

## 9<sup>TH</sup> MEETING OF THE COMPLIANCE AND TECHNICAL COMMITTEE (CTC)

*Held remotely, 19 to 22 January 2022*

### CTC 9 – Doc 08 Commission VMS Implementation and Operation Report *Secretariat*

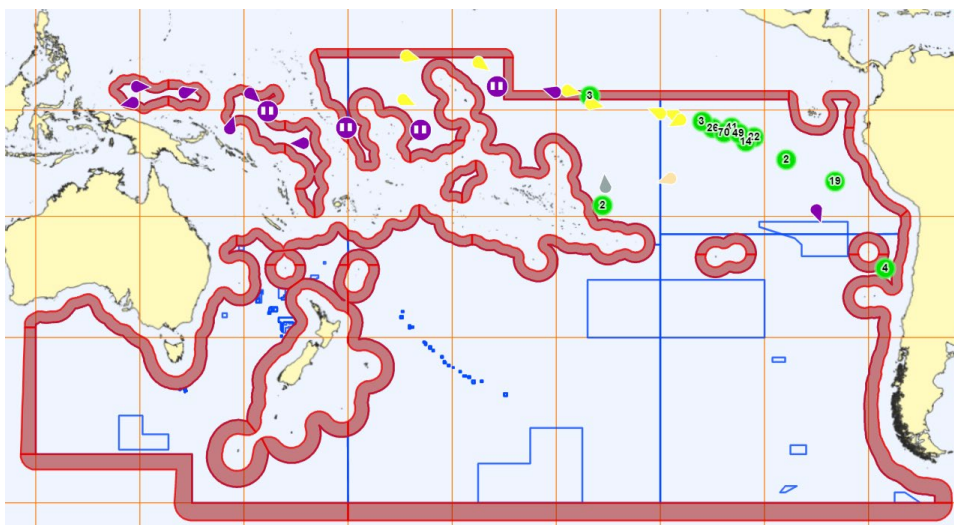
This report is provided pursuant to Paragraph 32 of CMM 06-2020 (VMS), which states: “At each annual meeting of the Commission, the Secretariat shall provide the Commission with a report on the implementation and operation of the Commission VMS”.

#### 1. Introduction

For authorised vessels operating in the SPRFMO Convention Area, Article 27(1)(a) of the SPRFMO Convention requires that the Commission establish appropriate cooperative procedures for “... the reporting of vessel movements and activities by a satellite vessel monitoring system that shall be designed to ensure the integrity and security of near real-time transmissions, including through the possibility of direct and simultaneous transmissions, to the Commission and flag State”.

The application of the Commission VMS is specified in paragraph 2 of CMM 06-2020. “The Commission VMS shall apply to vessels included in the Commission Record of Vessels Authorised to Fish in the SPRFMO Convention Area. It shall cover the area as defined in Article 5 of the Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean and have a buffer zone of 100 nautical miles outside the Convention Area. The buffer zone shall not apply to vessels flagged to adjacent coastal States fishing in waters under their jurisdiction”.

The purpose of the Commission VMS is set out in paragraph 4 of CMM 06-2020 “to continuously monitor the movements and activity of fishing vessels that are on the Commission Record of Vessels and are authorised by Members or CNCPs to fish for fisheries resources in the SPRFMO Convention Area in a cost-effective manner in order to, inter alia, support the implementation of SPRFMO CMMs”.



*Figure 1 THEMIS Screenshot- SPRFMO Convention Area with Buffer Zone and Exploratory Areas*



## 2. State of Reporting

Pursuant to CMM 06-2020 (Annex 2, Paragraph 7) each Member and CNCP shall designate a Point of Contact for the purposes of any communication regarding the VMS system (including data requests). These Points of Contact are listed on the [VMS Point of Contact](#) page on the website. All Members and CNCPs (*except for one Member with no vessels*) have provided a VMS Point of Contact.

As per CMM 06-2020, Paragraph 9, each Member and CNCP shall require vessels flying its flag to report VMS data to the Commission VMS automatically either:

- (a) to the Secretariat via their Member or CNCP's FMC; or
- (b) simultaneously to both the Secretariat and its FMC.

Most of the Members and CNCPs report the vessel VMS positions via their FMC. Table 1 below provides an overview of the type of reporting that each Member and CNCP has chosen as well as the number of unique vessels that reported their presence inside the SPRFMO Convention Area during 2020 and 2021.

*Table 1: The current state of reporting for SPRFMO Members and CNCPs*

Flag	Type of Reporting	Number of Vessels in the Convention Area	
		2020	2021
Australia	Simultaneous	1	2
Chile	Via FMC	6	0
China	Via FMC	599	526
Cook Islands	Via FMC (FFA)	7	7
Cuba	-	0	0
Curaçao	Via FMC	3	1
Ecuador	Simultaneous	0	0
EU	Via FMC	2	5
Faroe Islands	-	0	0
Korea	Via FMC	14	0
Liberia	Via FMC	7	4
New Zealand	Simultaneous	12	9
Panama	Via FMC	51	82
Peru	Via FMC	6	0
Russian Federation	Via FMC	1	1
Chinese Taipei	Via FMC	9	7
USA	-	0	0
Vanuatu	Via FMC	0	0
<b>Total</b>		<b>718</b>	<b>644</b>

Figures 2, 3 and 4 below depict the distribution by month of the number of unique vessels reporting to Commission VMS during 2020 and 2021 (*note December 2021 figures as of December 10<sup>th</sup>*). In 2020, February to May had the least amount of activity in the Convention Area with fewer than 300 unique vessels active. While in 2020, January, November, and December had the most unique vessels in SPRFMO at slightly more than 500.



