SPRFMO
South Pacific Regional Fisheries Management Organisation

14TH MEETING OF THE SPRFMO COMMISSION

Panama City, Panama, 2 to 6 March 2026

COMM 14 – Prop 18

PROPOSAL TO:

☐ Amend ☒ Create	CMM XX-2026 on Electronic Monitoring Standards

Submitted by: WGEMS Co-Chairs

Summary of the proposal:

(Provide here a summary of your proposal or list the proposed amendments)

This proposal is intended to fulfil the mandate given to the Working Group to develop electronic monitoring (EM) standards for fishing vessels to be presented for endorsement by the Commission, and comprises minimum requirements for EM programs, EM systems, and EM data that shall apply when EM is used in SPRFMO fisheries to fulfil the data requirements of SPRFMO CMMs. The proposal would create a framework for implementing EM in all SPRFMO fisheries, but at this time only proposes specific equipment configurations and minimum data fields for jigging vessels. The working group took this approach to deliver standards in a timely manner that would allow the provisions regarding EM in CMM 18-2025 to be exercised while avoiding making hasty decisions about other gear types in recognition that jigging in the jumbo flying squid fishery is the only activity for which the Commission has authorized EM to fulfil fishery observation requirements.

This is a 'Co-Chairs' proposal that reflects feedback received from many Member and Observer delegates over the past two years. Note that while the draft is largely a consensus text it (a) does not reflect the positions of each Member, CNCP, or Observer, as the WGEMS has not had the opportunity to achieve resolution on all areas where differing positions were expressed; and (b) includes some bracketed text.

Objective of the proposal:

(enter here the objective of your proposal or proposed amendments)

To enable collection, via Electronic Monitoring Systems (EMS), of verified catch and other data related to the conduct of SPRFMO fisheries in the SPRFMO area of competence in order to facilitate the collection of verified scientific data and additional information related to fishing activities in the Convention Area and their impacts on the ecosystem, and also to support the functions of the Commission and its subsidiary bodies, including the CTC. The proposal establishes minimum requirements for EM programs, EM systems, and EM data that shall apply when EM is used in SPRFMO fisheries to fulfil the data requirements of SPRFMO CMMs and ensure that when EM is used it is effective in achieving its intended purpose and generates data of equivalent confidence to data derived from the SPRFMO Observer Program.

Has the proposal financial impacts or influence on the Secretariat work?	☒ Yes ☐ No

To be filled out by the Secretariat:

Ref: **COMM14-PROP18**	Received on: 11 January 2026

CMM XX-2025

CONSERVATION AND MANAGEMENT MEASURE ESTABLISHING MINIMUM STANDARDS FOR ELECTRONIC MONITORING IN SPRFMO FISHERIES

The Commission of the South Pacific Regional Fisheries Management Organisation,

RECALLING that the Commission created the Ad Hoc Working Group on Electronic Monitoring Standards with a primary objective of developing EM standards for fishing vessels to be presented for endorsement by the Commission;

NOTING that the Commission has decided to allow Electronic Monitoring to fulfil some observer requirements;

NOTING that Article 28 of the Convention sets out the functions of the observer programme and that the observer programme shall be coordinated by the Secretariat of the Commission in a flexible manner to take account of the nature of the fisheries resources and other relevant factors;

NOTING that the primary function of observers on board fishing vessels is the collection of scientific information and that observers are not enforcement officials, but that Article 28 of the Convention specifies that the information collected by the observer programme shall, as appropriate, also be used to support the functions of the Commission and its subsidiary bodies, including the Compliance and Technical Committee (CTC);

NOTING the importance of the collection of robust scientific information, consideration should be given to *inter alia* cost-effectiveness and technical feasibility;

NOTING ALSO that one of the functions of the Commission is to promote the conduct of scientific research to improve knowledge of fishery resources and marine ecosystems in the Convention Area and of the same fishery resources in adjacent waters under national jurisdiction;

ACKNOWLEDGING that high-quality data and information related to the fishing activity in the Convention Area, and its impacts on the marine environment occurring in the SPRFMO area are essential for the Commission to adopt and implement effective and timely Conservation and Management Measures (CMMs);

DETERMINED to ensure the collection of data and information that can be used for effective assessment and management of SPRFMO fisheries resources, including target species and bycatch, and interaction of fishing activities with the environment and species occurring in the Convention Area, to improve the certainty of future scientific advice while taking into account ecosystem considerations;

COMMITTED to ensure that the SPRFMO Electronic Monitoring Programme is developed under a robust and transparent governance framework;

RECOGNISING the need to establish clear procedures for attaining accreditation of national EM programmes and service providers under the SPRFMO Electronic Monitoring Programme;

ADOPTS the following CMM in accordance with Articles 8 and 28 of the Convention:

Objective, Purpose, and Scope

1. The objective of the SPRFMO Electronic Monitoring Standards is to enable collection, via Electronic Monitoring Systems (EMS), of verified catch and other data related to the conduct of SPRFMO fisheries in the SPRFMO area of competence in order to facilitate the collection of verified scientific data and additional information related to fishing activities in the Convention Area and their impacts on the ecosystem, and also to support the functions of the Commission and its subsidiary bodies, including the CTC.

2. The purpose of these standards is to establish minimum requirements for EM programs, EM systems, and EM data that shall apply when EM is used in SPRFMO fisheries to fulfill the data requirements of SPRFMO CMMs and ensure that when EM is used it is effective in achieving its intended purpose and generates data of equivalent confidence to data derived from the SPRFMO Observer Program.

3. Notwithstanding paragraphs 1 and 2, the implementation of EM is optional, and this CMM does not create any independent obligation for Members and CNCPs to implement EM onboard their fishing vessels.

