

Minimum Standards and Program Requirements for EMS onboard Longline vessels

(Submitted by the European Union)

(Based on EMS JUN 03A/i2022 as amended by the Drafting Committee)

1. Background

During the first meeting of the Working Group on Electronic Monitoring Systems (EMS) on 28 February 2022, it was agreed to draft the Minimum Technical Standards for the implementation of EMS on longliners.

Several ICCAT Recommendations currently contemplate the use of EMS, in particular the Recommendation by ICCAT to replace the Recommendation by ICCAT replacing Recommendation 19-02 replacing Recommendation 16-01 on a multi-annual conservation and management programme for tropical tunas [Rec. 21-01], the Recommendation by ICCAT on the conservation of North Atlantic stock of shortfin mako caught in association with ICCAT fisheries [Rec. 21-09] and the Recommendation by ICCAT to establish rebuilding programs for blue marlin and white marlin/roundscale spearfish [Rec. 19-05].

EMS is a technology widely used nowadays which can make important contributions to improve the effectiveness of monitoring and control as well as the collection of scientific data. The possible use of this technology has been included in ICCAT Recommendations since 2019.

In this sense, the development of EMS minimum technical standards is a fundamental task to ensure that when these systems are used, there is a guarantee as to their effectiveness in achieving the purposes for which they are intended.

General objectives

This document aims to describe the common minimum technical standards and program requirements for Electronic Monitoring Systems (EMS) for longline fisheries activities that may be implemented by Contracting Parties, cooperating non-Contracting Parties, Entity or Fishing Entities (CPC) operating under the ICCAT framework. The document also describes additional specifications for particular programmatic objectives for the use of EMS (e.g., scientific data collection, compliance monitoring), including those objectives currently required in relevant ICCAT Recommendations.

EMS coverage

All EMS shall collect fishery data and associated metadata necessary to meet the requirements and/or check compliance with the rules laid out in ICCAT conservation and management measure, as well as the needs of the SCRS. When using EMS, the following data shall be recorded by the system:

- a) Vessel track: all EMS shall be provisioned with Global Positioning Systems (GPS) to allow the monitoring of the position, and speed [and course], of the vessel during the route of its fishing operations.
- b) Set location: EMS integrated GPS would allow the coordinates (latitude and longitude) of each of the sets during the fishing trips to be recorded.
- c) Haul back location.
- d) Number of sets.
- e) Date and time of fishing operations
- f) Data allowing estimation of fishing effort (i.e., use of winches used to set and haul the gear, speed of the vessel, etc.).
- g) Recording of the total catch per set: cameras shall be positioned to allow the recording of the number of individuals brought on board during the hauling operation.
- h) Estimation of the species composition: the recording of the hauling operation shall allow the proper identification of the individuals brought on board during the hauling operation.
- i) Data allowing bycatch estimation: camera placement and recording shall allow for proper estimation of bycatch species during a specific hauling operation on a specific set.

- j) Where applicable EMS may be used to monitor full retention/obligation to release certain species: EMS can be used to review the disposition of the species during the hauling operations (e.g., ICCAT Res. 09-07, ICCAT Res. 10-07, etc.).
- k) [Transshipments at sea: where applicable sensor information (i.e., GPS indicating that the vessel is stopped, sensors on cranes or hold hatches indicating that there may be transshipment activity) can trigger cameras and subsequent analysis of the video footage.]

A more detailed analysis of the several data fields to be covered on longline fisheries using EMS are listed under **Annex 2**, distinguishing the requirements of the system in case it is used for science purposes or for compliance purposes.

Vessel areas coverage

Although it will depend on the configuration of each particular vessel, EMS cameras [and where appropriate sensors] shall be installed in order to properly capture all relevant fishing activity, including the following:

1. General view of the fishing deck
[...]
[...]
2. Setting area (usually vessel stern site camera)
3. Catch handling area
4. Hauling area
5. Surrounding water area allowing to monitor discard events

Vessel Monitor Plan (VMP)

As each fishing vessel has a different or unique configuration (even if those vessels are listed under the same fleet segment), each individual vessel on which EMS is to be installed, should develop a unique Vessel Monitor Plan (VMP) that must cover all monitoring needs and protocols. The VMP should allow to adapt the installation to the vessel characteristics and optimize the quality of data and especially the video footage.