Figure 2. Fluctuation in Vessel Count by Month 2020

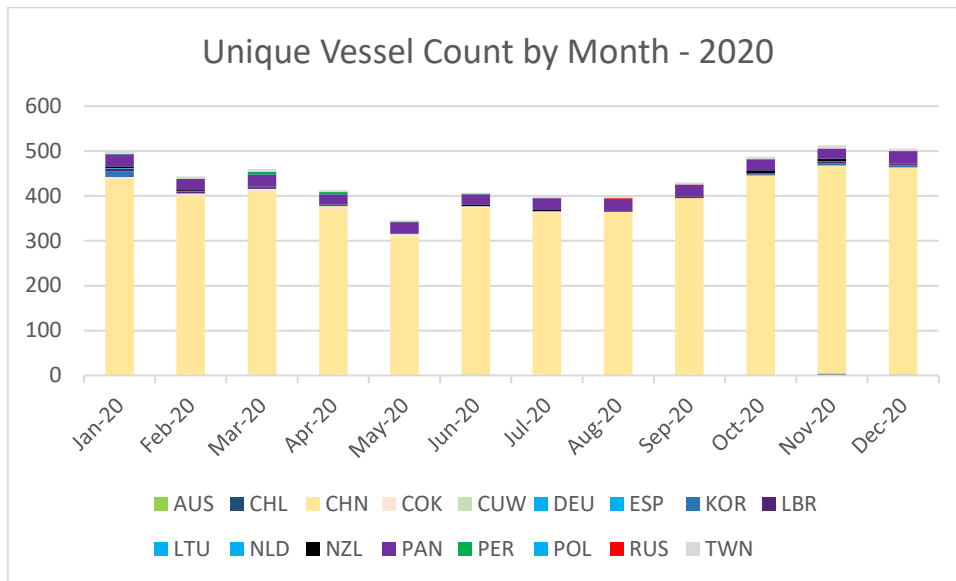


Figure 3. Fluctuation in Vessel Count by Month 2021 (as of Dec 10, 2021)

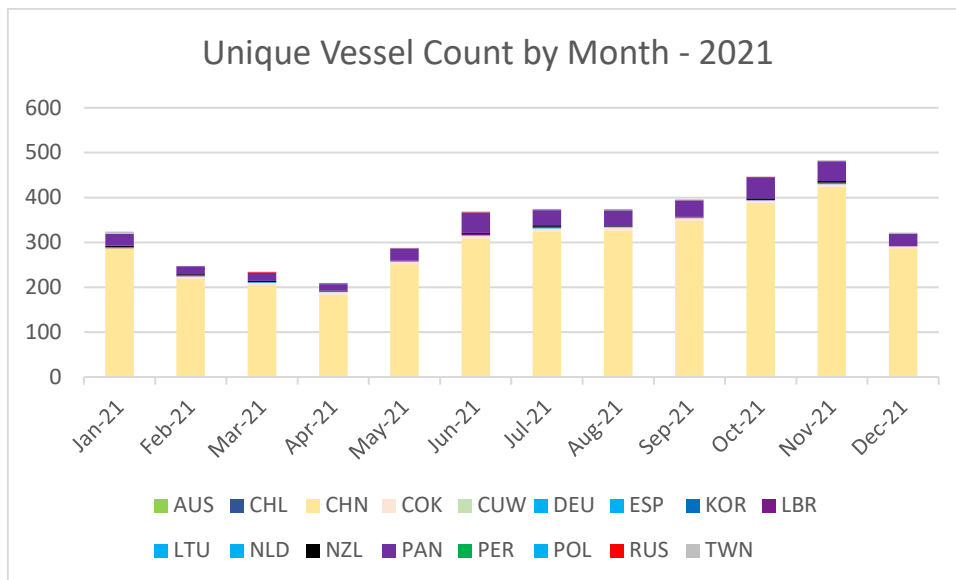
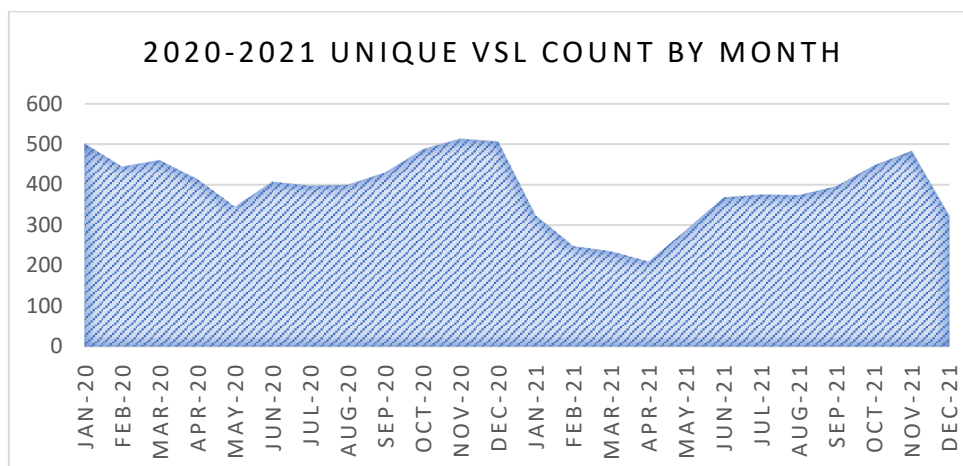


Figure 4. Fluctuation in Unique Vessel Count by Month - 2020 -2021 (combined)





### 3. Operation of the Commission VMS

#### 3.1. Personnel

The Commission VMS is largely overseen by the Compliance Manager position. In late 2020, following the departure of interim person seconded from Chile, the IT Manager supported the Commission VMS operations until the arrival of the permanent Compliance Manager, Mr Randy Jenkins on the 1<sup>st</sup> of November 2020.