4. Members and CNCPs that implement EM in their fisheries in order to fulfill the data requirements of SPRFMO CMMs shall ensure that their EM domestic programs fulfill the minimum program requirements and standards and specifications set out in these standards.

5. Unless otherwise decided by the Commission, Members and CNCPs shall ensure that they continue to meet the human observer coverage required in accordance with the relevant CMMs, and if they choose to implement EM in accordance with these standards in order to fulfill the data requirements of SPRFMO CMMs, electronic monitoring shall be used to complement the required level of human observer coverage and the required tasks to be performed by these human observers.

EM minimum standards and minimum data fields

6. EM equipment shall operate from port to port during a fishing trip, automatically and autonomously collect EM records to generate the required EM data, and shall be tamper-evident (i.e., any attempts to tamper with the equipment will be detectable to the EM service provider/vessel owner and reported to the respective vessel flag authority).

7. The minimum technical requirements, performance standards, and activities that shall be covered under EM and captured by the camera(s) are provided in Annex 2. General recommendations for configurations of EM equipment (e.g., camera placement and subsequent views) for each vessel type, are also in Annex 2.

8. The minimum data fields that shall be collected by EMS for each vessel type are provided in Annex 3.

Other Program requirements

Vessel Monitoring Plan (VMP)

9. If a Member or CNCP intends to generate data via EM to fulfill the data requirements of SPRFMO CMMs, such a Member or CNCP shall develop an EM Vessel Monitoring Plan (VMP) for each vessel, or groups of vessels (e.g., all squid jiggers, or all long-line vessels, or all long-line of a certain size range, etc.) fishing for species under the jurisdiction of SPRFMO, flagged to the Member or CNCP and on which EM equipment is to be operated and applying the SPRFMO minimum standards for EMS. The VMP shall describe the configuration, components and installation of EM equipment on each vessel, and this configuration should be capable of collecting EM records consistent with all relevant minimum standards and technical specifications in this document. A copy of the VMP approved by the flag should be maintained aboard each vessel at all times when EM equipment is deployed to monitor vessel's activities. The VMP requirements are detailed in Annex 4.

10. Any proposed modification to the VMP, including EM equipment shall be submitted to the vessel flag authority or its designated institution for approval, and promptly notified to SPRFMO.

Data management

11. The requirements applicable to Members and CNCPs for data storage and retention, data transmission or retrieval and data review and reporting are detailed in Annex 5.

Obligations of Members and CNCPs

12. Members and CNCPs that choose to implement EM to meet the data requirements of SPRFMO CMMs, shall ensure that the Masters of vessels required to carry an EM system by the relevant Member or CNCP:

    a. not take a vessel out of port if the EMS is not capable of operating properly in the Convention Area unless, the flag Member or CNCP authorizes the Master to do so and ensures that any relevant data collection or other SPRFMO obligations, such as minimum observer coverage requirements, can be met through other means;

    b. in case the EMS malfunctions, report the malfunction, including the display of any critical warning, to the flag Member or CNCP competent authorities, or its designated institutions, through automatic real time notification of the malfunction or manually, within a maximum of [48] hours [or as soon as practicable];

    c. provide on-board physical access to the EMS components and to physical or electronic copies of the approved VMP if requested by a flag Member or CNCP authorised observer and/or inspection personnel;

    d. ensure that, in accordance with the VMP and the minimum areas of vessel coverage as specified in Annexes 2 and 3, the cameras have an un-obstructed view, and following pre-established protocols, the camera lenses are kept clean;

e. ensure that the handling of the catch and other vessel operations does not hinder the proper identification and estimation of the catch composition by the onboard EMS, including by-catch;

f. ensure that the transmission or retrieval of EMS data is carried out in accordance with the provisions of Annex 5;

g. ensure that unless authorized and instructed by the flag Member or CNCP to take a specific action, the EMS is not tampered with (e.g., disconnect the system, rearrange, or obstruct the view of the cameras, disconnect cameras or sensors, switch-off the onboard EMS manually, intentionally break the system, etc.).

13. Members and CNCPs that choose to implement EM to meet the data requirements of SPRFMO CMMs, shall also ensure:

a. that the fishing vessels flying their flags meet the EMS minimum standards and requirements established in this CMM;

b. that domestic EM programs are developed, designed, implemented, and managed in a manner that ensures they are independent, transparent, and accountable, in accordance with requirements set out in this CMM;

c. that the analysis of the EM data is done by independent companies authorized by Members or CNCPs or by the institutions or authorities of Members or CNCPs, with the necessary knowledge, skills and technical abilities to ensure effective data analysis, including sufficiently accurate species identification;

d. that rules and procedures are established in case of EMS failure, including to ensure that any relevant data collection or other SPRFMO obligations, such as minimum observer coverage requirements, can be met through other means;

e. that appropriate follow-up is undertaken if potential infringements of SPRFMO conservation and management measures are detected through the Member or CNCP's EM program.

14. A Member or CNCP that chooses to implement an EM program for vessels operating in SPRFMO fisheries to generate data to fulfill the data requirements of SPRFMO CMMs shall develop an EM domestic program and submit a description of that program to the SPRFMO Secretariat. The EM domestic program shall meet the requirements in this CMM and the EM program description shall include at least the following information:

a. example VMPs for each fishery, fishing gear, and fleet type used in the program;

b. responsibilities of fisheries authorities and vessel owner/crew with respect to installing and maintaining equipment, including routine cleaning of cameras, and responses to mechanical or technical failure of the EMS;

c. methods for EM record review;

d. protocols for EM record and EM data storage, retention, and retrieval; and

e. a list of any SPRFMO measures for which EM will be used by the Member or CNCP to meet the requirements of SPRFMO CMMs for monitoring compliance, and the protocols for reporting and following up on potential infringements detected by EM.