1. The vessel monitor plan shall be compulsory for each vessel and shall be delivered to the competent authorities.
2. The vessel monitor plan shall be developed in collaboration with the EMS provider, vessel owner and fishing authorities.
3. A survey of the vessel to have an EMS shall be carried out and the following factors shall be taken into consideration:
 - a) Camera positioning 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 individuals.
 - d) Cameras shall be positioned to allow the assessment of the quantities and species retained onboard.
4. The minimum sections to be contained in a VMP are:
 - Contact information: current contact information for the vessel owner, vessel operator and EMS service provider as long as the contract lasts.
 - General vessel information: basic information about the vessel and its fishing activities and operations (e.g., vessel name, registration number, target fishery, areas, fishing gear, LoA, etc.).
 - Vessel layout: equipment of the vessel with detailed information, plan of the vessel disposition and different areas (deck, processing, storage, etc.).
 - EMS equipment set up: description of the settings of the EMS system, such as time running, number of cameras and areas covered, time recording for each of the cameras, number of sensors, [where applicable], software used, control box disposition, etc.

- Catch handling procedures: description of the crew and their operations (number of fishermen and their job).
 - Any physical changes on the vessel, fishery, categorization of the vessel (fleet segmentation), catch handling deck, etc., should be reported to the Flag State authorities, and the VMP should be updated accordingly before the next fishing trip.
 - A shot and image taken by each camera should be inserted in the VMP.
5. The VMP should be signed off by the vessel owner and finally approved by the Flag State competent authority.
 6. The EMS equipment should not adversely affect vessel stability by posing risk to vessel operations, crew, or environment, nor should it impede the vessel's safe navigation.

A template of a VMP is detailed in **Annex 3**.

2. Basic program requirements

To ensure proper usage of the EMS under the ICCAT Framework by all parties involved:

Obligations of the Master

1. The Master of the vessel shall, within a prescribed period of time [of maximum 24 hours], report to the competent authorities if the systems fails to operate properly at sea or if a critical warning has been displayed.
2. The vessel shall not leave port in case the EM system does not operate properly.
3. The Master of the vessel shall ensure the proper transmission of the EMS data and on board access to the EMS if requested by and ICCAT-authorized observer and/or inspector.
4. If the transmission of the video footage is decided to be:
 - a) Via exchange of hard drive, the operator must ensure the secure and safe delivery of the hard drive to the competent authorities.
 - b) Via satellite or Wi-Fi transmission, the operator must ensure the proper connection for the whole content of the video footage to be delivered to the competent authorities or to the analyst, excepting port Wi Fi infrastructure which is the responsibility of the port authority. If port Wi Fi is unavailable, the operator must ensure footage is properly stored and delivered as soon as reasonably possible. This type of transmission must ensure proper encrypted data, when required/decided by national authorities.
5. The Master of the vessel must ensure that the cameras have an un-obstructed view and to clean the camera lenses, when necessary, following pre-stablished protocols.
6. The Master of the vessel shall ensure that the crew will not change the handling process to ensure the proper identification and estimation of the catch composition.
7. The Master of the vessel (and the crew by extension) shall not tamper with the EMS (e.g., disconnect the system, unauthorized rearrangement of cameras, disconnect sensors [where applicable], switch-off manually, unless so instructed by the authorities, intentionally breaking the system, etc.).
8. If the Master of the vessel is the owner of the data, they shall ensure proper storage of the video and the sensor data [where applicable], for at least 3 years.

