vessels through the WCPFC VMS data, by both the WCPFC Secretariat and flag States, will eventually also be substantially increased.

70. **Future Options.**

71. With respect to future requirements, the WCPFC working with FFA should explore expanding their current VMS into an information management system which provides access to licensing/authorization data, vessel information, observer reports, catch data, vessel days, CMMs such as closed areas, as well as integration of other vessel based communications and reporting of onboard activities such as transhipment reports, observers reports, inspections reports, catch reporting etc. . Also Marine Stewardship Council certification (MSC) and catch document schemes will place an increasing demand on the current system which it will not be capable of delivering on without further development/improvement.

72. WCPFC and FFA should explore sharing one data base system where the data is stored and maintained by a contracted service provider at a mutually agreed location with each organization having full access to a true copy of the data. The signal would come to earth from the satellite, be delivered to one of these neutral locations, then the organizations and their members could access true copies of the data for their own purposes. Appropriate staff at WCPFC and the FFA should have full access to all data and the members would be restricted as determined by FFA and WCPFC regulations and policies (generally, to data within their zone, within an agreed “buffer” area outside their zone, to

active MCS patrol zones, to their own flagged vessels in any area, and within any area authorized by bilateral or multilateral data-sharing arrangements).

73. Another options worth exploring is a" virtual data base" or "Cloud computing " system which as described by the National Institute of Standards and Technology (NIST) as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" focuses on overall data integrity, security and availability rather than the physical location(s) of the data and hardware.
    - Cloud computing provides computation, software, data access, and storage services that do not require end-user knowledge of the physical location and configuration of the system that delivers the services. Parallels to this concept can be drawn with the electricity grid, wherein end-users consume power without needing to understand the component devices or infrastructure required to provide the service.
    - Cloud computing describes a new supplement, consumption, and delivery model for IT services based on Internet protocols, and it typically involves provisioning of dynamically scalable and often virtualized resources It is a by-product and consequence of the ease-of-access to remote computing sites provided by the Internet. This may take the form of web-based tools or applications that users can access and use through a web browser as if they were programs installed locally on their own computer"
    - The cloud based approach means that all of the computing power part of the VMS is taken care of virtually i.e. over the "cloud" without WCPFC/FFA and their members having to be directly involved in it, or needing to know if the database is centralised or decentralised – or even needing terminals/hardware/software on their machines to run the VMS. The team was informed that you only need netbooks or relatively simple devices to access and make use of the information. This means that the smallest pacific island country (PIC) should be able to log into a system on the internet and make use of the system – with the heavy data crunching part of the system taking place "in the cloud" and the PIC being presented back with a product or picture that is fairly easy to receive over low bandwidth. The team is concerned that this might "over promise" and would need to be researched further.
74. Any transition to new software will inevitably encounter glitches, particularly in the initial implementation phase and users tend to be comfortable with the software interface that they know and are using, and are uncomfortable (initially) with any change to new software. Any transition to new software will require user training

75. A centralized data base or Cloud computing system with a single satellite transmission to the Earth Station/Gateway and full access to a true copy of the data by appropriate WCPFC and FFA staff (and near-real-time access by members' MCS entities to data within their zone, within an agreed "buffer" area outside their zone, to active MCS patrol zones, to their own flagged vessels in any area, and within any area authorized by bilateral or multilateral data-sharing arrangements) would uncloak IUU activities that may not be visible in the current arrangement and could substantially reduce costs. As currently designed and operated, the cost of most WCPFC-registered vessels' satellite transmissions of position data, from vessel to satellite to Earth are being paid two, three or more times for the same information. In this scenario, the establishment of standards for, and implementing secure, automated machine-to-machine methods for VMS data replication from existing VMS, and competitively bidding out the primary VMS software contract would result in optimizing MCS operations while minimizing costs.
76. As such a Centralized data base/"Cloud computing " system could reduce aggregate recurring airtime cost by an estimated 60% or more by utilizing single satellite transmission followed by low/no-cost onward data transmissions to appropriate entities via automated machine-to-machine secure Internet.. There is also a potential cost savings by reducing service cost layering (i.e., "pay only once for each service"). The centralized data base/"Cloud computing" system should optimize MCS effectiveness by eliminating "stovepipes" (having to view data via multiple, separate interfaces), ease data integration (permit, observer, logbook data, etc.) and eases DNID management as it only requires a single ID per vessel. A centralized data base or "Cloud computing" system will retain the ability of key entities (flag state, coastal state, WCPFC, FFA, vessel owners, etc.) to view appropriate portions of the data via the "front end" software they choose (SmartTRAC, vTrack, Google Earth, etc.)
77. Implementing a centralized data base/"Cloud computing " system will require some up-front investment (likely by regional entities and flag states) to script initial software to "push" and "pull" appropriate data, and it may require some primary recipients to become secondary recipients of VMS data to achieve maximum cost savings.
78. Designing and implementing such a system would also need to be harmonized with the role and operation of the FFA VMS. with regard to the potential impact on the VMS service provided to FFA members, particularly because the FFA VMS is the national VMS system for many of the 15 small-island developing State members. FFA is currently reviewing the effectiveness and cost efficiency of the FFA VMS service provision to members, and it is likely that the future FFA VMS system will have greater integration with and provide greater support to national and sub-regional fisheries management activities.
79. A move to a centralized database or "Cloud computing" system will also require continued agreement on data sharing rules and responsibilities. Participants must trust & empower an entity to manage the central database on behalf of various data end-users and

there will be a need for technical expertise to routinely review existing arrangements in view of new technology & software options

80. Recognizing that national laws may preclude near-term transition by some Members to become secondary VMS data recipients, another option for getting the data from the Earth Station/Gateway to the central data base or "Cloud computing " system is via the existing CCM/Flag State systems. Such an arrangement would allow data delivery to a centralized data base/"Cloud computing "system either via a WCPFC or FFA-contracted service provider or via an existing CCM/Flag State system. This option should only be supported if the data transfer is done securely, near-real-time, machine-to-machine with no human intervention. Such an option will also need to be developed in such a way as to ensure consistency with Article 24(8) of the Convention, particularly the requirement that "The Commission, directly, and simultaneously with the flag State where the flag State so requires, or through such other organisation designated by the Commission, shall receive information from the vessel monitoring system in accordance with the procedures adopted by the Commission.". FFA registration/VMS reporting requirements (and associated costs) as a condition of fisheries licensing in FFA national waters should also be addressed in designing such an arrangement. There may, therefore, be a need for some sort of "accreditation" and periodic review process established for Members seeking to fulfill WCPFC and/or FFA VMS reporting responsibilities in this manner, and in any case, strong compliance processes and protocols is required to ensure sufficient data security and optimal data sharing.

81. **Cost**

82. While in Honiara, the team reviewed the FFA/WCPFC SLA. Present for the review were the FFA Director of Fisheries Operations, the FFA VMS Manager and the FFA's contracted service provider. Notwithstanding the costs and operational constraints outlined above, the current services provided within the SLA appear to adequately meet the current SLA requirements. If the SLA is to be continued, the SLA should be reviewed for deliverables, responsibilities and cost on an annual basis by representatives of WCPFC and FFA. In addition, the SLA should have provisions to permit WCPFC to liaise directly with the contracted service provider taking into account the potential impact for increases in cost and the overlap between the infrastructure supporting both the FFA and WCPFC VMS systems. With respect to cost, there were a number of areas identified during the review where costs could be reduced almost immediately. On completion of the review this issue should be further discussed between the Executive Director WCPFC and the Director General FFA for possible resolution.

83. Potential other means to reduce cost to the organizations and their members are:

- Reducing the position data transmitted to one-packet size for any vessels currently transmitting larger data packets. Single packets will provide sufficient vessel position information, with bearing and speed derived by land-based software. Currently it costs approximately 0.035 cents to send one packet and 0.070 for two packets.
- Monitoring and reviewing polling rates; for whatever reasons, some boats end up polling at a much higher rate than what is required which increases cost.
- ALCs/MTUs transmitting once (only) to a single data base will reduce cost to all parties (including industry)
- Reducing the polling rate to a less frequent polling period when a vessel is more than 200 NM outside the Convention Area
- Achieving economies of scale and minimizing "cost pyramiding" by replacing the current SLA arrangement (whereby VMS services are provided to WCPFC "via" FFA) with one competitively-bid commercial contract providing VMS services to both FFA and WCPFC, and appropriately splitting the costs of the contract between FFA and WCPFC.

  To achieve this, a statement of work for the WCPFC and FFA VMS (objective deliverables etc.) and a public tender process for service provision against this statement of work will be necessary. There are numerous competent commercial service providers currently available.