15. The EM program description required in paragraph 14 above shall be submitted to the SPRFMO Secretariat [and approved by the Commission] before a Member or CNCP's EM program may be used to fulfill a Member or CNCP's data requirements.

16. The Secretariat, [in consultation with the WGEMS as appropriate,] shall evaluate within [30] days of receipt, the EM domestic program descriptions for the inclusion of the required elements specified in paragraph 14 and share its assessments with the Commission [and the Commission will decide whether to grant interim approval to operate. This decision may be circulated for intersessional decision, consistent with the SPRFMO Rules of Procedure Regulation 7, at the discretion of the Chair, depending on the timing of the assessment results.] Members and CNCPs shall report any changes to their EM domestic programs to the SPRFMO Secretariat whenever such changes occur. If such changes result in a deficiency of a required program element the Secretariat will inform the Commission.

17. A Member or CNCP that chooses to implement EM in its fisheries to generate data to fulfill the data requirements of SPRFMO CMMs, shall also:

a. when EM is used to fulfill the data requirements of SPRFMO CMMs, report to the SC each year, using the electronic formats that are developed by the SC, the EM data collected through domestic EM programs, in line with procedures in place for other data reporting requirements and consistent with domestic confidentiality requirements; and

b. report to the Commission in its CMS Report other relevant information on the results of the implementation of its EM domestic program during the previous year, including, at least, the installation coverage of the fleet, the EM record coverage by vessels or fishing effort; the EM coverage levels achieved by fishery and gear type; details on how those coverage levels were calculated; and, where appropriate, information on compliance monitoring.

c. provide the data in Annex 3 collected by their EM domestic programs in a standardised format, to be included in the SPRFMO Observer/EM Database. Specifications and standards for data submissions are in Annex 5. EM data will be submitted in Microsoft Excel format, JavaScript Object Notation (JSON), or in such other machine-readable format as the Secretariat may prescribe following

consultation with the Scientific Committee. In the first 2 years after adoption of these standards Members and CNCPs may submit data derived from EM as soon as practicable. After 2 years Members and CNCPs will provide by 30 September, their previous (January to December) year's data, consistent with the deadline for the SPRFMO Regional Observer Program.

Commission and Subsidiary Body roles and responsibilities

18. The [WGEMS][Commission] shall:
    a. review, with assistance of the Secretariat where appropriate, the EM domestic program descriptions submitted pursuant to paragraph 15, as well as the implementation of those programs and, if appropriate, suggest improvements and adjustment to such programs to ensure that SPRFMO scientific data collection and/or compliance monitoring requirements are met or that the EMS standards followed by the domestic program are, with due consideration to the development status of Members and CNCPs, equivalent to those set out in this CMM;

    b. work with the Secretariat to develop an EM program description template and checklist to facilitate evaluation of EM program descriptions;

    c. Work with the Secretariat to develop, within 2 years of entry into force of this CMM, an accreditation procedure for domestic EM programs with a goal of seeking consolidation with the accreditation procedure for the observer program.

19. The Compliance and Technical Committee shall:
    a. address issues such as frequent or systemic technological EM System failure by suggesting changes to technical standards or the approval or accreditation processes;

    b. assess, via the existing compliance monitoring review process, whether appropriate follow-up investigations are undertaken by responsible Members and CNCPs for potential compliance issues related to this CMM or of other SPRFMO CMMs detected via EM.

20. The Scientific Committee shall:
    a. evaluate the scientific data collected by EM domestic programs and, if appropriate, suggest improvements and adjustments to ensure that SPRFMO scientific data collection requirements are met;

    b. review rates of EM Coverage to ensure they are sufficient to achieve robust data collection for catch of target and non-target and associated species; and

    c. recommend to the Commission any modifications or additions necessary to the priorities and objectives of the SPRFMO EM Program with regard to the collection and reporting of scientific data.

21. The Commission may:
    a. explore the availability of sufficient financial resources to support, where needed, the effective introduction and implementation of SPRFMO's EMS program

requirements, standards and specifications contained in this CMM, including by developing Members and CNCPs;

b. engage in coordination on EM activities and programs with other RFMOs and other relevant fisheries management organisations;

c. delegate the responsibilities in subparagraphs a and b to an appropriate subsidiary body.

Secretariat roles and responsibilities

22. The Secretariat shall:

a. review[, with assistance of the WGEMS or another Commission body where appropriate,] the EM domestic program descriptions submitted pursuant to paragraph 15, following the process described in paragraph 16;

b. communicate with the Members and CNCPs implementing EM domestic programs to ensure that they understand the applicable SPRFMO reporting obligations;

c. summarize and provide Annual Reports to the Commission about the progress of Member and CNCPs in implementing EM domestic programs;

d. compile and disseminate accurate and complete EM data to ensure that the best scientific evidence is available, while maintaining confidentiality where appropriate. In doing so, the Secretariat is to follow the procedures specified in CMM 02-2025 Section 6;

e. explore the possibility of developing a system, such as an Application Programming Interface, to automate EM data submission workflow for both Members and CNCPs and the Secretariat;

Periodic review

23. The Commission shall review this CMM 4 years after adoption and as needed thereafter to evaluate its effectiveness in fulfilling its purpose and consider the need for revisions, taking into account, *inter alia*, relevant information provided by Members and CNCPs on the introduction and implementation of their EMS domestic programs as well as any new technological developments.