Obligations of the CPC

1. In case ICCAT rules require the implementation of EMS, the CPC shall ensure that fishing vessels under its flag comply with the requirements established by the Commission for the purpose of ICCAT EMS implementation.
2. If the CPC applies EMS for compliance purposes, they shall ensure the proper notification and follow-up of the final reports regarding alleged infringements detected using EMS.
3. The CPC shall ensure that the video footage and the analysis of the data retrieved from the vessel is done by companies¹ or by institutions or authorities, with the necessary knowledge or experience to ensure effective data analysis.
4. CPCs shall require EMS analysts to be independent from all vessels and companies operating in the fishery.
5. If the CPC is owning the data of the EMS system, they shall ensure proper storage of the video and sensor data, [where applicable] to allow for historical data audit at least 3 years).
6. If the CPC is the owner of the data, they shall determine who will be the reviewer/analyst of the data.
7. The CPC shall ensure that national EMS Programs are independent, transparent and accountable.
8. The CPC shall document the roles and responsibilities of fisheries government authorities and vessel owner/crew with respect to inter alia installing and maintaining equipment, routine cleaning of cameras, sending storage devices, access to E-Monitoring records and data, responses to mechanical or technical failure of E-Monitoring system, including at sea, or data analysis.
9. CPC shall report to the ICCAT Secretariat, consistent with ICCAT reporting requirements, on their EMS national programmes as soon as they are finalised and upon any substantial changes.

[Rules and procedures should be established for the case the EM system fails]. Additional obligations or tasks for the analysts or EMS providers could be established.

ICCAT roles and responsibilities - ICCAT Commission

- To monitor and provide oversight of the implementation of the existing EMS programs.
- To adopt and revise, when necessary, minimum standards for EMS, technical specifications, and associated data collection.
- [To ensure sufficient financial resources for the effective implementation of ICCAT's EMS requirements including by developing CPCs.] [Note: to be discussed in EMS working Group]

[Note: the following tasks could be entrusted to the EMS Working Group. To be discussed in the EMS Working Group]

- [To review ICCAT's REM programs after an initial period (to be determined by the relevant ICCAT recommendation of implementation.)]
- [To evaluate that EMS CPCs Programs in accordance with ICCAT's EMS minimum standards and recommend improvements and adjustment to the EMS programs to ensure that data and monitoring requirements of the ICCAT Commission are met.]

¹ [These companies must ensure that the reviewers have proper training on the ICCAT Observer Program, training in species identification and proper background on the legal basic concerning the general ICCAT Framework should be a must for the reviewers in order to identify alleged infringements].² Using small cameras should be prioritized. Closure fittings need to be robust and durable.

- [To summarize and provide annual reports about the progress of EMS programs to the Commission.]

ICCAT roles and responsibilities - ICCAT Secretariat

- [To collaborate with the CPCs to ensure that they report effectively.]
- [To engage in coordination on EMS activities and programs with other tuna RFMOs as required by the Commission.]

3. Data management

[...]

[...]

Data storage and retention

Standards for where, how, and how long video footage will be stored after it has been reviewed, should be specified. Storage decisions should be based on the EM program's goals and the personnel who will need to access monitoring records, at what frequency, and for what purpose.

Depending on the program's objectives and standards, footage can range from video of an entire fishing trip to video stills from key fishing events [(e.g., transshipment)]. Once footage is reviewed, it should be stored for at least 3 years.

EM systems should have enough autonomy and capacity to safeguard and store all recorded images and sensor information for at least the duration of a complete fishing trip. Storage considerations shall include the size and number of hard-drives that record the EM data, whether the hard-drives need to be removable, or a cloud-storage service shall be in use, or the amount of time the data shall be stored.

[Standards for where, how, and how long EMS records and other data requirements will be stored, should be specified]. EMS records should have a compatible data output format (including usage of standardized, well-established code lists) to exchange collected information with current ICCAT data reporting format and standards and consistent with ICCAT data rules.

EMS records should contain the following information: EMS Record file name including, at a minimum, the vessel name and vessel ID and trip ID, camera number, geolocation data (date, time (UTC), latitude and longitude), sensor data [where appropriate], [camera recording status, EM system status], images.

Data transmission or retrieval

Once data is collected by EM systems on-board vessels, it will need to be transferred for review and analysis. Three options could be possible to transfer the data:

1. Memory device exchange;
2. Wi-Fi/4G/5G transmission: Wi-Fi transmission, including via mobile data networks;
3. Satellite transmission.

When EM records should be extracted or memory device replaced between trips, traceability of every memory device and information recorded on board should be guaranteed. The chain of custody of the EM system memory device should be assured. For chain of custody assurance and independence, it is necessary that the data are retrieved by a third party with no conflict of interest.

A detailed protocol on how to retrieve the data from the vessel to the authorities or to the data analyst shall be detailed and agreed on the vessel monitor plan by both the vessel owner, the respective authorities and the data analyst.