#### 3.2. Day to day work processes

The Secretariat monitors the VMS system daily, including:

- Monitoring the number, and movement of, vessels reporting to the Commission VMS
- Monitoring for data gaps, disruptions, and stoppages to the VMS display on Commission VMS
- Monitoring VMS for compliance with zone entry requirements and other CMM obligations
- Investigating system generated alerts such as:
  - Fishing without authorisation
  - New beacon identified, not yet associated with a vessel on the SPRFMO Record of Vessels
  - Bottom fishing outside open management areas
- Develop and maintain a file system to document, track, and report on VMS issues
- Ongoing communications with VMS points of contact to identify and resolve VMS issues as well as any file follow-up or support for issue resolution
- Regular communications and virtual meetings with the service provider (CLS) to facilitate product development and troubleshoot reporting or display issues
- Respond to requests for VMS data, geo-fence areas of interest for reporting and appropriate documentation and follow-up with Members and CNCPs
- Activating and de-activating polling for vessels<sup>1</sup> using Simultaneous reporting
- Reviewing of bi-monthly invoices covering charges for DNID Upload, Polling, Periodic Rate Change and Position Reports for vessels belonging to members using simultaneous reporting.

### 4. Requests for VMS data

Pursuant to CMM 06-2020 VMS data may be obtained by a Member or CNCP for their own vessels (Paragraph 22), or under certain circumstances, either requiring or not requiring the consent of the Member or CNCP of the vessels involved.

Without the permission of the Member or CNCP, the Secretariat can provide VMS data for the exclusive purposes of:

- Planning for active surveillance operations (CMM 06-2020 Paragraph 24a)
- Active surveillance operations and/or inspections at sea (CMM 06-2020 Paragraph 24b)
- Supporting search and rescue activities subject to the terms of an arrangement between the Secretariat and the competent MRCC (CMM 06-2020 Paragraph 24c)

The Secretariat can also provide VMS data to a requesting Member or CNCP where the VMS data relates to vessels flagged to other Members or CNCPs that have provided prior written consent through their VMS Point of Contact for the data to be shared (Paragraph 21).

A template for data release under Paragraphs 21, 22 and 24 is available on the [non-public section](#) of the SPRFMO website.

VMS data may also be used by the Scientific Committee for analysis to support specific scientific advice requested by the Commission. A template for such requests is available on the [website](#) (Paragraph 8)

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<sup>1</sup> For Australia, Ecuador, and New Zealand



There were 3 requests for access to VMS data during the calendar year 2021 received from the relevant VMS Point of Contact using the SPRFMO Request Template and containing the necessary information. All 3 requests were made pursuant to Paragraphs 24a and 24b (*Planning/Active Surveillance Operations and/or Inspections*). There were no requests for VMS data pursuant to Paragraph 24c (*Search and Rescue*). In all cases, in accordance with Annex 5, Paragraph 5, the Secretariat informed, no later than 7 days after the provision of VMS data, the relevant VMS Points of Contact representing the Member or CNCP of the vessel(s) whose VMS data was obtained.

## 5. Performance of the Commission VMS Service Provider

The Commission VMS service provider is the Collecte Localisation Satellites SAS (CLS) Group, a global company engaged in vessel satellite monitoring. The corporate headquarters and primary VMS Fisheries Monitoring support team are headquartered in France. Effective 1<sup>st</sup> of January 2021 the parent company transferred the contracts of its customers located in Oceania (*Australia, New Zealand and the Pacific Islands*) to its wholly owned Australian subsidiary, CLS OCEANIA. Hence invoicing and billing is now processed through the Australian office and there are 2 points of contact in Australia to assist with SPRFMO VMS issues, in addition to the Fisheries Monitoring Technical Support team in France.

In 2021 the SPRFMO Secretariat, CLS Oceania representatives and CLS France representatives (VMS Fisheries Monitoring Support Team) implemented a more structured tracking process for flagging issues and requesting support as well as holding regular virtual meetings (~ every 6 weeks) to facilitate the exchange of information on relevant VMS issues and/or future development needs. This has resulted greatly improved communications between the service provider and SPRFMO and has a very positive effect on issue identification and resolution. The service provider has been receptive to assisting SPRFMO in advancing the efficiency of the VMS program.

CLS uses a software known as THEMIS as the base of its Fisheries Monitoring/Management platform. THEMIS came to life ~ 15 years ago and while some of the standard functions and displays are the same, the software underwent a major update 2021 to modernize to a more intuitive user experience and enhanced marine map rendering with customizable feature, an easy to manage dashboard and a more scalable and efficient management of large datasets. Connectivity and direct integration with other data sources such as Sat-AIS data is also possible as a value-added layer and cross-referencing tool (also potentially quite useful in detecting vessels when the VMS display is no longer updating or as a secondary source of potential vessel detection).

SPRFMO was switched to the THEMIS v8 software in late October and an updated user manual has been provided. A more comprehensive 1-week training course is planned, and a contract in place, that would be tailored to the SPRFMO needs and requirements. Given recent staffing changes within the Secretariat the training has been deferred until after the Annual meeting in 2022 when the new Data Manager will have arrived on site in Wellington. In the interim CLS staff have been responsive to any queries arising from using the new version of the software and helpful in running the large data queries to determine the unique vessel summaries for 2020 and 2021. Overall, the roll out of the new software has not created any significant issues for Commission VMS Operations. Initially there were a few issues flagged pertaining to the O-Data feed synchronization<sup>2</sup>, access to the Bathymetry mapping layer, and a slow map display loading process but these have all been resolved by CLS. The Secretariat will continue to work with CLS to customize products such as reports and vessel alerts that would be of benefit to SPRFMO.

In 2021 CLS support has been invaluable in investigating and resolving some of the issues experienced throughout the year. This ranged from VMS data display issues in the mapping tool to connecting vessel VMS to Commission VMS on the fleets reporting directly to Commission VMS to importing missing data and updating the VMS records in Themis.

The Service Level Agreement stipulates that CLS will provide service within a 99.7% fault tolerance. This is calculated monthly and summarized for each 6-month period in the 2 Operating (Service) Reports per year.