Entry into force

24. Members and CNCPs may continue using their own [approved but] non-accredited EM domestic programs to generate data to fulfill the data requirements of SPRFMO CMMs until [31 December 2030]. From [1 January 2031] Members and CNCPs shall only utilize EM domestic programs accredited by SPRFMO to fulfill the data requirements of SPRFMO CMMs.

ANNEX 1 - EMS terms and definitions

Electronic Technologies (ET): any electronic tool that is used to support fisheries-dependent data collection, both on shore and at sea, including electronic reporting (ER) and electronic monitoring (EM).

Electronic Reporting (ER): the use electronic systems (application, software, form or file) to record, store, receive and transmit fisheries data.

Monitoring: the requirement for the continuous collection of fishery-related data.

Electronic Monitoring (EM): the use of electronic devices to record fishing vessel's activities using video technology linked to a Global Position System (GPS) or its equivalent, which may include sensors.

Electronic Monitoring System (EMS): the system comprising the vessel and shore-based components for collecting, transmitting and reviewing EM records, reporting of EM data and implementing an EM Program.

EM Domestic Program: a process administered by a national or regional administration that regulates the use of EMS on vessels to collect and verify fisheries data and information responsible through an implementation of an EMS in a defined area and/or fishery.

EM Program standards: the agreed standards, specifications and procedures (SSP) governing the establishment and operation of an EM Program, applicable to all components of the EMS.

EM data requirements: the agreed subset of data requirements by the SPRFMO Observer Program that can be collected via EMS.

EM records: Electronic data, including imagery and sensor, and positional data collected by EM equipment that can be reviewed to produce EM data.

EM data: processed/analysed data produced through review of EM records that conforms with the EM data standards.

EM equipment: a network of electronic cameras, sensors, and data storage devices installed on a vessel and used to record the vessel's fisheries-related activities.

Vessel Monitoring Plan (VMP): The vessel's EM equipment characteristics and how the vessel's EM equipment is installed and configured to monitor fishing activities and meet the EM Program Standards and EM Data Requirements.

EM review: the review of EM records by EM observers/reviewers to produce EM data.

EM observer/reviewer: a person qualified to review EM records, store and produce EM data in accordance with the EM Data standards and analysis procedure.

EM review system: application software used by the EM observer to review the EM records and produce the processed EM data as per the EM data standards.

EM review center: local, national, or regional office facility where EM records are received and reviewed to produce and store EM data.

EM review provider: a third-party provider of EM review services to review EM records to produce EM data. The same third-party organization can provide both the EM equipment and EM review services but they can also be supplied by different providers.

EM installation coverage: the proportion of vessels by fleet that has EM equipment installed that is operational.

EM record coverage: the proportion of fishing effort for which EM records are collected by installed EM equipment.

EM coverage: the proportion of fishing effort for which EM records are reviewed to produce EM data.

EM service provider: a third-party provider of EM equipment (and/or system), technical and logistical services to maintain the EM equipment and monitor its proper functioning.

Fishing Activities: any action related to the catching, taking, or harvesting of fish and other marine resources, including the preparatory steps and post-harvest handling.

Fishing activities: any action related to the catching, taking, or harvesting of fish and other marine resources, including the preparatory steps and post-harvest handling.

Fishing trip: a voyage by a fishing vessel, for the purpose of catching, taking, or harvesting fish in the SPRFMO Convention Area, starting when the vessel departs from port, including all times that it is in the Convention Area and ending once it enters port.

ANNEX 2 - Minimum technical requirements, performance standards, camera view of fishing activities under coverage by EMS, and recommended configurations for EM equipment for each vessel type

EM equipment

1. The EM system and associated equipment used to meet the requirements of these standards must have sufficient specifications (e.g., image resolution, frame rate, user interface) to enable, and must be configured to:
    a. continuously record and store vessel location (latitude/longitude coordinates), speed, course, and records from any sensors used to trigger image collection (e.g. hydraulic and winch activity) for the entire fishing trip;

    b. allow the identification of the time, date, and location of all fishing activities, bycatch, or discard events;

    c. record and store image records from all fishing activities;

    d. Allow the vessel operator to test and monitor the functionality of the EM system prior to and during the fishing trip to ensure it is fully functional;

2. The EM equipment shall be protected against onboard power outage, with a backup power system capable of operating until the vessel power is restored (e.g., 30 minutes). It should also be capable of saving EM records collected when the vessel power is down for longer periods than the backup system was designed to withstand.

3. Digital video is typically preferred for capturing information during the different phases of vessel activity, but still images can also serve as a viable option, especially due to limited storage capacity. An optimal configuration may involve a camera setting, using video for specific areas, cameras, or moments, while utilizing still photos for others.

4. EM records shall include, at a minimum, location, date, and time stamps, and to the extent possible, vessel ID, and integrate with other data collection and monitoring tools (e.g., sensors).

5. The onboard interface shall include an on-board screen, or equivalent interface, to allow verification by the skipper/crew on the correct functioning of the EM equipment.

6. The EM provider should ensure that radio frequency interference from EM equipment with other on-board vessel communication, navigation, safety, geolocation devices or fishing equipment is prevented.

7. EM Equipment shall be tamper-evident/resistant and record automatic alerts which should be provided to the appropriate Member or CNCP point of contact and EM provider in near real-time in cases of malfunctions, manual activation/shutdown, manual data input, external data manipulation, or attempts to tamper with the equipment or EM records. If these recorded automatic alerts cannot be sent in near real-time to the appropriate Member or CNCP point of contact and EM provider they shall be provided as soon as possible, along with other EM records at the end of the corresponding trip. It should also be possible for

data recording to be controlled manually, but only in case the EM equipment fails to start or stop automatically, and any manual activation should trigger an automatic alert. Manual shutdown should not be permitted.