It should be noted that the transmission of the data should be done at the end of the fishing trip where possible or if not possible (due to port Wi Fi being unavailable, due to low transmission speed, etc.) the data must be securely stored and transmitted without unreasonable delay/at the earliest opportunity. If the transmission of the data is done by satellite or Wi-fi/4G/5G, the transmission should be done at the entry of port without delay.

Data review and reporting

The system should have dedicated software to assist in data review. This software should permit the analysis of all the stored data, images and sensor data, [where appropriate], in a synchronized way. At a minimum, analysis software should allow for the report of the minimum following:

- Identification of fishing operations date/time;
- Identification of set type;
- Estimation of the total catch by set;
- Estimation of target species catch composition and sizes;
- Detection of bycatch species and their fate; and
- Estimation of discards of target species.

When the system is to be used for scientific purposes, data should be submitted in a format that is compatible with, . the ongoing National Observer Sampling Programs (including observer's databases), and RFMO data requirements and templates for data submission.

When the system is to be used for compliance purposes data analysis should be based on risk assessment.. A list of potential non-compliances with ICCAT measures to be verified during the data analysis, should be agreed and made available to CPC appointed analysts. A protocol of reporting of alleged infringements detected using EMS shall be established by the CPCs or ICCAT, and the final report to be submitted to the authorities shall be reviewed and signed by an inspector or fisheries authority.

Minimum technical requirements

A. Minimum requirements for Control Box or EM Control Centre

The EM control centre is an onboard computer that acquires and stores all sensor and imagery footage (modified computer with possibilities to connect a number of different cameras and sensors). The following minimum requirements are required:

- GPS sensor or equivalent. The system must be able to record vessel position, speed, and course at a configurable time intervals from 1 minute.
- Fan-less passive cooling, with high temperature cut out.
- Sufficient data storage capability to store both sensor, [where appropriate], and imagery footage for the entire trip.
- At least one removable/swappable back-up data storage devices to ensure that data are not lost if a storage device fails.
- Where applicable, ability to transfer data to dedicated storage servers through 4G/LTE (prepared for 5G) mobile data connection and/or satellite connection (and possibly Wi-Fi connection, configured to connect to the harbour network when the vessel is docked).
- On-board screen connection for verification, including keyboard and mouse or touch screen.
- UPS (uninterrupted power supply), decreasing the risk of power loss. If possible, allowing the continuation of recording for relevant timespan (for e.g., 15 minutes). Controlled shutdown. Information on the power failure shall be automatically recorded to subsequent notification.
- Possibility for sensor and imagery data to be properly encrypted and compressed where necessary.
- Digital signature (date and time stamp, vessel name, vessel registration and GPS coordinates).
- The EM system incorporates a self-test function to allow remote verification of its functionality at all times. [compliance only, subject to verification against SCRS min standards]
- Near-real-time remote online "health statements" that assure that the data are recorded during the trip, which are sent to the supplier and/or authorities; and alerts when there is evidence of tampering. [compliance only, subject to verification against SCRS min standards]
- Support built in remote access/configuration for system configuration, updates, verification of system health and possible transmission requests of all or parts of recorded sensor data and video footage. [compliance only, subject to verification against SCRS min standards]
- Control box must prohibit tampering with registered vessel information and system setup. Administration rights must be required to access and modify these settings. The EMS should not generate or cause radio frequency interference with other on-board vessel communication, navigation, safety, geolocation devices (e.g., VMS) or fishing equipment.

B. Minimum technical requirements of cameras

The cameras shall be constructed out of material that resist harsh weather conditions on board and can resist tampering². Crew assistance should be required to clean the camera lenses when necessary.