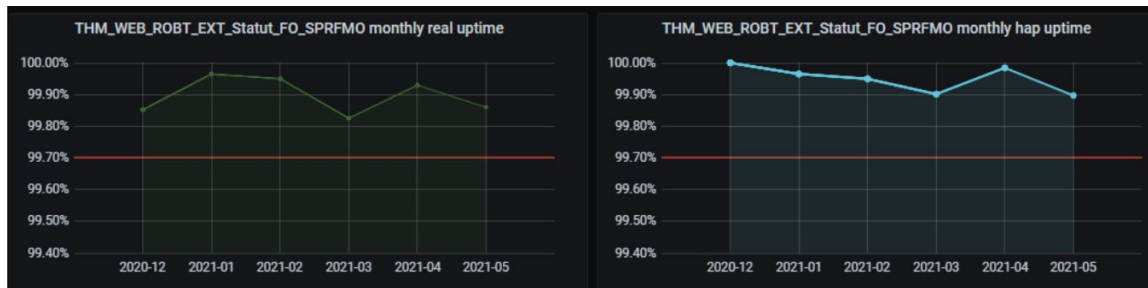
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<sup>2</sup> The "O-Data" feed provides data from the SPRFMO Record of Vessels into THEMIS



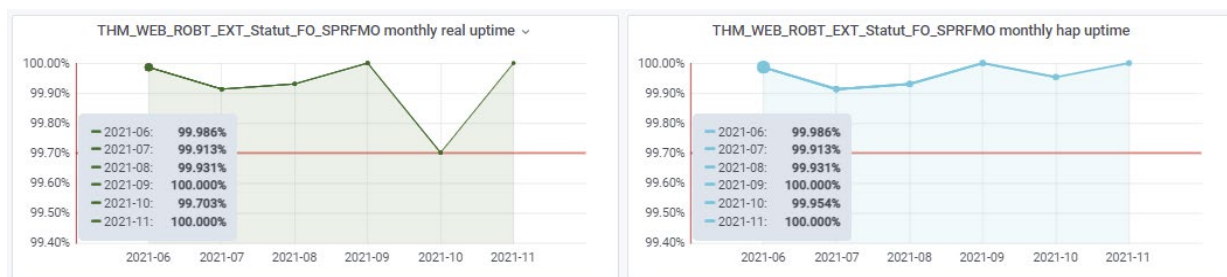
As can be seen in Figures 5 and 6 below, while there are monthly differences between the “real” service and “planned” service availability, CLS has consistently delivered on a service availability rate that exceeds the minimum uptime threshold of 99.7%. In most months the global availability rates were higher than the contractual threshold with only October 2021 dipping close to the minimum. The decrease in availability rate in October 2021 can largely be attributed to slight disruptions during the migration to the upgraded THEMIS v8 platform.

Figure 5. SPRFMO Operating Report for the period December 2020 – June 2021



Notes: Red Line= Contractual Threshold (99.7%); Left side: Real Service Availability; Right Side: Planned uptime, including maintenance.

Figure 6. SPRFMO Operating Report for the period July 2021 – November 2021



Notes: Red Line= Contractual Threshold (99.7%); Left side: Real Service Availability; Right Side: Planned uptime, including maintenance.

## 6. Operational Performance of the Commission VMS

During the previous annual meeting (COMM 9/CTC 8) there was discussion concerning several issues noted in the VMS implementation report where it was evident that, for one reason or another, it had not been possible to continuously monitor the movements and activity of all vessels that were on the SPRFMO Record of Vessels. While there were symptoms and indicators of issues and problems with VMS, the overall scope and scale of was unknown and would require a dedicated focus to determine to what extent the VMS system may have been compromised or underperforming and identify potential causes that could be resolved.

The outcome, and recommendation, with respect to CMM06-2020 (VMS in the SPRFMO Area) as stated in the Executive Summary of the Final Compliance Report 2019/20 ([COMM 9 – Report ANNEX 6 a](#)) was:

*The CTC acknowledged issues identified by the Secretariat regarding VMS reporting during the reporting period and requested more specific details regarding the issues that had been briefly outlined, including any potential compliance impacts. There was interest among the Members as to the possible causes of the issues, and whether they are things that the Secretariat, Member or the service provider CLS can resolve, or whether changes to the measure are required. The Commission accepted the CTC recommendation that a Secretariat Work Plan would be developed to assess the issues in more detail, consider whether the Commission VMS is achieving its agreed purpose and principles, and propose approaches to support the continued development of the Commission VMS.*



Additionally, in the COMM9 – [Record of Decisions](#) Section 5 (CTC) Paragraph 25 it instructs the Secretariat to include more details in the VMS implementation report and to develop a VMS workplan. Specifically, it states:

*“The Commission requested that the Secretariat provide more information in the VMS implementation report and develop a VMS workplan in consultation with the Chair of the CTC.”*

Following the annual meeting, the Secretariat commenced a review of the 2020 VMS data and operations to better understand what the specific issues and challenges were for 2020, including potential causes and solutions. The experiences and findings from the review of 2020 data would also help shape a VMS workplan to move forward with a more systematic annual process to benchmark VMS performance. This was further communicated to all Members and CNCPs on 22 April 2021 via correspondence [G54-2021 SPRFMO VMS – 2020 Issues and Data Review](#) with a commitment to present a detailed summary of the issues and/or data gaps as part of the VMS Implementation Report during the 2022 CTC meeting.

It should be noted that some of the findings and lessons learned from the 2020 VMS review were immediately leveraged to put in place practices to reduce VMS data disruptions and gaps for 2021. VMS disruptions and issues for 2021, while tracked separately, also added to the knowledge base to boost VMS performance, reduce VMS downtime, and improve confidence in the Commission VMS program. Not all issues had the same magnitude of impact and not all files had the same scope of complexity, but all issues have the potential to disrupt the Commission VMS.

The VMS review, and ongoing the VMS monitoring and issue resolution, has required considerable interaction with various VMS Points of Contact as well as the Commission’s service provider and consumed a tremendous amount of time and effort at the Secretariat. The support and cooperation of all those involved is gratefully acknowledged and appreciated. Without an open and transparent exchange between the Secretariat and the Members/CNCP’s it would be challenging to advance the VMS Review in any meaningful way and to fill VMS data gaps as they were uncovered.