84. The review team did attempt to get updated cost estimates from four commercially available service providers however the responses varied in deliverables as well as detail which made it difficult to make any comparisons. The author was afraid he would be comparing apples to oranges to bananas which would be inaccurate and unfair to all involved. That said it does appear that there could be cost savings with respect to what WCPFC is currently paying. In order to get an accurate estimate of cost a detailed statement of requirements which clearly identifies what WCPFC and FFA wants their VMS to do needs to be developed and put out to open tender.
85. The two main "discretionary" (i.e., non-labour) VMS cost factors are satellite airtime and cost of VMS software. This report identifies how money could be saved on the VMS airtime. Based on the team's discussions and written exchanges with service providers, this Review concludes that a joint WCPFC/FFA open tender process, evaluated by unbiased technical experts, could lead to substantial cost savings. For example, the $18/month per vessel figure looks like it could fall to as little as $5/month per vessel in one of the proposals – a savings of over 72%. If WCPFC/FFA were to opt for the long-term over short-term, they would similarly reap substantial long-term savings. In both these cases, taking on the task now leads to substantial VMS cost savings.

86. **Review of the SLA, SSPs and CMM**

87. The current SSPs, the SLA and CMM which implements these SSPs, overly constrains the flow of necessary information, negatively impacting the WCPFC VMS Manger's ability to do his job, on member countries' ability to conduct MCS activities within their EEZs, which may negatively impact the highly migratory fisheries resource the VMS is implemented to protect and may be hiding or supporting IUU activities in the Convention Area. See appendix II.

88. **System Redundancy**

89. No concerns were raised with existing system redundancy and recovery as a result of any failures or existing recovery procedures or the minimum window of downtime allowed before new vessel positions are lost while the system is still down. That said, with the initiative to replicate WCPFC data to Guam, any concerns there should be resolved.

90. **ALC/MTU Units**

91. Although many, if not most, currently fielded ALCs/MTUs have some on-board data storage capacity, there was no need identified for ALCs/MTUs to store a minimum of 45 days of data collected hourly, containing date/time/speed//latitude/longitude. The vast majority of individuals interviewed support the need for all approved ALC/MTUs having the ability to poll, The Review team heard there are only about 300 non-polling units still active and they will likely be phased out over time.

92. **General Concerns:**

93. There were numerous concerns raised by various parties interviewed during the course of this review with respect to the following:

- The provision of basic VMS data from the WCPFC VMS to members. Chief among these complaints was that the data provided is generally wholly redundant with the VMS data already available by the Coastal states own vessel monitoring system (direct quotes: "I can't see anything I need to see", "Why does WCPFC have a VMS?", "It is very frustrating as a Member who has clearly specified our user requirements, not to get the VMS services as requested").
- WCPFC VMS data for recently-approved zones ("in the zone", 100NM buffer area around EEZs, and patrol zones) is either (in some cases) not being provided, or is not being provided to the prescribed "near-real-time" standard nor is it provided in a user-friendly format.

- Several members who use VMS data for MCS purposes complained about perceived lags by the current FFA contracted service provider in responding to reported issues.
- Several members who use VMS data for MCS purposes complained about the current VMS software's "user friendliness" (i.e., ease of use), cost, system speed, and other performance issues (direct quote from our survey response: "A key weakness in the system at present is usability, and the fact that (perhaps because we haven't collectively specified in great detail what we want the system to do at a user level) we find it very difficult to easily use the VMS or access VMS data. Data needs to be provided in a user friendly format that meets the needs of those using it, in a low cost, timely and efficient way."

94. An open tender bidding process, with proposals evaluated by technical experts, should assist with dealing with this. The current FFA contracted service provider will then have to meet or exceed the services and cost factors available from other competent commercially available service providers.

95. Conclusion:

96. The WCPFC and its members should be commended for getting such a large, complex VMS system up a running as quickly as the organization did—a truly remarkable feat. Given that the basic VMS information needs of both organizations are very similar in nature, tying the WCPFC with the FFA System via the SLA was the most expedient course of action available at that time, and quickly achieved initial operational capability, albeit with substantial unanticipated costs.
97. As the WCPFC moves forward, it is important for WCPFC to clearly document what they expect of their VMS (objective deliverables etc.) in a statement of work. The current data sharing regulations are negatively impacting on the WCPFC VMS manager and operators' ability to manage the system and support members' required MCS activities and may actually hide IUU activity from MCS authorities,
98. The current reporting requirements are adequate, however actual reporting (polling) levels should be monitored as a potential cost saving measure. Also the polling frequency for vessels outside the Convention Area could be reduced to a less-frequent level. Marine Stewardship Certification demands are going to require polling from harbour to harbour
99. There is no clear objective set for the existing VMS system other than a statement that the WCPFC will have one. WCPFC needs to clearly state what is expected of a VMS program and anticipated results and utility. The current system is designed to provide timely and accurate knowledge of the movements of fishing vessels in the high seas waters of the Convention Area only.

100. The current SSPs, and the SLA which implements these SSPs, is restricting the flow of information which may negatively impact member countries' ability to conduct MCS activities within their EEZs, which may negatively impact the highly migratory fisheries resource the VMS is implemented to protect. This likely also increases costs of MCS to WCPFC, FFA and Member. It is therefore imperative moving forward that greater trust and data sharing be established between appropriate staff at WCPFC, FFA and members.
101. There are numerous commercially available service providers which could be serious contenders to meet the future VMS needs of WCPFC.
102. The demand on the WCPFC VMS system could increase as more and more CMMs are adopted such as vessel day schemes, effort reductions, area closures etc.
103. The current process for providing data on vessels coming in and out of EEZ and the High Seas is a concern. CCMs would like better information on vessels within 100 miles of their EEZ. They currently get the information once per working day manually in a spread sheet; however it would be more efficient if they showed near-real-time on the WCPFC VMS.
104. The high sea is actually a small component of the fishing area; polling when not in the convention area is adding to costs. Why are boats polling from the Indian ocean, perhaps a 200 NM buffer zone around the convention area could be looked at with the polling rate being reduced to once per day outside this buffer zone.
105. In spite of WCPFC's, FFA's, and Members' efforts to track commercial fishing vessels in the Convention Area and in their zones, there were situations identified where vessels are not showing or tracking on the WCPFC VMS and yet these vessels have been observed on aerial surveillance flights.
106. It was suggested that the current multiple systems (FFA's, WCPFC, and conceivably domestic systems) could be replaced by one contracted service provider or system.
107. Multiple, separate VMS satellite transmissions of the same position information to the various required reporting entities (flag state, FFA, WCPFC, owners, etc.) greatly increases cost to WCPFC and industry. As one the largest recurring cost factors for WCPFC, VMS satellite airtime costs could be cut to a fraction of current costs by transitioning to single-satellite-transmission of VMS data to one entity (whether WCPFC, FFA or flag state), with onward provision to other appropriate entities done via automated (no human intervention) low/no-cost secure internet machine-to-machine replication. The team asked each technical expert and system manager interviewed whether such a low-cost, secure arrangement is technically feasible, and they all agreed that it can be done. See diagrams outlining the current system design/operation and possible low-cost options at Appendix i
108. The amount of polls per vessel per week should be monitored closely on a deliberate, ongoing basis, as some boats are intermittently polled a large number of times, leading to increased airtime costs.

Recommendations:

Moving Pacific VMS Forward

Given that the information needs and the fishing fleets are so similar, the Review recommends that the FFA and WCPFC continue to work cooperatively and collaboratively and continue to improve this relationship to sustainably manage the highly migratory fishery resources in the western and central Pacific.

WCPFC and FFA must identify what they want their systems to do from a usability perspective, defining what they want their systems to do and linking it to management measures themselves e.g. 2008 01 etc. They could potentially prioritise the use of the system around priority measures – which also may have the benefit of reducing costs. Review team suggested objective: to support fisheries management, including combatting IUU activity.

The current vessel monitoring systems be expanded into a fisheries information management systems similar to what PNG has developed for their VMS/vessel day scheme

A clear statement of work needs to be developed and approved by FFA and WCPFC for the implementation and maintenance of the centralized data base or "Cloud computing " system, and a public tender process be conducted based on the statement of work

FFA and WCPFC should develop one central data base or "Cloud computing " system to store all original VMS data received with a goal of eliminating redundant, separate satellite transmissions (and associated costs) to multiple entities. This centralized data base system would then provide a true copy of the data which would be directly accessible automatically, securely and near-real-time by both agencies, and as appropriate, discrete portions of the data would be directly accessible automatically, securely and near-real-time by member countries and authorized vessel owners.

In order to protect the integrity of the data, ideally this centralized data base or system would receive the data directly from the Land Earth Stations/Gateways receiving the data from the satellites. However, in some cases, it may be more practical for the data to be retrieved from the Land Earth Station/Gateway by the member countries' VMS with the data replicated securely, near-real-time, automatically, "machine-to-machine" (with no human intervention) to the WCPFC/FFA database.