Cameras

8. Cameras shall be sufficient in number and quality to meet the data requirements of these standards, with high-resolution images that allow the identification of species, specific fishing activities including bycatch, discards and the vessel's surroundings.

9. Onboard EM equipment components shall be sufficiently dust and water resistant and durable enough to operate reliably under the range of conditions expected in their location on vessels.

10. Cameras shall be capable of recording video and/or still images in Full High Definition (FHD), 1080p and 30 frame per second (FPS). The resolution, frame rate, and capture intervals set for individual cameras shall achieve the purpose of the individual camera in capturing records sufficient to generate the required data. For cameras used for species identification, video should be set at a minimum resolution of 720p, with a minimum frame rate of 5 FPS. Still images shall have a minimum capture interval of no more than 1 second and a resolution of no less than 2MP.

11. Placement of cameras shall provide clear and unobstructed views of the areas that are being covered.

12. On jigging vessels the cameras shall provide, at a minimum, a view of all hooked fauna, both those brought aboard the vessel and, when possible, those discarded or released without first bringing them on the vessel. Cameras shall also provide views of products entering post-production storage areas in order to facilitate counting of cases or other containers for catch estimation. Descriptions and diagrams of example camera locations for jigging vessels are provided in Table 1 and Figure 1.

13. Required camera views for other vessel and gear types will be developed at such time as the Commission decides to allow the use of EM to fulfill data requirements for those vessel and gear types.

14. Cameras should be able to record activities in low and very bright natural light conditions (low and high contrasts). Nocturnal fishing activities involving species captured should be illuminated with sufficient lighting, and image quality should be tested to ensure there is not excessive glare.

Sensors

15. EM equipment may also include sensors for recording non-visual data (e.g., vessel movement, hydraulic pressure, environmental information), and also possibly mechanisms for activating/disactivating cameras so as to focus visual data collection during activities of interest.

16. A GPS sensor or equivalent shall be capable of automatically recording the position and, unless the EM equipment uses cameras that will record continuously, the speed and course of the vessel.

Data storage

17. EM equipment shall include sufficient capacity to store all required EM records, including images, GPS (or equivalent) records, position, date, time, vessel name and sensor information where applicable at a minimum, for the duration of a fishing trip.

18. Vessels shall have onboard enough blank data storage devices (preferably solid-state drives) in case these must be replaced at sea. A specially trained crew member may need to replace the devices during a fishing trip if the data storage capacity is exhausted, always in coordination with the EM service provider.

19. EM equipment should include separate duplicate backup devices, to ensure that data are not lost if one device fails.

Compatibility

20. EM data shall be submitted to SPRFMO in a format compatible with SPRFMO databases and IT resources (e.g., data structure, units, species ID/other fishing activity codes, etc.). Recorded imagery should be recorded in a widely used and accessible video or image file format, such as MP4 or JPEG.

21. All EM Records generated by the EM system shall be compatible with EM analysis software being used by the EM Review Center where EM Records will be sent to generate EM data.

EM equipment maintenance

22. At sea, all maintenance, repairs and replacement activities of EM equipment shall be conducted by a designated trained vessel crew member(s), only in coordination and when instructed to do so remotely by the EM service provider.

23. On land, all maintenance, repairs and replacement activities of EM equipment shall be conducted by a technician in coordination with EM service provider.

24. Each vessel shall have a designated crew member responsible for routine camera lens cleansing, per a specific protocol, to ensure the clarity of EM records. Appropriate cleaning materials must be used to avoid lens damage and should always be available onboard.

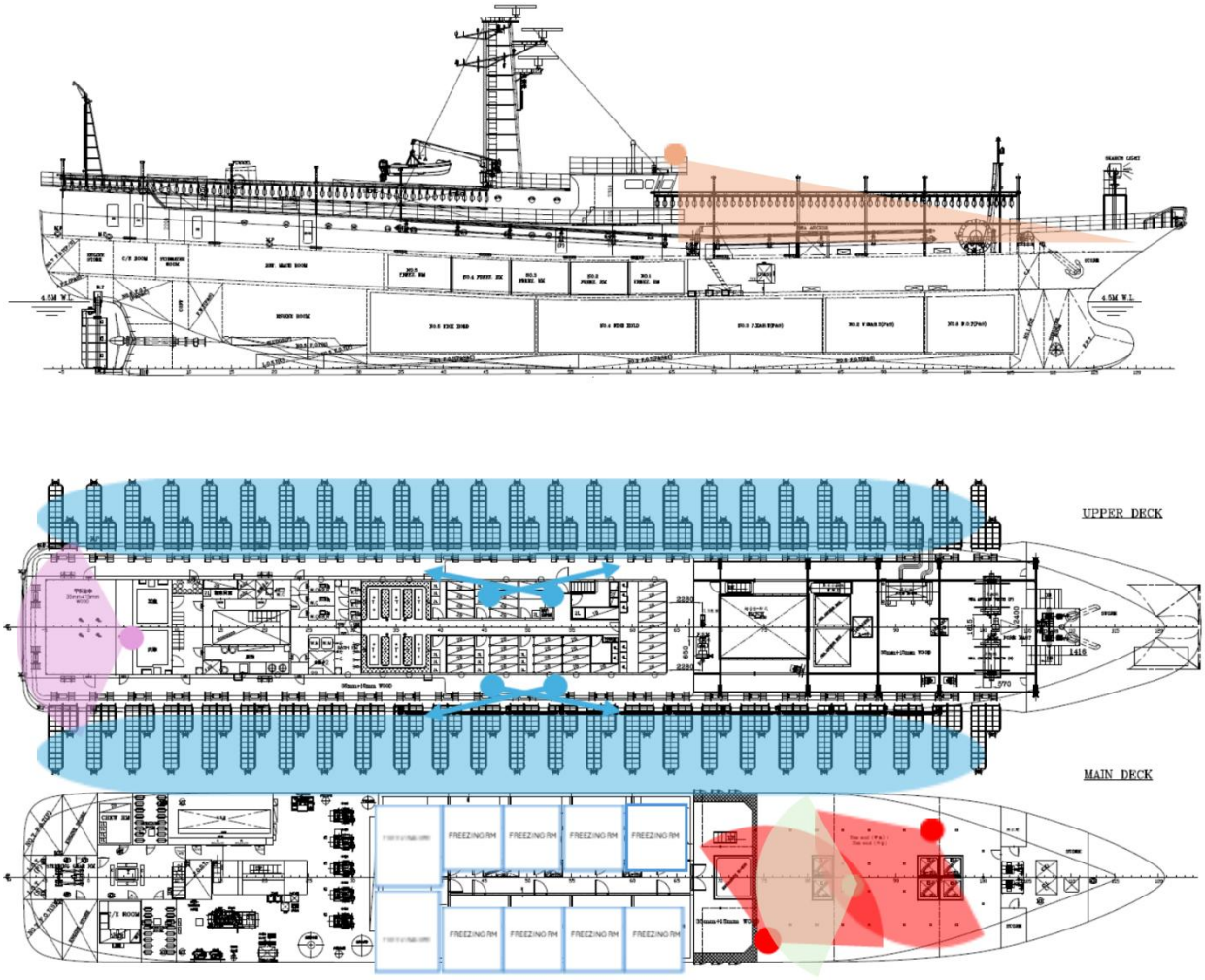
TABLE 1. An example for the location of cameras in jigging vessels:

- One camera (e.g., 105°) on bridge roof, covering the forward upper deck, starboard and port areas, and part of the bow, thereby providing an additional view of fishing activities.
- One camera (e.g., 105°) at the stern of upper deck, covering fishing activities. (Optional, if jiggers are located at the stern)
- Two cameras (e.g., 105°) or 1 camera (e.g., 180°) located at the port side of upper deck, covering fishing activities.

- Two cameras (e.g., 105°) or 1 camera (e.g., 180°) located at the starboard side of upper deck, covering fishing activities.
- Three cameras (e.g., 105°) on the work deck: two cameras cover the catch handling process, and one camera covers the entrance to the freezing rooms and fish holds.

Example locations for other vessel types will be developed at such time as the Commission decides to allow the use of EM to fulfil data requirements for those vessel types.

Figure 1. Example camera placement for jigging vessels:



ANNEX 3 - Minimum data requirements for vessel type

Taking into account CMM 02-2025 Annex 8.

Table 1: Vessel Data to be Collected via EM for Each Trip. Vessel data must be reported in a way that links the vessel data to data required in Tables 2, 3, 4 5, 6, and 7.

The following vessel data are to be collected for each observed trip:	Comments:
Trip ID;	As metadata
SPRFMO ROV Unique ID;	As metadata

Current vessel flag;	As metadata
Name of vessel;	As metadata
UVI (Unique Vessel Identifier) / Lloyd's / IMO number;	As metadata

Table 2: Catch & Effort Data to be Collected Daily for Jigging Fishing Activity

The following data are to be collected for each observed day of squid jig effort:	Comments	Alternate Source, if applicable
Trip ID;	As metadata	
SPRFMO ROV Unique ID;	As metadata	
Current vessel flag;	As metadata	
Name of vessel;	As metadata	
UVI (Unique Vessel Identifier) / Lloyd's / IMO number;	As metadata	
Fishing start date and time (UTC);		
Fishing end date and time (UTC);		
Position at start of drift (1/10th degree - decimal) latitude and longitude;		[Increase VMS reporting interval to 30 minutes]
Position at end of drift (1/10th degree - decimal) latitude and longitude;		[Increase VMS reporting interval to 30 minutes]
Number of hand jig lines;		
Number of single jig machines;		
Number of double jig machines;		
Number of jigs per line;	[Not required to be collected via EM, but required to be included in submitted data.]	[Fishing Activity Data]
Estimated catch of all species (FAO species code) retained on board, split by species, in live weight (to the nearest kg);	[May estimate by counting cases or other containers of known weight moved into storage/processing areas.]	
[Estimated catch of all species (FAO species code) discarded, split by species, [in live weight (to the nearest kg)][in number of individuals], including all benthic taxa;]		
If any marine mammals, seabirds, reptiles or other species of concern were caught, report as per		

requirements described in Table 6.		

Table 3: Catch & Effort Data to be Collected via EM for Trawl Fishing Activity
Minimum data fields for trawl fishing activity will be developed at such time as the Commission decides to allow the use of EM to fulfill data requirements for that activity.

Table 4: Catch & Effort Data to be Collected via EM for Purse Seine Fishing Activity
Minimum data fields for purse seine fishing activity will be developed at such time as the Commission decides to allow the use of EM to fulfill data requirements for that activity.

Table 5: Catch & Effort Data to be Collected for Bottom Long Line Fishing Activity
Minimum data fields for bottom long line fishing activity will be developed at such time as the Commission decides to allow the use of EM to fulfill data requirements for that activity.