The goal of the Review was not to find fault from a compliance perspective but rather to identify gaps, deficiencies, and issues such that problems could be resolved, and solutions, procedures, protocols, and practices put into place to improve future performance and reliability of Commission VMS. For this reason, the Member/CNCP compliance with CMM 06-2020 Paragraph 4 (VMS continuous monitoring) was not assessed during this year’s annual Compliance Report and any VMS operational issues deferred to the VMS Implementation Report.

The following section will provide an overview of the types of issues identified whereas Annex 1 (Restricted Circulation) will include a summary of the specific files generated to track 2020 and 2021 VMS issues. The proposed VMS workplan for future VMS data analysis an improvement in the efficiency of the Commission VMS is discussed in section 8 and outlined in detail in Annex 2.



## 7. VMS Issues Overview

The expectation is that the Commission VMS programme makes it possible to continuously monitor the movements of any vessel authorized by the Member/CNCP and included on the SPRFMO Record of Vessels in a “near real-time” basis. Members and CNCPs that choose to report to the Secretariat via their FMC are expected to automatically forward VMS reports to the Secretariat at an interval not less frequently than hourly.

Notwithstanding any technical issues occasionally creating an excessive lag time between the position being reported from the vessel and received by the FMC, most SPRFMO vessels report their VMS positional data hourly<sup>3</sup> to their FMC, this means that in most cases the positions of vessels displayed on Commission VMS accurately reflect their location from within a relatively short timeframe. Hence at any given point in time the information displayed on Commission VMS for all SPRFMO vessels operating within the Convention Area, or the 100-mile Buffer zone, should provide a good representation of the distribution and movement of vessels at that point in time. Unfortunately, with respect to 2020 VMS data, numerous issues and gaps were determined to have existed, undermining the purpose of the Commission VMS and at times creating significant disruption to the “continuous monitoring” of, and the subsequent reporting on, vessels and/or fleets.

While it perhaps should be expected that with over 700 unique vessels operating in SPRFMO in 2020 (and 640+ in 2021) that there would be occasional disruptions to VMS, especially for individual vessels, the VMS Review revealed that there were underlying issues and disruptions in some cases that affected entire fleets, geographic areas, and/or multiple vessels at once. The review identified a range of contributing factors and causes including technical issues, software issues, certificate issues, mapping application issues, processing issues, and human error.

In cases where data gaps were found, the Member or CNCP was asked to update the missing data to Commission VMS such that the system had a continuous vessel track for the periods the vessel was in the SPRFMO Reporting Area. In all but a few cases, the VMS data existed, and Commission VMS could be populated. This suggests that the VMS signal was transmitted from the ship and the disruption or incident causing the failure to display on Commission VMS occurred elsewhere.

Upon review of specific events incidents, it quickly became apparent that the root cause of VMS disruptions and gaps could often be linked to some sort of “technical, programming or software” issue that, in theory, once corrected would resolve the ongoing issue and prevent future disruptions. This would include incidents detected linked to incorrect or incomplete shapefiles defining the VMS reporting area (particularly pertaining to the 100-Mile buffer zone); inadequate or inaccurate “programming” to forward VMS positional data to Commission VMS; incomplete or incorrect NAF message data fields; incompatible software versions; security - SSL certificate issues; complications with program add-ons/upgrades and server capacity limitations. Even the Secretariat was not immune from technical glitches with issues being linked to software issues in the Themis data display and issues in establishing or maintaining VMS connectivity with individual vessels. Other quasi-technical issues that have been noted included planned or unplanned FMC maintenance, power outages, internet/email service disruptions and supplier and billing issues.

Of course, not all issues are technical, some appear to be the result of the absence of a structured processes or standard operating procedures with respect to quality control, oversight and/or data forwarding and of course there is always a component of “human error” that comes into play. For example, there were cases detected where vessels were well inside the SPRFMO Convention area before VMS started flowing to Commission VMS due to miscommunications (or lack of communications) between those involved in the permitting or authorization of the vessels and those responsible for monitoring the vessels.

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<sup>3</sup> In practice, SPRFMO vessels tend to report hourly or even more frequently than the minimum provisions of the CMMs (and in some cases national regulations require), except for a small number of “Motherships” reporting every 2 hours.





In extreme cases there were incidents where the VMS was transmitted and received by the Member/CNCP but never forwarded to Commission VMS due to administrative errors and/or break down in communications. (But generally unbeknownst to anyone that the information wasn't transmitted until it was detected during cross-checks with other data sources). Unfortunately, if a vessel does not display on Commission VMS at all during a given period it is very challenging for the Secretariat to know it is in the SPRFMO Area as there are currently no secondary sources of vessel positional data to reference. Thus, until the first VMS positional report is received, the Secretariat is generally unaware of the vessels in the SPRFMO Convention Area (unless there are reports from other sources such as transshipment or catch notifications).

Notwithstanding some of the "larger" issues that had a wider impact and/or ongoing implications, there were of course also many individual or "low impact" issues that cropped up regularly requiring attention and time to resolve. The Secretariat commenced a numbered file assignment to aid in the tracking of issues by Member/CNCP. Not all files are of the same complexity or impact. Not all files are necessarily "compliance issues" as a lot are more technical and administrative issues. Some are relatively minor and straight forward whereas others require a considerable amount of work and effort to resolve. A summary of the files for 2020 and 2021 can be found in Annex 1 (restricted circulation) which will be available before the annual meeting.

For 2020 there were 26 files initiated to track issues. Many of these files were complex and involved multiple vessels, longer time periods and often the underlying cause was not readily apparent. As time progressed and fixes implemented for some of the root causes the incidents became more related to individual vessels and/or shorter time periods (lower impact) and the Secretariat was able to react more quickly to any developing situation. Notwithstanding, the occasional situation leading to a widespread outage, having more individual or smaller incidents lead to an increase in file assignments in 2021 but often the files were more routine in nature (e.g., short gaps in VMS records) and although still required time to action and follow up with the Member/CNCP were less complex to resolve. In 2021 ~80 files have been created.