If the centralized data base system or ("Cloud computing") is implemented, then the current SLA should be replaced with joint legal agreement (contract) that is signed by all parties accessing the data, this legal agreement would clearly identify each parties respective roles, responsibilities, the information they will receive and a means of holding each signatory responsible.

Aspirationally (i.e., longer term), WCPFC & FFA may want to seek opportunities to move more ongoing/routine responsibility for VMS management from the commercially-contracted service provider to competent, trained WCPFC technical staff, and seek to move from essentially a "rented" software platform to an "owned" software platform,

using examples and lessons learned from mature systems like Chinese Taipei's VMS and newer innovations like PNG's VMS.

Data Sharing

119. Amend the current data sharing rules to permit VMS Managers, VMS operators and technicians of FFA, WCPFC and Members with EEZs in the Convention Area to have full access to all the data under very strict confidentiality guidelines. Violations of the strict confidentially guidelines should be dealt with harshly and swiftly.
120. Members of distant water fishing nations and all vessel owners should also have access to the data although limited to their flagged vessel or, their own vessels' data.

121. **ALC/MTU**
122. It is recommend that the non-polling ALCs/MTUs be deliberately phased out perhaps in conjunction with the adoption of the FFA ALC/MTU approval process and the FFA list of approved ALCs/MTUs.

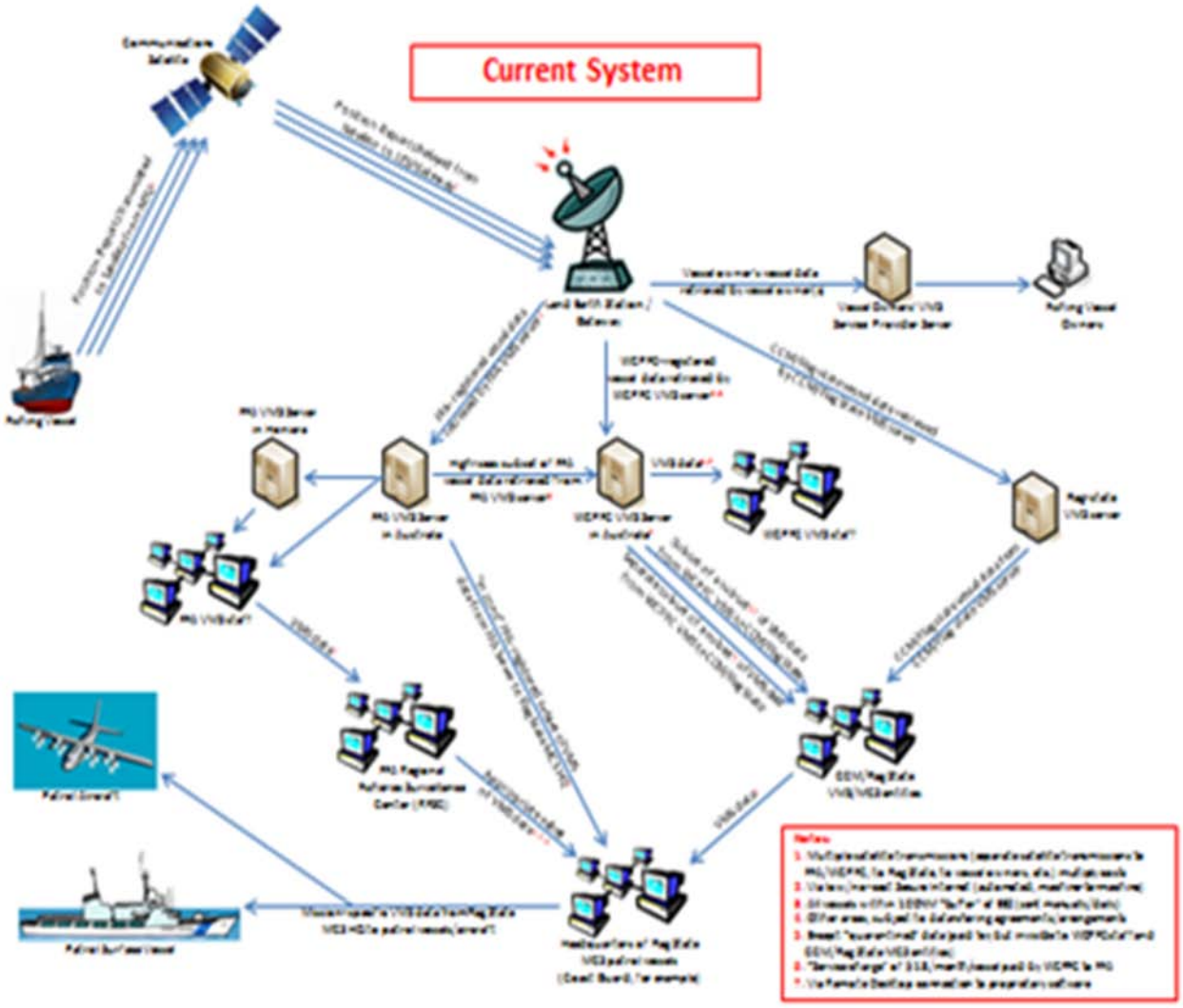
123. **Cost Reduction**
124. to reduce costs
    - the amount of information transmitted should be reduced to one packet size
    - polling rates should be monitored, to ensure vessels are polling at the correct rate
    - Reducing the polling rate to a less frequent polling interval when a vessel is more than 200NM out the Convention Area.
    - Review and eliminate situations where the same data is being sent to Land Earth Stations/Gateways more than once (see Recommendation at para. 119-121& Appendix I).
    -

125. **Service Level Agreement**
126. If the SLA is to be continued, the SLA should be reviewed for deliverables, responsibilities and cost on an annual basis by representatives of WCPFC and FFA.
127. The current SLA should be amended to permit WCPFC to liaise directly with the FFA contracted service provider taking into account the potential impact for an increase in cost and the overlap between the infrastructure supporting both the FFA and WCPFC VMS systems.

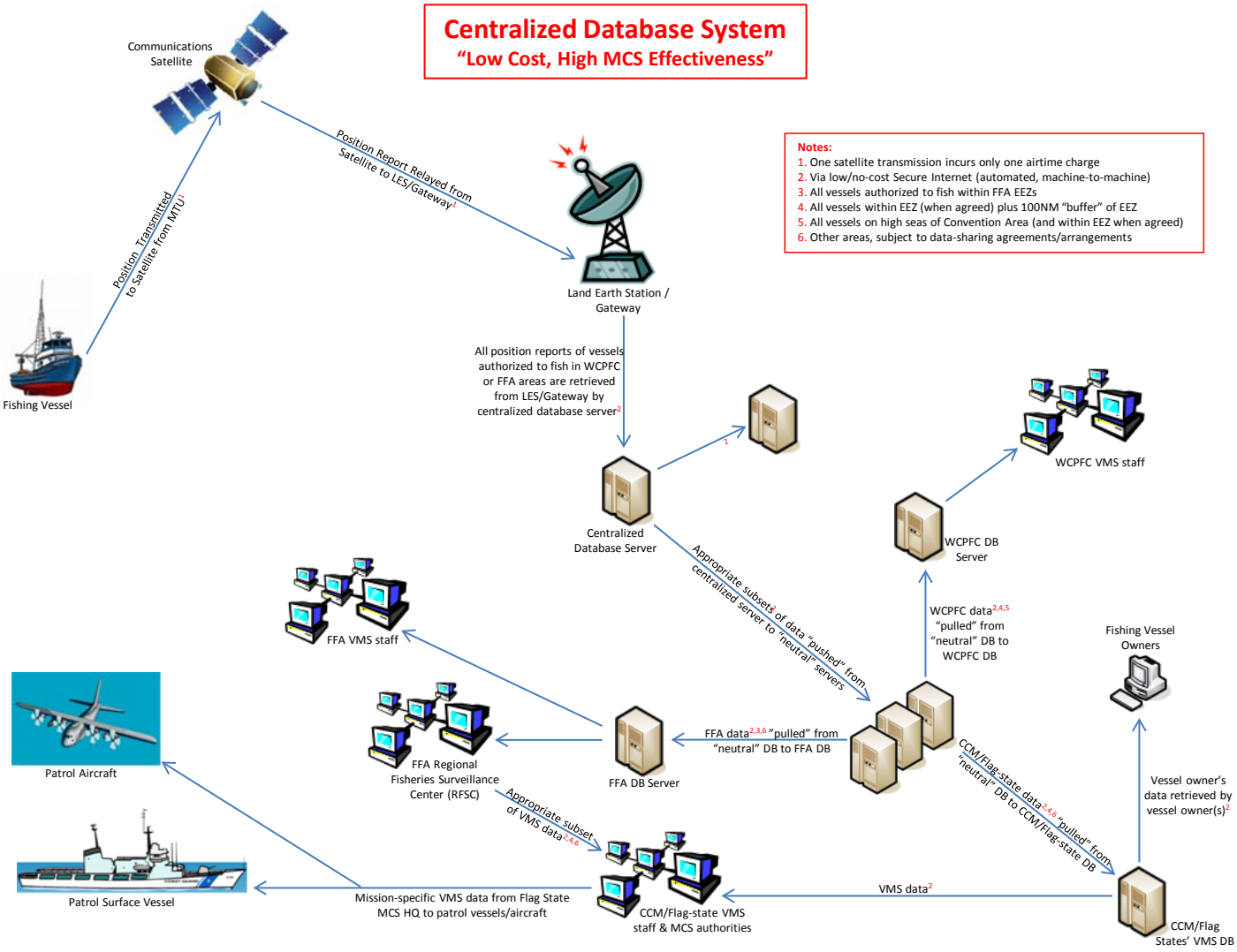
Appendix I

Diagrams outlining the current system design/operation and possible low-cost alternatives/options.