- Type: Digital IP Cameras (IP= Internet Protocol)
- Ingress Protection: IP66 Rating. A higher IP for cameras exposed to heavy weather conditions is recommended
- Cabling: minimum CAT 5e Ethernet cable preferably CAT SFTP cable
- Resolution: minimum 2MP (1080P), depending on the purpose of each camera
- Specified range of fixed and zoom lens option cameras, with replaceable lenses
- Housing: replaceable camera dome/housing glass
- Video:
 - Compression: supports standard video compression formats. Minimum H264
 - [Remote configuration: Note: check technical feasibility] capability to configure the following parameters [both remotely and] on board:
 - FPS (Frames per second) adjustable depending on camera purpose
 - Image resolution
 - Image quality
 - Digital/optical zoom level
 - Automatic switching between day/night lighting conditions. Color / BW. Option for automatic face blurring, where needed. Dynamic face masking is recommended and preferred instead of blanking out parts of the field of view, as this would potentially blank out regions of interest
 - Possibility to set between video and still photographs and to set the time of taking those photographs
 - Measuring capability: capability to measure fish length for relevant cameras

In order to determine the number of cameras needed and the type, the following parameters shall be taken into consideration:

- Distance of the camera to the point of interest
- Aperture of the focal lens
- Required resolution needed for the purpose of the camera

² Using small cameras should be prioritized. Closure fittings need to be robust and durable.

C. Minimum technical requirements for sensors

[Sensors other than GPS are optional]. The minimum requirement for sensors depends on the type of vessel. Sensors must indicate when the gear is used and when fishing activity takes place, including, where appropriate, processing, storage or transshipment. Sensors should facilitate video footage revision and analysis. Several sensors shall be based on a common requirement independently from the type of vessel. The following sensors are recommended:

- Winch rotation with direction detection
- Hydraulic pressure
- Electric current
- Fish hatch/door open/close
- Temperature (fish hauls)
- Power block

Description of data fields to be collected using EMS on longliners

A more detailed analysis of the data fields that should be collected when using EMS are listed on the tables below.

Table 1 shows the data fields for an Electronic Monitoring System used for compliance purposes and **Table 2** shows the data fields for an Electronic Monitoring System used for science purposes.

[...]

[...]

[...]

Table 3 shows the general vessel and trip information and should be collected only when the Electronic Monitoring System scheme specifically requires it. This information is not collected by the EMS system directly and may be collected before or after the trip. The information may be included in the Vessel Monitoring Plan (VMP), attached to the VMP and/or in the post-trip report if the case this trip is evaluated.

Table 1. Data fields for ICCAT longline activities to be collected when an EMS system is to be implemented for compliance purposes.

[...]

Data field name	Data field description
1. Setting information	
<u>Set number</u>	<u>A unique number to be allocated to each individual set. Internally generated. This should be a four digit numerical code beginning 0001. Set numbers should be consecutive from the start of the first line set to the last line set of a particular trip.</u>
<u>Start setting date and time</u>	<u>Date and time the first buoy is thrown into the water to start the setting of the line. Use Coordinated Universal Time (UTC). Specify units (preferably hh:mm and YYYY/MM/DD).</u>
<u>Start setting position</u>	<u>Position in latitude and longitude for the start of the setting operation.</u>
<u>End setting date and time</u>	<u>Date and time the last buoy (usually has radio beacon attached) at the end of the mainline thrown into the water. Use Coordinated Universal Time (UTC). Specify units (preferably hh:mm and YYYY/MM/DD).</u>
<u>End setting position</u>	<u>Position in latitude and longitude for the end of the setting operation.</u>
<u>Use of mitigation measures or techniques</u>	<u>Where there are specific requirements on the use of mitigation techniques or devices in the applicable ICCAT legislation. i.e. Tori lines, low light night setting, branch line weighted, bird scaring lines, hook-shielding devices,...</u>
<u>Vessel speed during setting</u>	<u>Where there are specific requirements on the total number of hooks in the applicable ICCAT legislation. Vessel's average speed during setting (knots). Note: Collect vessel speed from the GPS/VMS several times during the operation and calculate the average.</u>
<u>Line setter speed</u>	<u>Where there are specific requirements on the total number of hooks in the applicable ICCAT legislation. Speed setting of the line setter (metres/second).</u>
<u>Length of mainline set</u>	<u>Where there are specific requirements on the total number of hooks in the applicable ICCAT legislation. Mainline total set length (i.e. the total deployed length of the mainline for the specific set). Usually calculated by multiplying the total time to set the line and the average line setter speed, taking into account any interruption times. This information can be obtained from the Fishing Master and cross checked against observer calculations. Note: specify units (preferably in metres).</u>