Overall, the time spent on VMS issues has been significant since the last annual meeting. To have an efficient and effective VMS system with reliable information and data it is necessary to minimize gaps and delays in positional information to Commission VMS and to keep abreast of other VMS issues requiring attention (e.g., duplicate vessels, erratic positions, alerts, missing information, etc) and work closely with the VMS Service provider and the relevant VMS Points of Contact to resolve issues and enhance performance. While, over time, there is every expectation to see a decrease in serious or prolonged incidents requiring Secretariat intervention, Commission VMS will continue to require a dedicated focus, spot checks, and quality control daily to ensure it meets the threshold of continuous monitoring of SPRFMO vessels.

## 8. VMS Performance Monitoring and Workplan

Last year, the Secretariat prepared the "Commission VMS Implementation and Operation Report" (CTC8-Doc08) for the 2021 SPRFMO Annual Meeting which identified several VMS issues occurring during 2020. Discussion at the CTC meeting on these issues resulted in Members/CNCPs requesting additional information. There was discussion among the Members as to the possible causes of the issues, and whether they are issues that the Secretariat, Member or the VMS service provider (CLS) can help to resolve, or whether changes to the CMM are required. The CTC agreed on the following recommendations:

- *The Secretariat ensure that future versions of the Commission VMS Implementation and Operation Report contain more detail regarding all identified VMS issues (including those previously identified but not resolved).*



- *Details should include the nature (including the method of VMS reporting used by the flag State), scope, cause and potential solution of each identified VMS issue. Where no cause and/or solution has been able to be identified, a troubleshooting approach between Secretariat, Members/CNCP and VMS provider(s) should be proposed to prevent ongoing recurrence of the particular issue.*
- *The Secretariat also agreed that issues regarding the SPRFMO VMS that were identified but not explored during the 2020 calendar year also be reported on within next year's VMS implementation report presented at CTC 2022.*
- *The Secretariat prepare a workplan prior to CTC9 to guide an effective VMS review process in 2023. This workplan should at least provide for a systematic review of previously identified VMS issues, consider whether the Commission VMS is achieving its agreed purpose and principles, and support the continued development of the Commission VMS.*

These recommendations were accepted by the SPRFMO Commission, and the Record of Decisions (COMM9) reflects that the Commission requested that the Secretariat provide more information in the VMS implementation report and develop a VMS workplan in consultation with the Chairperson of the CTC.

In response to initial bullets the Secretariat undertook a review of the 2020 VMS data (and continued into 2021 data) to determine the extent to which there were data gaps, irregularities and/or other issues pertaining to Commission VMS. A high-level overview of the general findings is outlined in Section 7 above whereas more specific information pertaining to specific issues for calendar years 2020 and 2021 can be found in Annex 1 (*Restricted Circulation*). It is proposed that going forward a similar format could be used to report back annually on VMS issues encountered during the year. Specifically, a general overview of VMS issues encountered, and any trends observed, could be provided in the main body of the VMS Implementation Report and, for greater transparency and awareness, a summary of the individual files pertaining to VMS related issues be included in tabular fashion in a Restricted Annex.

Additionally, with respect to the development of a workplan, and reflecting on the experiences from this year, there needs to be a systematic and ongoing review of VMS data to determine the frequency of delays or gaps in VMS while at the same time identifying missing or incomplete VMS data as quickly as possible to minimize disruption to Commission VMS. There must be strong oversight and continued improvement by all involved (the Members, CNCPs, Secretariat and the Service provider) to reflect upon the issues detected and implement actions, solutions, processes and/or procedures that can potentially be undertaken to reduce future issues and/or prevent re-occurrences of similar issues.

Our experience this year has demonstrated that in most cases the VMS data exists and disruptions to the VMS feed can be quickly restored, and missing data populated within a short period once the VMS gap/disruption is detected. To maximize efficiency, the Commission VMS must always be reasonably up to date (with minimal lag time) and vessel track records accurate and complete. Of course, it should go without saying, the VMS for all SPRFMO vessels operating in the Convention Area and/or the Buffer zone must be reported to Commission VMS. VMS data gaps or data delays can only be detected if there are reported VMS positions from the vessel. Currently, the Secretariat has no "near real time" means to check for vessels entering or operating in the SPRFMO area against the Record of Vessels and VMS.

Annex 2 proposes a workplan, from the Secretariat's perspective, to help focus the review of Commission VMS and the VMS data holdings. It builds upon the experiences this year from reviewing the 2020 VMS data, interactions with the Members and CNCPs on VMS issues and observations pertaining to the practical application of the CMM measures.



## 9. CTC Considerations

In summary, to improve the accuracy, efficiency and functionality of the Commission VMS, the CTC is asked to consider that:

- Going forward the documenting and reporting on VMS issues with the methodology followed in this report (i.e., general overview of key issues and trends in the main body of the report complimented with a more detailed summary of issues (files) as provided in Annex 1).
- Not all VMS issues are to be considered “Compliance issues”. Guidance is required on what types of issues should be considered “Compliance issues” and noted in the annual compliance report under the CMM06 VMS section (e.g., Vessels at sea not reporting; manipulation or interference with an ALC; falsification of data; etc) versus issues just reported in the VMS Implementation report.
- Approve the conceptual VMS Workplan as outlined in Annex 2 with respect to undertaking tasks to identify VMS stoppages, data disruptions, data gaps and data reporting delays.
- Authorize the use of AIS as a secondary tool to aid in the implementation of the provisions of the SPRFMO CMMs including the detection of vessels not displaying on Commission VMS.
- Authorize the Secretariat to identify and review of provisions of CMMs relevant to VMS with a view of preparing a proposal for updating, clarifying and/or harmonizing various provisions for CTC consideration.