Currently, multiple, separate VMS satellite transmissions of the same position information are sent by all fishing vessels to the various required reporting entities (flag state, FFA, WCPFC, owners, etc.). This maximizes costs to all parties by requiring each to pay for satellite airtime for essentially redundant transmission of the same information. The diagram below depicts a typical situation, for example a US longline vessel fishing on the highs seas in the Convention Area. Under the current VMS scheme, the vessel sends one satellite transmission of its position to its owner, a separate satellite transmission of the same position to the US VMS database, and a separate satellite transmission of the same position to WCPFC. If the vessel is licensed to fish in the FFA (or hypothetically, in the waters of another entity, such as PNA, requiring VMS tracking), another separate satellite transmission of the same position may be necessary. Each of these separate satellite transmissions MULTIPLIES the aggregate recurring costs of VMS position reporting…in this example, to 3 or 4 times what is necessary to accurately track each vessel. Even using the most conservative factors possible (lowest-cost service provider, lowest-possible frequency of reports, fewest entities receiving separate transmissions, and hardware and software functioning perfectly), the redundant cost in such an arrangement is at least $144 per vessel per year, which for all vessels reporting to WCPFC and FFA amounts aggregately to approximately $500,000/year in unnecessary expenses. Again, this is using “best case” cost estimates (actual unnecessary expenses are likely greater). The diagram below depicts the VMS position report paths with the current system. As you can see, the notion of “direct reporting” (i.e., from vessel to satellite to data consumer) does not accurately capture the actual VMS position report data flow, which as currently designed, is quite fragmented from point of origin to ultimate destinations, going through multiple intermediaries en-route to the end users of the data.



Aggregate satellite airtime costs could be cut substantially by transitioning to single-satellite-transmission of VMS data (whether to WCPFC, FFA or flag state), with onward provision to other appropriate entities done via automated (no human intervention) low/no-cost secure internet machine-to-machine replication. One option would be a "WCPFC/FFA-centric" system, whereby all position reports go from the fishing vessel to the satellite to the Land Earth Station/Gateway to a central WCPFC/FFA data base from which appropriate portions of the data are automatically, securely, in near-real-time, and at low/no-additional-cost made available via the internet to other authorized data users (MCS entities, vessel owners, etc.). A diagram of such a conceptual system is pictured below.



While the above option may be ideal from a Commission perspective, (and may be possible for many members to adopt), it may not be achievable near term for all parties due to flag state and/or regional or sub-regional laws, regulations or policies which require reporting to other vessel monitoring systems which pre-existed the WCPFC VMS. That does not, however, preclude achieving the "one-satellite-transmission per position report" goal, if a "hybrid" system is adopted. In such a system, members would be allowed to provide position reports from their flagged vessels by the method shown above, OR to provide position reports from their own VMS, as long as such provision meets Commission-mandated security, automation, and other standards as shown below. Arguably, the present system is built to maximize security, but at the cost of operational flexibility (and at very high financial expense) akin to putting all citizens in prison because some of them might commit crimes. Rather than the current system which is designed, operated and funded based on what a small minority of the population might do to subvert the integrity of the system, WCPFC and FFA might ameliorate this threat (while substantially reducing aggregate recurring costs to all parties) by jointly implementing minimum standards for security to require:

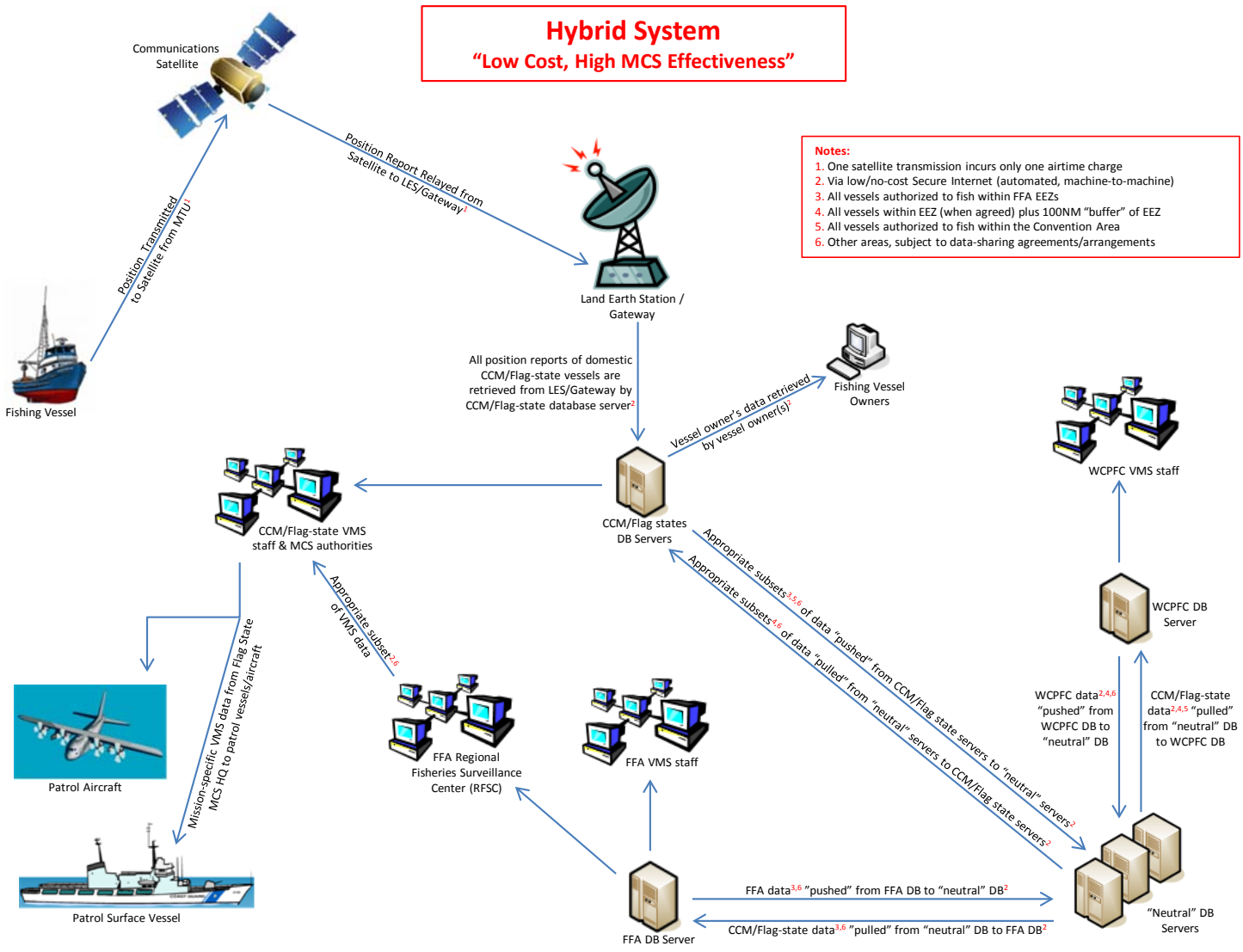
- Automated software that securely, near-real-time and without human intervention transmits VMS position data to all appropriate entities from the original VMS position data recipient via the internet

- Commission approval of the software and security measures used in this process, ensuring that the process is compatible with WCPFC/FFA data standards and is capable of reliably providing the data machine-to-machine (without human intervention)

- Independent audit procedures for these processes

- Disincentives (penalties, similar in severity to IUU listing) for data manipulation

The Team asked each technical expert and system manager interviewed whether such a low-cost, secure arrangement is technically feasible, and they all agreed that it can be done. A depiction of such a hybrid system is shown below.