Table 6: Data to be Collected on Incidental Captures of seabirds, mammals, reptiles (turtles) and other species of concern

The following data are to be collected for all seabirds, mammals, reptiles (turtles) and other species of concern caught in fishing operations:	**Comments:**	**Alternate Source, if applicable:**
Trip ID	As metadata	
SPRFMO ROV Unique ID;	As metadata	
Current vessel flag;	As metadata	
Name of vessel;	As metadata	
UVI (Unique Vessel Identifier) / Lloyd's / IMO number;	As metadata	
Species (identified taxonomically as far as possible, or accompanied by photographs if identification is difficult) [and [estimated] size];		
Count of the number of each species caught per tow or set, or in the case of jigging, per drift;		
Fate of bycaught animal(s) (retained or released/discarded);		
If released, life status (vigorous, alive, lethargic, dead) at time		

of release;		
Record the type of interaction (hook/line entanglement/warp strike/net capture/other).		
Record sex of each individual for taxa where this is feasible from external observation, e.g. pinnipeds, small cetaceans or elasmobranchii species of concern.		
[Record the length of each individual (cm), with record of the type of length measurement used. Measurement precision and type should be determined on a species-by-species basis.]		
Record the life-history stage of each individual where this is feasible (i.e., juvenile/adult).		

Table 7: Detection of Fishing in Association with Vulnerable Marine Ecosystems
Minimum data fields for detection of fishing in association with vulnerable marine ecosystems may be developed at such time as the Commission decides to allow the use of EM to fulfil data requirements for fishing activities that occur in association with vulnerable marine ecosystems.

ANNEX 4 - Description of the EM Vessel Monitoring Plan (VMP)

The VMP shall meet the following conditions:

1. The VMP shall be developed for each vessel or group of vessels on which EM equipment is to be installed and shall be delivered to the flag Member or CNCP competent authorities.

2. The VMP shall be developed in collaboration with the EM service provider, vessel owner and relevant Member or CNCP fishing authorities.

3. A survey of each vessel or example vessel for a group of vessels intended for EM equipment installation shall be conducted by either the EM provider or flag Member or CNCP fishing authorities. During this survey, the following aspects will be considered in the development of the VMP, aimed at ensuring that the system meets the minimum data collection requirements outlined in Annex 2:
    a. Camera placement and settings.
    b. Number of cameras to be installed to ensure optimization of the view of the catch-handling area.
    c. Key areas to be surveyed are catch handling areas for species identification and storage of the individual and areas of discards or release.

4. The minimum sections to be contained in a VMP shall include:
    a. Contact information: current contact information for the vessel owner, vessel operator and EM service provider as long as the contract lasts.
    b. General vessel information: basic information about the vessel and its fishing activities and operations (e.g., vessel name, registration number, target fishery, fishing areas, fishing gear, LOA, etc.).
    c. Fishing gear type and configuration:
    d. Vessel layout: equipment of the vessel with detailed information, plan of the vessel disposition and different areas (deck, processing, storage -including number of wells, etc.).
    e. EM equipment set up: description of the settings of the EM equipment, such as time running, number of cameras, settings of the cameras (frame rate and resolution), and areas covered, time recording for each of the cameras, number of sensors, where applicable, software used, control box disposition, etc.
    f. Catch and discard handling procedures: description of the crew and their operations, including protocols for handling both targeted and incidental catches and discards that facilitate or allow for EM record collection.
    g. An example view from each required camera view.

5. Any physical changes to the vessel, modifications in vessel categorization (fleet segmentation), or adjustments to the catch handling deck, including those result in the vessel no longer belonging to its original group, should be reported to the Flag Member or CNCP authorities. Subsequently, the VMP should be updated accordingly before the commencement of the next fishing trip.

6. The VMP shall be signed off by the vessel owner and approved by the Member or CNCP competent authority or its designated institutions.

7. The EM equipment shall not compromise vessel stability, posing risks to vessel operations, crew safety, or the environment. Additionally, it shall not hinder the vessel's safe navigation.

8. An example template of a VMP is presented below. Members and CNCPs may choose another format of a VMP as long as it contains the minimum requirements described in paragraph 4 of this annex.

Example EM Vessel Monitoring Plan Part A

(Should be provided by the vessel owner to the competent authority of flag Member or CNCP *or its designated institutions)*

1. Information provided by the owner of the vessel

External registration:		Main fishery(es):	
Vessel name:		Gear type(s):	
SPRFMO vessel register No.:		Crew size:	
IRCS:		May carry an observer:	
Port base:		Owner(s) representative:	
Vessel length (m):		Phone No.:	
Vessel type:		Email:	
Net length (fathoms):		Mainline length (fathoms):	
Net depth (strips):		Hook type:	
Brail capacity (mt):		Branch line material:	

2. Description of the crew fish handling and any other useful details

3. If available, copy or image of the vessel general arrangement plan

4. General layout and handling (not necessarily to scale)

Sensor recording, where applicable:	Description of the settings:
Video recording:	Description of the settings:

5. General remarks

Part B

(Responsibility of the flag Member or CNCP *competent authority and to be validated by the flag* Member or CNCP *competent authority)* 1. Vessel image

2. EM equipment configuration

a. System Operation – General Description

b. System Components Location

Control box:	User Interface:

Image of location of the control box	
GPS or equivalent:	GPS details:
Image of location of the GPS or equivalent	

Drum Rotation Sensor:	Drum Rotation Sensor details:
Image of location of drum sensor	
Hydraulic Pressure Sensor (HPS):	HPS details:

Image of location of the HPS	
Sensor XX:	XX Sensor details:
Image of location of the XX Sensor	
Sensor XX:	XX Sensor details:
Image of location of the XX Sensor	

Sensor XX:	XX Sensor details:

Image of location of the XX Sensor	
Sensor XX:	XX Sensor details:
Image of location of the XX Sensor	

Camera 1 - Deck Camera	
Image of Location of Camera 1	View and Objectives:
mage of Location of deck camera	Camera settings:
Camera 2 - Retain/General View Camera	
Image of Location of Camera 2	View and Objectives:
Image Retain/General View Camera	Camera settings:
Camera 3 - Sorting Belt Camera	