## ANNEX 1: VMS ISSUES OVERVIEW

*Available before the Annual Meeting*

*(Separate RESTRICTED Circulation Document)*



## ANNEX 2: VMS WORKPLAN 2022

As noted in the report, the primary goal is to ensure that the Commission VMS is operating as efficiently and effectively as possible to achieve “continuous monitoring” with VMS positional data records that are accurate and received on a timely, regular basis. When disruptions occur, to the extent possible, the aim is to identify solutions, best practices and/or business processes that can be employed to prevent repeats and/or allow swift resolution to similar issues in the future. All parties to the Commission VMS are to “leverage” issues as lessons learned and implement necessary changes and/or oversight to minimize the likelihood of re-occurrence.

Reporting on the functioning of Commission VMS, and issues detected, will comprise part of the annual review process going forward. Greater transparency in the reporting of the VMS issues detected to Members and CNCPs will increase the awareness of all Members/CNCPs, and others involved in Commission VMS operations, to aid in the implementation of solutions and improvements. Throughout the reporting period, monitoring by Members, CNCPs and the Secretariat would continue such that any developing issues can be detected as quickly as possible and triaged accordingly.

### Proposed Methodology:

There is not one singular approach rather a multi-faceted approach is required to address the symptoms and signs of a VMS system that is not providing “continuous monitoring” and/or “accurate reporting”. The more obvious indicators would be VMS data gaps (disruptions or stoppages) and/or significant delays in the receipt of VMS data. These could likely be documented annually to provide a metric regarding performance and/or relative progression on performance.

Other indicators of the “health” of the VMS system could be the frequency “anomalies” stemming from the receipt of inaccurate or incomplete data leading to the creation of irregular VMS patterns such as “Flying Vessel” Zig Zag patterns, auto-create duplicate profiles with the same name and/or active vessels indicating land-based positions. Another area of concern would be the non-reporting of SPRFMO vessel(s) while in the SPRFMO VMS reporting area. Finally, observations as to whether the CMM provisions pertaining to VMS reporting continue to reflect the practical application of VMS from the SPRFMO vessels and fleets.

The following outlines a proposed way forward to address the key issues identified. (*Note: Each proposed action may require finetuning or modification upon practical application depending on system and data limitations, but spirit of the analysis would remain the same*).

### **1) Missing or Incomplete VMS Data:**

The most basic situation is confirming that all the vessels authorized to fish in the SPRFMO Convention Area (including support/carrier vessels) are all transmitting VMS while in the Convention Area (and in the 100 nm buffer zone if required) and that the VMS records do not contain significant temporal gaps. Data review and methodology to support this may include:

*Enters SPRFMO without VMS reporting:*

- *Determine if vessels commenced VMS reporting upon entry to the Convention Area/Buffer Zone as required. Review the first recorded VMS position for the year, or upon entry, and note if the position is in proximity to expected boundaries or if it is already well inside the zone (which would indicate data gaps in the VMS record).*



*Stops reporting while still in SPRFMO:*

- *Determine if vessels stopped VMS reporting while within the Convention Area/Buffer Zone. In the case of the Convention Area, determine if vessels reported in the Buffer zone following reports from the Convention Area. For exit from the buffer zone a zone exit Alert should be received. Non-receipt may be an indicator that the vessel stopped displaying on Commission VMS.*

*Disruptions to the Commission VMS display while within the SPRFMO VMS reporting zone:*

- *Calculation of the time difference between datapoints for each vessel to identify pre-defined time gaps (for example no VMS received for more than a certain time period (timeframe can be any pre-determined period such as the equivalent of 4 missed VMS reports), and whether there is any pattern in these gaps (for example, an entire fleet having the same gap indicates that the data for that fleet is missing and has not been repopulated versus individual or a few vessels with gaps which are indicators of localized issues).*

*Document issues observed:*

- *Identifying any trends or patterns to the data gaps which could point to underlying technical reasons that are inter-related (e.g., groups of vessels “disappearing” at the same time may be indicative of FMC, system, or service provider disruption)*

## **2) Delayed Receipt of VMS Data:**

The premise of VMS is that the Commission VMS is being regularly updated at the intervals required for the specific fishery so that vessels can be “continuously monitored” on a near real time basis<sup>4</sup>. Data review/methodology to support this may include:

- *Analysis of the field which stores the delay between the time of the location data and the time the record was received by the SPRFMO VMS, and whether there is any pattern in these delays.*
- *Like the gap analysis, reporting on how frequent reporting is delayed by a pre-determined time frame will reflect the Commission VMS with respect to “near real time” reporting. (This may be an issue in the event of any patrol or surveillance activity that may detect anomalies between Commission VMS positional data and observed positions.)*
- *Significant delays in populating positional data to Commission VMS undermines the credibility of automatic reporting on a near real time basis and may raise concerns that there are nefarious reasons for the delayed transmission.*
- *Notwithstanding the foregoing, any gap periods identified and populated after the fact will result in a noticeable delay period. Hence reporting on “delay frequency” by time frame may also capture “gaps that have been subsequently populated”.*

## **3) Other VMS Vessel Related Issues:**

There have been several issues specific to individual vessels that have been identified over the past year such as incorrect vessel information being associated with a vessel beacon (e.g., two vessels have the same beacon number, recycling of beacons from scrapped vessels), incorrect radio call signs or IMO numbers associated with vessels, NAF message rejection due to values exceeding parameters (e.g., course value > 360) and other ad-hoc issues. These types of issues are largely caused by human error (data entry typos, vessel list/

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<sup>4</sup> CMM06-2020 - Paragraph 11 requires that Members and CNCPs that choose to report to the Secretariat via their Member or CNCP's FMC shall automatically forward VMS reports to the Secretariat at an interval not less frequent than hourly.



information updating errors, NAF message field formatting errors etc) or technical glitches (e.g., time stamp issues, occasional random positions out of sequence, Latitude values indicating the wrong hemisphere, Longitude values confusing East and West etc) but all could compromise the integrity of the VMS data.