Appendix II

The following table identifies the objectives and deliverables identified in the current applicable SLAs, SSPs and CMMs and their status

Document Organization	Objective Deliverables	comment
SLA	**Service level Agreement to give effect to the decision of the Fourth Session of the Commission convened in Guam in 2007 to use the Pacific VMS to implement the Commission VMS; and to define the relationship for the provision of services between the Commission and FFA in respect of the implementation of the Commission VMS**	
FFA	establishment, maintenance, diagnostic and support infrastructure and services to the Commission VMS	Completed and ongoing
	Providing mobile transmission unit (MTU) or automatic location communicator (ALC) management services in accordance with the procedures set out in Schedule 2 of the agreement	WCPFC should adopt the FFA process and lit for approving MTUS and ALCs
	Providing communication gateways for mobile communications service providers such as: Inmarsat C and D+, Iridium, and CLS Argos. meet	Completed and ongoing
	Providing additional communication gateways to the WCPFC when requested subject to an agreed cost recovered development program	Completed and ongoing
	Providing training for implementation of the WCPFC VMS to Commission staff in accordance with Schedule 2.	Completed and ongoing
	Providing services for the WCPFC VMS independent of the existing FFA VMS;	Completed and ongoing
	Providing High Seas VMS data in near real-time to the WCPFC from vessels on the FFA Vessel Register without any additional charges;	Completed and ongoing
	Providing ninety (90) days prior notification to the WCPFC of any planned changes to the Pacific VMS that may affect the WCPFC VMS.	Completed and ongoing

	maintaining a record of all support calls from the Commission including tracking number, problem description, action taken to resolve the problem and the final resolution action recommended to rectify the fault and	Completed and ongoing
	ensuring security of WCPFC VMS data in accordance with WCPFC standards, rules and procedures;	Completed and ongoing
WCPFC	Providing necessary information to FFA to enable the monitoring of MTUs;	Completed and ongoing
	Determining users and access rights and data sharing in accordance with WCPFC standards and notification to FFA in a timely manner;	Completed and ongoing
	Paying the specified charges and fees to FFA in accordance with the Service level agreement	Completed and ongoing
	Obtaining and managing contracts with Mobile Communications Service Providers (MCSP) to provide for collection of VMS Data from all WCPFC vessels reporting high seas data direct to the WCPFC VMS.	Completed and ongoing
	Carrying out acceptance tests to identify any malfunctions, faults or abnormalities in the performance of services under this Agreement	Completed
	Notifying the Director General of FFA of the Agreement Acceptance Date.	Completed
	Advising FFA of any policies, decisions or measures, including amendments to the standards, specifications and procedures, adopted by the WCPFC that may impact on the delivery of services as specified in Schedule 2 of the service level agreement.	Completed and ongoing
SSP	**Standards, specifications and procedures for the fishing vessel monitoring system of the WCPFC to establish the terms of implementation of the WCPFC VMS**	December 2008
WCPFC /TCC	methods to ensure compliance of Automatic Location Communicators (ALCs)/Mobile Transceiver/Transmitter Unit (MTU) with WCPFC standards;	Annex 1 of CMM 2007-02
	inspection protocols	Inspection being completed and reported to WCPFC
	rules on polling and reporting of ALC units incapable of being polled	Completed, The team was lead to believe Argos units will be phased out; it is recommended that the Argos ALC that cannot be poled be phased out. Over reporting need to be dealt with to reduce costs

	Vessel reporting including position reporting frequencies	completed
	tampering prevention measures;	Completed
	obligations and roles of fishing vessels, CCMs, the FFA secretariat and the Commission secretariat	completed
	recommend appropriate penalties or sanctions to the Commission as a means of deterring non-compliance to VMs requirements	CMM Measure 2010-061 IUU listing may complete this, if not Vessel not in compliance should be listed as IUU vessel, & Data security Rules and Procedures …
Fishing Vessels	Register, carry and continually operate an ALC that meets the standards set out, as well as any additional standards, specifications and procedures agreed by the Commission.	No reported incidents of non-compliance
	Provide access to the ALC, associated connections and antennas, when directed by authorized fisheries officers, inspectors or other authorized persons or organizations...	No reported incidents of non-compliance
	carry aboard and monitor at all times a two-way communication device that supports real-time communication between vessels and the Commission's VMS,	No reported incidents of non-compliance
	ensure that a vessel's ALC is protected from any attempt to tamper with its operation, data transmission or integrity of data transmitted in conformity with Section 5 of the SSP	No reported incidents of non-compliance
CCMs	ensure compliance by their vessels and operators with the provisions of Annex 1 and any other WCPFC standards, specifications and procedure	No reported incidents of non-compliance
	conduct and report results of ALC inspections in accordance to procedures established for that purpose, results to include data specified in Section 2 above	Not aware of any inspection being conducted
	Utilize the Commission VMS in accordance with the Commission's conservation and management measures and any of the standards, specifications and procedures agreed by the Commission.	No reported incidents of non-compliance
	Provide to the WCPFC Secretariat a list of all ALC inspections by flag and vessels type, including a summary of the results of each inspection.	Not aware of any reports being filled or required

	To report, to the Secretariat within a period of 5 days any registered ALC, including connections and antennas, associated vessels (by name and flag) and vessel masters that appear to not be in compliance with CMM-2007-02 and/or specifications and procedures agreed by the Commission as well as the details of the non-compliance.	Only Chinese Taipei and Japan have been providing notices of MTU updates and changes.
	Apply sanctions and penalties sufficient to deter violations of applicable VMS requirements and standards and to report action taken and sanctions applied to ensure compliance.	Not aware of any sanctions being report or required
WCPFC Secretariat		
	ensure that data once received at the Commission VMS is not altered, accessed, manipulated, copied or interfered with in any way, or used by anyone other than those authorized to do so, as prescribed in the Commission's ISP and the associated rules and procedures developed by the AHTG [Data] adopted by the Commission.	Completed and ongoing
	Provide a stable, reliable, fully maintained and supported Commission VMS that conforms to the security standards set out in the Commission's ISP. 3.	Completed and ongoing
	Develop and manage a service level agreement (SLA) with the FFA for provision of VMS services	Completed need to be reviewed on an annual bases
	If required develop and manage SLAs for the provision of VMS software, support and the possible out sourced VMS services between the WCPFC secretariat and a software provider. SLAs will include provisions for confidentiality and non-disclosure; SLA contract clauses; services provided under the SLA; service rates; target response times; help desk support; billing; possible provision of outsourced VMS services (e.g. front-line ALC management	Other than the current FFA SLA no other SLAs have been required
	Enter into, and to maintain, direct contracts with mobile communications service providers for the provision of position (and other) data from the ALCs to the Commission VMS. A strategy of joining cooperating RFMOs, where possible, will be followed to achieve a goal of negotiating the best possible rates for these services.	Completed and ongoing

	Utilize the Commission VMS in a manner consistent with the Convention, the Commission's CMMs, and SSPs relating to the Commission's VMS adopted by the Commission. Unless explicitly requested by a coastal State in accordance with Article 24(8) of the Convention the Commission shall not have access to, interfere with, or use any VMS data owned by the coastal State.	Not having access to coastal state data is severely negatively impacting on the WCPFC VMS manger and operators to conduct MCS activities on the High Seas to the point of almost supporting IUU activities VMS Managers and operators need access to all the data
	To administer the list of ALCs approved for use in the Commission VMS.	Completed and ongoing, WCPFC should adopt the ALC/MTU approval process adopted by FFA
	To compile and circulate to all CCMs a list of registered ALCs by vessel and flag reported to the Commission in compliance or non-compliance with CCM- 2007-02 and these standards, specifications and procedures, as agreed by the Commission	Completed and ongoing, WCPFC should adopt the ALC/MTU approval process adopted by FFA
	Were a CCM reports to the Secretariat any registered ALC, including connections and antennas, associated vessels (by name and flag) and vessel masters that appear to not be in compliance with CMM-2007-02 and/or specifications and procedures acknowledge receipt of the report and, in the absence of this acknowledgement within 72 hours of transmission, the CCM is required to re-transmit any unacknowledged report	Not aware of any reports received by the secretariat
	monitor and report annually to the TCC the performance of the Commission VMS and its application and, as necessary, make recommendations for improvements or modifications to the system, SSPs established to support it	Completed and ongoing
	Include in its annual report (6.3.9) on the operations of the Commission's VMS to the Technical and Compliance Committee, all details for non-compliant ALCs detected in the previous 12 months.	Completed and ongoing

CMM 2007-02	**Commission Vessel Monitoring System to establish a VMS system by January 1 2008 in the Convention Area south of 20 degrees north and east of 175 degrees East.**	
WCPFC	Commission VMS shall be a stand-alone system administered by the Secretariat of WCPFC which is to receive data directly from fishing vessels operating on the High Seas in the Convention Area; and will be capable of accepting VMS data forwarded from the FFA	completed
	Establish rules and procedures for the operation of the Commission VMS, including, inter alia: • vessel reporting, including the specifications of the data required, its format and reporting frequency • rules on polling; • ALC failure alternates; • cost recovery; • cost sharing • measures to prevent tampering; and • obligations and roles of fishing vessels, CCMs, the FFA Secretariat and the Commission Secretariat • Security standards for the Commission VMS data, consistent with the WCPFC Information Security Policy. • minimum standards for ALCs used in the Commission VMS	Completed Completed Completed Being reviewed Being reviewed Completed Completed Completed Completed
SOP	**Standard Operating Procedures to provide uniform guidance for Commission personnel in the management and operation of the Commission VMS**	
Compliance Manager	Develop Roles and responsible for individuals administering the Commission VMS	completed
	Develop, roles and responsible of the WCPFC MCS S	completed
	Identification of the of Commission VMS services and to whom these services are available.	completed
	Identification of VMS Software Applications	SmartTrack Track Explorer and Manual report and Sighting Application.