Image of Location of Camera 3	View and Objectives:
Image Sorting Belt Camera	Camera settings:

Camera 4 - Discard Camera	
Image of Location of Camera 4	View and Objectives:
Image Discard Camera	Camera settings:

Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives:
Image of XX Camera	Camera settings:
Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives:
Image of XX Camera	Camera settings:
Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives:
Image of XX Camera	Camera settings:
Camera XX - XX Camera	

Image of Location of Camera XX	View and Objectives:
Image of XX Camera	Camera settings:

Control Box Setting Summary:	Camera Setting summary:
Main configuration screen	

Sorting Area Measurement Details:

Part C

(To be completed by the EM service provider)

1. EM User Guide

a. Description on how to retrieve memory devices

b. Description on how to power up the system

c. Description on how to do a function test

2. Vessel-specific handling protocols

Description of any special protocols that may apply to the vessel referred in the VMP.

a. Description and diagrams of control points with specific procedures carried out. For each area description, there must be a protocol on how to ensure the catch remains in camera view.

Part D

(To be completed by the EM service provider)

List of EMS service providers contact information:

Name and Last Name	Phone	Email	Office address

Part E

(To be completed by the vessel owner and the EM service provider)

This part should certify that the vessel owner/operators have been trained in and understand the function and operation on the EMS installed on the vessel, and that the operator agrees to comply to the VMP.

Vessel owner/operator	EM service provider
Full name:	Full name:
Signature:	Signature:
Date and time:	Date and time:

ANNEX 5 - Data Storage, Retention, Transmission, Retrieval, Review, and Reporting

Data transfer

1. The vessel flag Member or CNCP authority shall allow for the recovery and secure transmission of EM Records at the end of each trip.

2. A detailed protocol on how to retrieve the data from the vessel to the authorities or to the EM review center should be established and agreed on in the VMP by both the vessel owners and the vessel authority.

3. When EM records are transmitted (via WI-FI, mobile data network or satellite, or hard disk delivery), the transmission of the data should be done at the end of the fishing trip where possible. If not possible the data shall be securely stored and transmitted without delay/at the earliest opportunity.

4. Irrespective of the data transfer method used for EM records, and according to the recommendation in Annex 2, the transmission should ensure the information is properly encrypted. Also, an encrypted storage device containing the same EM record information should remain on board as backup. The deletion of records from the vessel's backup devices should only occur once the EM records have been converted to EM data at the EM review center.

Data review

5. EM data shall be generated by the program that monitored that trip. Provided that standard protocols and procedures are followed, Members or CNCPs may choose whether to contract the work out through a commercial EM review service provider, authorized contractor, or do it themselves.

6. EM equipment should include separate backup devices, to ensure that data are not lost if one device fails.

EM data storage and retention

7. All information regarding fishing operations of the vessel shall be treated as confidential by SPRFMO and subject to SPRFMO confidentiality rules.

8. Procedures for where, how, and how long the EM records will be stored after EM analysis should be specified by the flag Member or CNCP. Storage decisions should be based on the EM program's goals and the staff who will need to access monitoring records, at what frequency, and for what purpose. EM records and associated EM data MUST be retained in accordance with any SPRFMO audit requirements.

Data analysis and reporting standards

Training

9. The Member or CNCP should design and organize training courses for EM analysts, with input from the SPRFMO Secretariat, EM service providers and other experts, where

necessary.

10. EM analyses shall only be conducted by qualified EM analysts, ideally possessing some experience in fishing activities, with skills on how to use the dedicated analysis software and observe and accurately record data to be collected under the program. EM analysts shall not be employees of a fishing vessel company involved in the observed fishery or have other direct conflicts of interest.

Automation

11. When feasible, make EM data generation automatic and user-friendly to expedite EM analysis and directly include information in EM data or reports.

12. EM records subject to EM analysis shall contain at least: the trip ID; SPRFMO ROV Unique ID; current vessel flag; name of vessel; UVI (Unique Vessel Identifier) / Lloyd's / IMO number; camera number; geolocation data (date, time (UTC) latitude and longitude); sensor data where applicable; camera recording status and EM equipment system status, where available; and images.

Data quality

13. The EM analysis should involve dedicated software, which shall permit the analysis of all the stored data, images, and sensor data where applicable, in a synchronized way. Members or CNCPs shall ensure that data analysis procedures ensure traceability and effective analysis of data and routines to flag potential errors, and digital measuring tools.

14. The EM analysis software shall allow reporting the mandatory minimum data fields requirements established in Tables 1 - 6 of Annex 3 (Areas of fishing activities under coverage by EMS and minimum data requirements for vessel type). It may also allow reporting of the voluntary data fields.

[Conversion factors]

15. [Standardized species-specific length-weight and weight-number conversion factors, based on peer-reviewed research results and/or empirical data, should be developed by the SPRFMO Secretariat, endorsed by the SC and adopted by the Commission, and updated as necessary.]

Format

16. Standard formats applicable to human observers reporting should be used for generating EM data fields (e.g., dates as DDMMYY, latitude and longitude in decimal units, speeds in knots, weights in kg, lengths in centimeters) and creating resulting EM data files (Microsoft Excel format, JavaScript Object Notation (JSON), or in such other machine-readable format as the Secretariat may prescribe following consultation with the Scientific Committee).

Reporting procedure

17. EM data may be submitted via a dedicated cloud-based portal which may be developed by

the SPRFMO Secretariat, or other appropriate means. The portal should be as user-friendly and automated as possible, and include quality control procedures (e.g., format checking, error flagging), as well as automatic reminders for the timely submission of EM data.