Often, these types of issues are one-off situations that become apparent during the conduct of daily business and data entry. Each has its own unique set of circumstances that must be investigated and resolved individually. Data review/methodology to help support the search for VMS data irregularities may include:

- *Undertake a review of data searching a duplication of vessel names. Often errors in the NAF messaging result in the auto-creation of a “new” vessel profile having the same name but different information such that it cannot be linked with the vessel on the Record of Vessels.*
- *Undertake a review of data searching a duplication of IRCS (call signs) or IMO numbers in the records from different vessels (i.e., different vessels with the same call sign).*
- *If possible, review NAF messages pertaining to specific incidents to determine if there are formatting errors or data outside of parameters.*
- *Comparison of the list of unique vessels on the VMS for a flag State for a calendar year with the Active Vessels list for that flag State (provided 30 January of the following year), to detect vessels that are reporting to the VMS but are not recognised by the flag State as being active. This should detect instances where the SPRFMO VMS is receiving data from an incorrectly identified beacon (for example a beacon from a scrapped vessel).*

#### **4) VMS System or Administrative Issues:**

In addition to the VMS issues related to vessel tracking there have been situations arising where there appears to be inconsistencies in the extract of data/reports from the VMS system which may result in inconsistencies or errors in reporting and/or administration. While these do not appear to be widespread, failure to address could undermine the confidence in the Commission VMS system.

This was evident at the last annual meeting with several Members indicating that the “active vessels” derived from Commission VMS data did not match their own records of active vessels supplied to the Secretariat (*It was later determined that certain vessels were missed during the report extract in certain situations due to the way the system interpreted the request and applied the extraction parameters*). Likewise, it was determined during the review of 2020 VMS data that in certain, unique situations, the vessel VMS data was “received but not displayed” in location reports and VMS mapping displays leading to an incomplete vessel data extraction. (*Note: actions have been taken and processes implemented to prevent future issues*).

These types of issues can be documented and CLS consulted to determine if a patch or software update may be required and/or the development of a Standard Operating Procedure and/or new business process for certain queries such that there are consistent reports generated and that the information presented is an accurate reflection of activity in the SPRFMO Convention Area. This step may require significant engagement with the CLS team and the development of new query tools or Themis add-ons (at an addition cost) to reflect the needs of SPRFMO. As issues arise, they can be triaged accordingly.

Some practices that may assist going forward (*subject to workload considerations and time constraints*) include:

- *Review the system reporting and query functions to ensure congruency with SPRFMO report and information requirements (e.g., unique vessel count queries, initial and last position reports).*
- *Review the automatic information lookup functions to ensure correct linkages (e.g., fishing vessel type; flag state; identification information).*



- *Review whether the use of manual entry positions vs. automatic entry positions impact the system query or report functions.*
- *Review the relevance of existing alerts – designed so that they inform business needs (and/or CMM requirements)– this may result in new alerts being designed or modifications to existing alerts.*
- *Additional verification of accuracy against other Commission records (e.g., Comparing submitted fishing activity and/or transshipment locations with VMS locations).*
- *Developing and documenting a “VMS verification business process” to improve consistency and standardize regular procedures (frequency of checks, useful analyses & reporting).*

#### **5) Vessels operating without being displayed on Commission VMS:**

As previously noted, once VMS positional records are received and displayed on Commission VMS, there are strategies that can be potentially deployed to aid in the identification of VMS gaps, delayed reporting, stopped reporting and/or other data anomalies or inconsistencies. However, it is very difficult to detect vessels that may have entered SPRFMO without their positional data being reported to Commission VMS if at some point positional data is not received. There are several practices, as outlined below, that help mitigate this situation if they come into play by comparing other sources of information, but there is often significant lag time before the data is available for the comparisons to be carried out.

- *Comparison of list of unique vessels on the VMS for a flag State for a calendar year with the Active Vessels list for that flag State (provided 30 January of the following year) to detect vessels that the flag State recognises as having fished, but which for some reason are not appearing at all on the SPRFMO VMS.*
- *Comparison of information provided in the Annual Implementation report (provided annually in October) against the Commission VMS information.*
- *Comparison of vessels reporting catch data and/or transshipment data (various times) against vessels on the Commission VMS.*

The Secretariat does not have access to secondary sources of “near real time” electronic vessel positional data, such as AIS, that may be used to carry out spot checks of vessel reported positions against vessels on the Commission Record of Vessels. There have been issues in 2020 and 2021 where vessels have been authorized and active in SPRFMO, but the VMS positional reports were delayed or not reported to Commission VMS. Access to a secondary data source may have been useful in detecting these oversights in a timelier manner. (Likewise, when connectivity to Commission VMS is disrupted for any significant period, a secondary source can aid in vessel monitoring until connectivity is restored).

With the implementation of Themis 8, the Commission VMS system now has the ability to incorporate AIS as a secondary data feed that can be layered, if required, with VMS data and/or accessed for specific queries or issues (noting that the Secretariat would have to source the AIS data and/or procure data through CLS).

- *Access to, and use of, AIS as a secondary tool to spot check for vessels on the Commission Record of Vessels operating within the Convention Area with their positional data being displayed on Commission VMS.*

#### **6) Potential CMM VMS related updates:**

The Secretariat has noted that provisions of the CMMs pertaining to VMS reporting have been in place for some time and could benefit from review and possible updating to bring the CMMs in line with current reporting practices and/or to better harmonize and/or clarify the various VMS reporting requirements. A more comprehensive review could be undertaken, and a proposal developed for the 2023 Annual meeting in line with the review timelines for CMM 06-2020. Potential areas of refinement may include:





- *Identifying specific requirements in other CMMs that have provisions pertaining to VMS requirements (e.g., Bottom fishing, Gillnets in SPRFMO) and reviewing for consistency of application with the primary VMS CMM.*
- *Review the reporting timeframes for vessel types and consider a single baseline for “routine” VMS reporting for all SPRFMO vessels regardless of function or fishery (i.e., catcher, carrier, bunker).*
- *Removal or updating of footnotes for relevancy to today’s practical application of VMS reporting.*
- *Consider moving towards a “standard” reporting timeframe more reflective of actual SPRFMO vessel reporting.*
- *Review the “Manual Reporting” provisions and any other specific provisions that may need updating considering recent experience.*