Appendix III- Terms of Reference (TOR) for Review

TERMS OF REFERENCE FOR THE JOINT FFA/WCPFC PACIFIC VMS REVIEW INFORMATION PACKAGE

BACKGROUND

WCPFC

The Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Convention) entered into force in June 2004 creating one of the first regional fisheries management organizations to be established since the 1995 adoption of the United Nations Fish Stocks Agreement (Agreement). The objective of the Convention, and hence the Western and Central Pacific Fisheries Commission (WCPFC), is to ensure the long-term conservation and sustainable use of highly migratory fish stocks in the Convention Area in accordance with the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the Agreement.

The WCPFC currently has 25 Members, seven Cooperating Non-Members, three Pacific Overseas Territories from each of France and the US, and Tokelau are included as Participating Territories within the Commission. Additional information concerning the WCPFC, including copies of recent decisions, is available from www.wcpfc.int

In December 2007, the WCPFC agreed on the framework for the establishment of the Commission VMS (CMM 2007-02), specifying amongst others the nature and specifications of the Commission VMS as a stand-alone system. Then, in 2008 the Commission adopted a proposal for a "Pacific VMS" that was a stand-alone VMS but run in conjunction with the Pacific Islands Forum Fisheries Agency (FFA) VMS. This was designed to leverage savings and improve services that would have otherwise not been achievable without the use of a jointly located system. In adopting this approach the Commission also accepted a Service Level Agreement (SLA) between WCPFC and the FFA and the Standards Specifications and Procedures for the Commission VMS. :

On 01 April 2009, WCPFC began monitoring high seas positions of fishing vessels authorized to fish for highly migratory fish stocks in the WCPFC Convention Area. The "WCPFC VMS" uses the infrastructure managed by the FFA which also supports a VMS for FFA members in their national waters. When referred to as a single system the WCPFC VMS and the FFA VMS are collectively referred to as "Pacific VMS". In 2008, WCPFC5 endorsed a Service Level Agreement ("SLA") between the WCPFC and FFA regarding the FFA's support of the WCPFC VMS.

The WCPFC VMS is an open architecture, integrated service that utilizes FFA-owned IT VMS infrastructure, software and services. It consists of the Sydney, Australia-based co-location services under an FFA contract with Macquarie Telecom Data Centre. Vessel position reporting to the WCPFC VMS varies from hourly to four-hourly intervals with over 2,750 fishing vessels being monitored in the high seas of the Convention area. The WCPFC Record of Fishing Vessels lists over 6,500 vessels, and

it is expected that more of these fishing vessels will be reporting to the system in the near future. In the last 12 months, a number of coastal members of the Commission have entered into bilateral arrangements with the WCPFC to extend the WCPFC VMS to waters under national jurisdiction.

FFA

The Pacific Islands Forum Fisheries Agency (FFA) was established in 1979 in response to the member countries' desire to promote regional cooperation and coordination in respect of fisheries issues and their concern to secure maximum benefits from the living marine resources of the region, in particular the highly migratory species.

Under the 1979 FFA Convention, the FFA consists of the Forum Fisheries Committee (FFC) which is the governing body, and a Secretariat. The Agency presently has seventeen members, each of which is represented at the FFC. The Convention places the seat of the Agency at Honiara, and an Agreement between the Agency and the Government of Solomon Islands defines the diplomatic status of FFA.

The FFA Secretariat, with a current establishment of approximately seventy five positions, is organized into four divisions; Fisheries Management, Fisheries Development, Fisheries Operations and Corporate Services. FFA is led by an executive management unit headed by the Director-General.

In 1988, a regional meeting of fisheries surveillance officers from FFA member countries discussed the possibility of using satellite technology to enhance other compliance measures used by FFA member countries in their respective EEZs. From those early discussions that were reported to the FFC, the concept was developed by the FFA Secretariat in collaboration with fisheries officials from FFA member countries, into a FFA VMS Business Plan.

The FFA VMS Business Plan identified two main business problems, namely illegal fishing and misreporting and/or under reporting of catches of tuna in FFA member countries' Exclusive Economic Zones (EEZs), that total approximately 30 million square kilometres of ocean.

The FFA VMS provides the FFA member countries with a cost-effective tool to enhance other measures in place in their EEZs to ensure fishing vessel operators comply with national fisheries regulations. The system has been built to exacting standards and has been rigorously tested to provide the functionality required by FFA member countries.

Foreign fishing vessels applying for licenses to fish in the EEZs of the FFA members are advised by their national licensing authorities that a pre-condition of obtaining a licence is that the vessel must first be registered on the FFA Vessel Register and monitored by the FFA VMS System. The decision to require a fishing vessel to register on the FFA Vessel Register is therefore the responsibility of FFA member countries, not the FFA Secretariat. There are currently over 1251 vessels of all types being monitored by the FFA VMS.

TERMS OF REFERENCE

Background to the review

There has been considerable interest between members of the WCPFC and the FFA to analyze the cost and structure of the VMS services in the Pacific to ensure that the best possible vehicle is currently being utilized to provide VMS services to the members of both organizations.

Paragraph 10 of WCPFC Conservation and Management Measure 2007-02 states that: “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.”

Paragraph 9.6 within the Memorandum of Understanding signed between the FFA and the WCPFC notes that “The financial arrangements and fees in this agreement shall be reviewed on an annual basis unless otherwise agreed by the parties”.

This review is the first formal review by the parties to accommodate the requirements of the WCPFC to review CMM 2007-02 and to review the costs and fees as outlined in paragraph 9.6 of the SLA.

The FFA have also announced that they intend to conduct a thorough internal review of their own VMS and its structure in the near future and no doubt this review will greatly benefit FFA’s own internal review process.

OBJECTIVES

The objectives of this joint FFA/WCPFC Pacific VMS Review are as follows:

- To assess the WCPFC VMS and the services currently provided within the SLA and provide options for improvements in its operations to meet current and future requirements. Consider if the current VMS arrangements are the most appropriate arrangements to meet the Commission’s future VMS requirements.

- To assess FFA VMS services currently provided within the SLA and provide options for improvements in its operations to meet current and future requirements.

- To assess and recommend the most operationally effective mechanisms to strengthen cooperation between the WCPFC and FFA (and where possible, their respective Service Providers) in the implementation of the WCPFC VMS within the requirements of the current arrangements. These requirements include SLA, SSPs, CMMs and general best practice standards for the provision of high quality cost effective and timely data to support fisheries management.

- Consistent with paragraph 9.6 of the SLA, review the current cost structure of the SLA and determine if there are avenues to reduce the overall cost impact of VMS for members and the potential costs to industry of any proposed changes to the system.

- To assess whether the current arrangements allow sufficient access and control by each organisation to address their respective mandate with respect to responsible

SCOPE OF WORK

The review will assess the performance of the Pacific VMS in terms of its overall objective – the provision of high quality and timely data to support fisheries management, including through better informed and targeted MCS. This will include a review of the SLA, SSPs and CMMs themselves.

The review will define and assess current practice against criteria to be determined from the SLA, SSPs, appropriate CMMs and general best practice standards.

Specifically the review will:

Technical system requirements:

Assess existing system redundancy and recovery as a result of any failures with specific attention on the recovery procedures and the minimum window of downtime allowed before new vessel positions are lost while the system is still down for each system.

Assess the effectiveness of current mechanisms and service provider responses for access to the WCPFC in-zone VMS data for CCMs and FFA high seas data for its Members, and provide options for enhancement.

Review the list of ALC/MTU units currently accepted by the Commission and consider modifying the SSPs and SOPs so that the units can:

Store a minimum of 45 days of data collected hourly, containing date/time/speed//latitude/longitude

Have the capacity of pooling (two way communications).

Review reporting requirements to ensure appropriateness Evaluate the technical necessity for reporting VMS vessel positions from outside of the Convention area and in doing so evaluate any legal issues associated with receiving vessel position data from outside the convention area.

- Consider whether the current system is the most appropriate for the parties of the FFA and the WCPFC and consider if the region would be best served in terms of cost and service by (a) the current model, (b) two separate systems with the WCPFC system based in Pohnpei or (c) with one VMS for the Pacific servicing the requirements of both agencies.