<u>Total number of floats set</u>	<u>Where there are specific requirements on the total number of hooks in the applicable ICCAT legislation.</u>
<u>Total number of hooks set</u>	<u>Where there are specific requirements on the total number of hooks in the applicable ICCAT legislation.</u>
<u>Hook type</u>	<u>Where there are specific requirements on the type of hooks in the applicable ICCAT legislation.</u>
<u>GPS information</u>	<u>Including a review of whether fishing activity may have occurred in closed areas or closed periods.</u>
<u>2. Hauling information</u>	
<u>Start hauling date and time</u>	<u>Date and time the first buoy is hauled back on board to start hauling the line. Use Coordinated Universal Time (UTC). Specify units (preferably hh:mm and YYYY/MM/DD).</u>
<u>Start hauling position</u>	<u>Position in latitude and longitude for the start of the hauling operation.</u>
<u>End hauling date and time</u>	<u>Date and time when the last component of the longline gear (usually buoy with radio beacon attached) is hauled back on board. Use Coordinated Universal Time (UTC). Specify units (preferably hh:mm and YYYY/MM/DD).</u>
<u>End hauling position</u>	<u>Position in latitude and longitude for the end of the hauling operation.</u>
<u>3. Catching details</u>	
<u>Set number</u>	<u>Unique number within a specific trip.</u>
<u>Catch number retained on board by species</u>	<u>Record/estimate the number of individuals per species caught and taken on board (for large fish).</u> <u>Analysts should record the species using FAO three figure alpha codes. If species FAO code is not available, record the species scientific name. Record "unknown" for species that cannot be positively identified and give it a reference number. Use the same reference number throughout the trip for that species. Retain a sample and / or take a photograph of the unidentified organism for latter identification.</u>
<u>Length of fish retained on board</u>	<u>Length dependable. The establishment of a calibrated area on the deck is usually necessary. May require the establishment of a protocol, which includes the cooperation of the crew.</u>
<u>Catch weight retained on board by species</u>	<u>Use the size-weight relationship established by ICCAT. For species where this relationship has not been established, indicate the correlation used and cite the source.</u>
<u>Bycatches discarded or released</u>	<u>Where there are specific requirements on discards in the applicable ICCAT legislation.</u>
<u>Condition of bycatches discarded or released</u>	<u>Where there are specific requirements on the condition of the bycatch in the applicable ICCAT legislation.</u>

Table 2. Data fields for ICCAT longline activities to be collected when an Electronic Monitoring System is to be implemented for science purposes.

[The table will be based on the work carried out by the SCRS.]

Table 3. Data fields for ICCAT longline activities. General vessel and trip information. *[A new column could be added describing whether each field is relevant only to science, to compliance or both.]*

Data field name	Data field description
1. Vessel identification	
<u>Name</u>	<u>Vessel full name as recorded on vessel official documentation.</u>
<u>Flag state</u>	<u>Record the name of country in which vessel is registered as shown on its registration documents. Where chartering occurs, record name of the chartering country.</u>
<u>Vessel ICCAT number</u>	
<u>Vessel registration number</u>	
<u>International radio call sign (IRCS)</u>	
<u>Vessel phone, fax and email</u>	
<u>Licensed target species</u>	
2. Vessel attributes	
<u>Tonnage</u>	
<u>Length overall</u>	
<u>Hull material</u>	<u>Record the vessel hull material (s) (steel, wood, aluminium, fibre glass, etc.)</u>
<u>Main engines power</u>	<u>Specify units (HP, Kilowatt or BHP).</u>
<u>Fish storage capacity</u>	<u>The vessel total maximum capacity to store catches. This should include blast freezer(s) capacity. Note: specify units (metric Tons (mT.) or cubic metres (m3)).</u>
<u>Fish preservation methods</u>	
<u>Freezing capacity</u>	<u>Indicate the maximum volume of fish the vessel can freeze per day.</u>
<u>Vessel autonomy</u>	<u>Record vessel autonomy, expressed by the time (days) a vessel can spend at sea without refuelling. If this information is not available then record vessel range expressed in cruising distance (nautical miles). If a figure for the range cannot be obtained, the observer should calculate vessel range as follows. <Vessel range (nm)> = <Vessel average cruising distance per metric ton (nm/mT)> : <Tonnage of fuel carried (mT)> Note: specify units (days or nautical miles)</u>
3. Vessel owner and personnel	
<u>Registered owner</u>	<u>Owner's name, nationality and contact details.</u>
<u>Charterer/operator</u>	<u>Where the vessel has been chartered and is operated and managed by a company other than the owner. Record operator's full name (company or individual as appropriate), nationality and contact details.</u>
<u>Skipper</u>	<u>Skipper's name and nationality.</u>
<u>Fishing master</u>	<u>Fishing master name and nationality. Complete in case the fishing master and skipper are not the same person.</u>
<u>Crew number</u>	<u>Number of crew members.</u>
4. Vessel electronics	
<u>Global Positioning System (GPS)</u>	
<u>Vessel Monitoring Systems (VMS)</u>	
<u>Radars</u>	
<u>Track plotter</u>	
<u>Depth sounder</u>	
<u>Sonar</u>	
<u>Doppler current meter</u>	