System redundancy requirements:

Assess potential alternative operational VMS applications, how each compares with the current VMS applications, costs, and its suitability to address the requirements under FFA-WCPFC SLA, the Commission SSPs and CMMs.

Assess the VMS data redundancy options for the potential alternative VMS applications.

Service Level Agreement Arrangements:

- Assess the cost effectiveness of current contractual and operational arrangements under the SLA including:

- Evaluate current procedural and operational requirements.
- Anticipated future operational requirements.
- Evaluate the effectiveness and efficiency of the current SLA between FFA and WCPFC in providing Commission VMS needs; administrative, technical, legal, and systems that comprise the Pacific VMS, including, where legally possible, the service providers' agreements, response times and cost effectiveness, and make recommendations as to how these may be improved to more effectively to meet the needs of WCPFC members.

Implementation Recommendations for Improvement:

- Prioritize the implementation of any proposed improvements to the various components comprising the Pacific VMS, including indicative costs and proposed implementation timeframes, noting the existing differences in system configurations. Prepare a business and implementation plan for the proposed improvements to the Pacific VMS, including the scope of work and estimated costs.

ACCESS TO/DISCLOSURE OF INFORMATION

In undertaking this review as a cooperative effort, WCPFC and FFA shall both ensure that all relevant data, policies, protocols, systems [costs] etc. held by them, or held by third parties on their behalf are available, where legally possible, for review by the selected reviewer(s).

Terms of the contract for the review will include specific provisions for written and legally binding undertakings regarding non-disclosure and discretion when dealing with sensitive information.

Terms of the contract shall stipulate activities agreed to be undertaken by the review.

OUTPUTS

Detailed report including options, recommendations, costs and implementation schedule for all tasks noted in the SCOPE OF WORK within three weeks of the completion of the field assessment.

OVERSIGHT

Acknowledging the importance of the VMS to both agencies, the review shall be overseen at the strategic level by the Executive Director of the WCPFC and the Director-General of the FFA.

The role of the Executive Director and Director-General will be to jointly select an independent consultant(s) to undertake the work, and act as a clearing house for contentious issues (i.e. those other than day to day technical issues that one would expect such a review to reveal). Given the specialized nature of the review and desire to complete the study within a short time the two agencies agree that the Consultant(s) may be jointly selected without requirement for competitive bidding.

The Executive Director and Director-General, will be the final decision makers for any points of uncertainty or conflict during the process, including determining what is "relevant data, information etc." for the review.

The Executive Director and Director-General shall determine the exact terms of the contract.

The Executive Director and Director-General shall receive the final report from the reviewer(s) and shall decide how and when to release the result to members of both parties for, consideration and discussion as well as providing guidance regarding implementation of recommendations.

CONSULTANCY ATTRIBUTES

Note: It is intended that the consultants used in this study be sourced based on their expertise and experience from member countries. It is proposed that the consultants would have skills consistent with those listed below and be acceptable to both the FFA and WCPFC. An approach has been made to Canada to allow for Mr Robert Martinolich to lead the review team and coordinate the final report to the Commission:

a. A minimum of five years experience in the operations of vessel monitoring systems and registration of fishing vessels, preferably in the international context with an understanding of the need and abilities to harmonize systems, address security issues and handle high volumes of data flow and entry; and

b. No affiliation or direct linkage or vested interest with the current service provider for three years or any direct linkage or affiliation with other commercial service providers.

A review team that meets the above requirements and consists of technical specialists actually operating an existing VMS for a member of the Commission]

PROVISIONAL INDICATIVE SCHEDULE

Task	Time frame
Selection of consultants	Mid Feb 2011
Draft consultancy report	End May 2011
Secretariats review of the draft	Mid June 2011
Final consultancy report	End June 2011
Circulation to Members	Thereafter

Appendix IV – Service Level Agreement between WCPFC and FFA

SERVICE LEVEL AGREEMENT

Between

The Western Central Pacific Fisheries Commission

And

The Pacific Islands Forum Fisheries Agency

In respect of

The implementation and provision of services for the Western and Central Pacific Fisheries Commission Vessel Monitoring System

Western and Central Pacific Fisheries Commission and the Pacific Islands Forum Fisheries Agency

PARTIES TO THE AGREEMENT

The Parties to this Agreement are:

i) The Western and Central Pacific Fisheries Commission, established by the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean 2000, and located at Kaselehlie Street, P.O Box 2356, Pohnpei, Federated States of Micronesia (hereafter Commission) of the one part;

ii) The Pacific Islands Forum Fisheries Agency, established by the Forum Fisheries Agency Convention 1979 and located at 1 FFA Road, P.O Box 629, Honiara, Solomon Islands (hereafter FFA) of the other part.

RECITALS

WHEREAS since 1998, the Pacific Islands Forum Fisheries Agency has been operating the FFA Vessel Monitoring System to assist in the monitoring, control and surveillance of fishing vessels in the Pacific

Islands region;

AND WHEREAS the Commission is required by the Convention to establish cooperative mechanisms for effective monitoring, control, surveillance and enforcement, including a vessel monitoring system; AND WHEREAS the Commission adopted in 2006 and 2007 measures to establish and implement the Commission VMS to monitor fishing vessels in the high seas within the Convention Area;

AND WHEREAS the Commission and FFA entered into a Memorandum of Understanding for cooperation, consultation, and collaboration;

AND WHEREAS the Commission further agreed to enter into a Service Level Agreement with FFA for the provision of Commission VMS services;

NOW THEREFORE THIS AGREEMENT WITNESSETH AND IT IS HEREBY MUTUALLY AGREED:-

1. INTERPRETATION

1.1 For the purposes of this Agreement:-

i) “Acceptance Test” means the test against attributes, criteria and deliverables undertaken by the Commission described in Schedule 2;

ii) “Access Date” means the date from which the FFA is to be given access to the Installation Site for the purpose of this Agreement;

iii) “Agreement” means this Agreement including all Schedules appended hereto;

iv) “Agreement Acceptance Date” (AAD) means the date by which the Acceptance Tests for the System or part thereof are to have been completed;

v) “Automatic Location Communicator” or “ALC” has the same meaning as Mobile Transmitting Unit or “MTU”;

vi) “Commission Vessel Monitoring System” or “Commission VMS” means the system referred to in Article 24(8) of the Convention including Standards, Specifications and Procedures adopted and amended from time to time by the Commission;

vii) “Convention” means the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean;

viii) “Intellectual Property Rights” includes copyright, trade mark, design, patent, semiconductor or circuit layout rights, trade, business or company names, trade secrets, confidential or other proprietary rights, or any rights to registration of such rights whether created before or after the date of this Agreement;

ix) “Licensed Software” means the software provided to the Commission and includes any update or new release of that software under the licence and any material related to the licensed software;

x) “Mobile Communications Service Provider” or “MCSP” means any provider of MTU data transmission services for VMS;

xi) “Mobile Transmitting Unit” or “MTU” means a unit fitted on board a vessel to enable tracking of the vessel. An MTU usually contains a Global Positioning System (GPS) module

and a transceiver module. In its most basic form the transceiver modules transmits the GPS derived time, date and position via a communications service to a Monitoring Station;

xii) “Outage” occurs when the Commission is unable to access the Pacific VMS network. Outages can be scheduled or unscheduled;

xiii) “Pacific Vessel Monitoring System” or “Pacific VMS” means the satellite based VMS established by the FFA;

xiv) “Service Level Agreement” means this Agreement;

xv) “Services” means the services described in Schedule 2;

1.2 In this Agreement, unless the contrary intention appears:

i) monetary references are references to United States Dollars;

ii) the clause headings are for convenient reference only and have no effect in limiting or extending the language of the provisions to which they refer; and

iii) a cross-reference to a clause number is a reference to all its subclauses.

2. OBJECTIVES

The objectives of this Agreement are:

i) To give effect to the decision of the Fourth Session of the Commission convened in Guam in

2007 to use the Pacific VMS to implement the Commission VMS; and ii) To define the relationship for the provision of services between the Commission and FFA in respect of the implementation of the Commission VMS.

3. FFA RESPONSIBILITIES

3.1 The responsibilities of FFA under this Agreement are to:

i) Provide for the establishment, maintenance, diagnostic and support infrastructure and services to the Commission VMS ;

ii) Provide mobile transmission unit (MTU) or automatic location communicator (ALC) management services in accordance with the procedures set out in Schedule 2; Western and Central Pacific Fisheries Commission and the Pacific Islands Forum Fisheries Agency

iii) Provide communication gateways for the following MCSPs: Inmarsat C and D+, Iridium, and CLS Argos.

iv) Provide additional communication gateways to the Commission subject to an agreed cost recovered development programme, on request;

v) Maintain a record of all support calls from the Commission including tracking number, problem description, action taken to resolve the problem and the final resolution action recommended to rectify the fault;

vi) Ensure security of Commission VMS data in accordance with Commission standards, rules and procedures;

vii) Provide training for implementation of Commission VMS to Commission staff in accordance with Schedule 2.

viii) Provide services for the Commission VMS independent of the existing FFA VMS;

ix) Provide high seas VMS data in near real-time to the Commission from vessels on the FFA Vessel Register without any additional charges;

x) Provide ninety (90) days prior notification to the Commission of any planned changes to the Pacific VMS that may affect the Commission VMS.

3.2 The specific services to be provided by FFA under this Agreement are outlined in detail in Schedule 2.

3.3 The services described in Schedule 2 of this Agreement shall be available each day of the year.

4. SERVICE GOALS

4.1 FFA will endeavour to make the services in Schedule 2 available not less than 99.7% of the time.

4.2 In the event of an unscheduled outage, the outage shall be dealt with by the FFA in accordance with the response times in Schedule 2 Table 3. FFA will use reasonable endeavours to identify, and notify the Commission, of the cause of an outage. All unscheduled outages shall be logged by the FFA and reported to the Executive Director of the Commission.

4.3 FFA shall not be responsible for rectifying faults outside the Pacific VMS network.

4.4 For a scheduled outage, the FFA shall notify the Commission at least seven (7) days before the said scheduled outage.

5. RESPONSIBILITIES OF THE COMMISSION

5.1 The responsibilities of the Commission under this Agreement are to:

i) Provide necessary information to FFA to enable the monitoring of MTUs;

ii) Determine users and access rights and data sharing in accordance with Commission standards and notification to FFA in a timely manner;

iii) Pay specified charges and fees to FFA in accordance with this Agreement;

iv) Obtain and manage contracts with Mobile Communications Service Providers (MCSP) to provide for collection of VMS Data from all Commission vessels reporting high seas data direct to the Commission VMS.

v) Carry out Acceptance Tests to identify any malfunctions, faults or abnormalities in the performance of services under this Agreement. The Testing Period shall commence from a Western and Central Pacific Fisheries Commission and the Pacific Islands Forum Fisheries Agency date agreed between the Parties and end as per the implementation plan to be developed and agreed. Upon the completion of the Acceptance Tests, the Executive Director of the Commission shall notify the Director General of FFA of the Agreement Acceptance Date.

vi) Advise FFA of any applicable policies, decisions or measures, including amendments to the SSPs, adopted by the Commission from time to time that may impact on the delivery of services as specified in Schedule 2.

6. INTELLECTUAL PROPERTY

6.1 Nothing in this Agreement affects the ownership of any intellectual property rights created or owned by the FFA before or arising from its performance of the services specified in Clause 3 and Schedule 2 to this Agreement.

7. OWNERSHIP OF DATA

7.1 Subject to the provisions of paragraph 6.1, all data compiled by the Commission VMS under this Agreement shall be owned by the Commission.

8. WARRANTY

8.1 The FFA warrants that the Commission's use of services under this Agreement, will not infringe the Intellectual Property Rights of any person or legal entity.

8.2 The FFA further warrants that it has the necessary rights to use the licences as provided in Schedule 2.

9. FINANCIAL ARRANGEMENTS

9.1 The payment for the provision of the services as outlined in Schedule 2 to this Agreement is described in detail in Schedule 3.

9.2 Services shall be paid for upon receipt of an FFA invoice, and will include:

i) One off costs associated with initial set up as described in Schedule 3 Table 1; and

ii) Recurring costs as specified in Schedule 3 Tables 2, 3, 4 and 5.

9.3 Support and enhancement activities that cannot be undertaken within the scope of this Agreement will require separate funding. Such activities will be managed as a Change Request (Schedule 4) and provided at the rates shown at Schedule 3 Tables 6 and 7.

9.4 If the Commission deems site visits necessary, the costs for travel and accommodation in respect of each visit will be invoiced by FFA to the Commission. Whenever FFA staff is required to travel to

discharge obligations under this Agreement, FFA Staff will be reimbursed by the Commission in accordance with Schedule 3 Table 7.

9.5 Transport (including airfares and taxis), telephone and other costs that are necessarily incurred for business reasons will be reimbursed, upon production of receipts, by the Commission.

9.6 The financial arrangements and fees in this Agreement shall be reviewed on an annual basis unless otherwise agreed by the Parties.

9.7 Invoices forwarded by the FFA must be correctly addressed and include the:

i) Description of Services;

ii) Charges and expenses to be invoiced (including a description of the services the invoice relates to);

iii) Bank account details for payment of the invoice by electronic funds transfer; and

iv) Date for payment which shall be fourteen (14) days upon receipt of invoice.

10. ADMINISTRATION

For the purpose of administering this Agreement, contact officers designated by the Commission and FFA are listed in Schedule 1. The Commission and FFA will advise each other of any revisions to the list of contact officers.

11 MONITORING AND REVIEW

11.1 The operation of this agreement will be reviewed quarterly by both Parties. Monitoring reports will be produced quarterly by FFA and will include:

i) statistical information on service-level outputs, and

ii) a statement on delivery and any remedial plans to improve services.

11.2 In the third quarter of each calendar year, the requirements of both Parties for the forthcoming calendar year will be discussed. Agreement will be reached over key performance targets for the service provided and the level and cost of the service needed to achieve these targets in the coming year.

11.3 The Parties shall cooperate with audit processes and procedures related to the provision of services under this Agreement if required by either Party.

12. CONFIDENTIALITY

The Commission and FFA shall ensure confidentiality is maintained at all times and in all matters relating to any part of this Agreement, including compliance with the Commission's rules and procedures, measures and policies relating to confidentiality and access to Commission VMS data.

13. DURATION OF AGREEMENT

13.1 The initial term of this Agreement will be thirty six (36) months, beginning on the date of the signing of this Agreement. The Agreement will continue thereafter on a yearly basis.

13.2 This Agreement will terminate when either Party gives the other a minimum of six (6) months notice in writing to terminate the Agreement.

13.3 This Agreement shall terminate without notice if FFA is prevented from providing the services, as described in Schedule 2, for any reason as specified in clause 14.4.

13.4 In the event that a Party cannot perform any of its obligations under this Agreement due to circumstances beyond its reasonable control (force majeure), including but not limited to, acts of God, war, industrial disputes, change of law, power or mechanical failure, defects in elecommunication equipment and/or computer viruses, that party's obligations are suspended for as long as the Force Majeure continues, and if the force majeure continues for more than sixty (60) consecutive days preventing either Party from performing its obligations, then either Party may terminate this Agreement.

13.5 In the event of termination, the Commission shall pay FFA, on the production of a final invoice, all monies due and payable within fourteen (14) days of receipt of the invoice.

14. GOOD FAITH

14.1 The Parties agree to fulfil their responsibilities and implement this Agreement in good faith.

15. DEFAULT

If either Party is in default under this Agreement on account of the failure to perform or observe any obligation or undertaking to be performed or observed on its part under this Agreement, the Party not in default may terminate this Agreement in whole or in part without prejudice to any right of action or remedy which has accrued or which may accrue in favour of either Party.

16. RESOLUTION OF DISPUTES

16.1 In the event that a dispute arises regarding the level of service provided by FFA and the discharge the responsibilities of the WCPFC under this Agreement, the Parties to this Agreement shall use their best endeavours to resolve any dispute between them through consultation.

16.2 If the Parties to this Agreement are not able to resolve the dispute through consultation, they shall endeavour to settle the dispute by any peaceful means including mediation, conciliation, and arbitration.

17. AMENDMENTS

Any amendments or variations to this Agreement must be recorded in writing and signed by the Parties to this Agreement.

18. ENTIRE AGREEMENT AND VARIATION

18.1 This Agreement contains the entire agreement between the Parties and supersedes all communications, negotiations, arrangements and agreements, whether oral or written, between the Parties with respect to the subject matter of this Agreement.

18.2 No agreement or understanding varying or extending this Agreement shall be legally binding upon either Party unless in writing and signed by both Parties.

19. SEVERABILITY

Each provision of this Agreement and each part thereof shall, unless the context otherwise necessarily requires it, be read and construed as a separate and severable provision or part. If any provision or part thereof is void or otherwise unenforceable for any reason then that provision or part (as the case may be) shall be severed and the remainder shall be read and construed as if the severable provision or part had never existed.

Signed For and on Behalf of the Western and

Central Pacific Fisheries Commission

Signed For and on Behalf of the Pacific Islands

Forum Fisheries Agency

BY:..... BY:.....

TITLE: Executive Director TITLE: Director General

Signature:

.....

Signature:

.....

DATE: / /2008 DATE: / /2008

SCHEDULES:

SCHEDULE 1 AGREEMENT DETAILS(Table printed from Abode version)

SCHEDULE 2 STATEMENT OF SERVICES(Table printed from Abode version)

SCHEDULE 3 CHARGES AND PAYMENT(Table printed from Abode version)

SCHEDULE 4 CHANGE ORDER(Table printed from Abode version)