<u>Expendable bathythermographs (XBT)</u>	
<u>VHF radios</u>	
<u>HF radios</u>	
<u>Satellite communication systems</u>	
<u>Sea Surface Temperature (SST) gauge</u>	
<u>Weather facsimile</u>	
<u>Global Positioning System (GPS)</u>	
<u>Fisheries information services</u>	
<u>5. Special gear equipment or machinery</u>	
<u>Line setter</u>	
<u>Line hauler</u>	
<u>Bait casting machine</u>	<u>Indicate Yes or No.</u> <u>Most vessels manually deploy branch lines with the bait. However, there are a number of vessels that use automatic bait casting machines.</u>
<u>6. General gear attributes</u>	
<u>Mainline length</u>	
<u>Branch line configuration number</u>	
<u>Branch line storage</u>	<u>If the branch lines are coiled up and packed into baskets (BSK), or layered out in tubs (TBS), or coiled up onto reels (RLS).</u>
<u>Mitigation devices</u>	<u>Record depredation mitigation device/s DMDs used by the vessel.</u>
<u>7. Trip details</u>	
<u>Trip number</u>	<u>Trip unique identifier. Could be internally generated.</u>
<u>Trip duration</u>	<u>Date and place of the start and end of the fishing trip.</u>
<u>Port of departure</u>	
<u>Landing</u>	<u>Date and place of landing.</u>
<u>8. Human observer on board</u>	
<u>Name</u>	<u>First and last name.</u>
<u>ICCAT registration number</u>	<u>Registration number allocated by the ICCAT Secretariat.</u>
<u>Nationality</u>	
<u>9. Observed trip summary</u>	
<u>Number of fishing events/sets conducted by the vessel</u>	<u>Record the total number of fishing events/sets conducted by the vessel, independently of their success in catching.</u>
<u>Number of fishing events/sets reviewed</u>	<u>Record the total number of fishing sets/events monitored by the analyst.</u>
<u>Number of days searching</u>	<u>Record the total number of days that the vessel was engaged in actively searching for fish (this includes active fishing days).</u>
<u>Number active fishing days</u>	<u>Record the total number of days that the vessel actually fished (i.e. when the vessel had gear in the water).</u>
<u>Number of days in the fishing area</u>	<u>Record the number of days the vessel spent in the fishing area. This does not include transit time even if the area being transited is within the fishing area.</u>
<u>Number of days transiting</u>	<u>Record the number of days the vessel spent steaming or transiting to/between/from fishing areas.</u>

Description of a Vessel Monitor Plan

Part A

(Shall be handed over by the vessel owner)

1. Information provided by the owner of the vessel

External registration		Main fishery(es)	
Vessel name		Gear type(s)	
ICCAT Fleet register No.		Crew size	
IRCS		May carry an observer	
Home port		Name of the owner(s) representative	
Vessel length		Phone No.	
Vessel type		E-mail	

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)

5. General remarks

Part B

(Responsibility of the competent authority and to be validated by the competent authority)

1. Vessel image
2. System Configuration

a) System Operation – General Description

Sensor recording:	Description of the settings:
Video recording:	Description of the settings:

b) System Components Location

Control box: - Image of location of the control box	User Interface:
GPS: - Image of location of the GPS	GPS details:
Drum Rotation Sensor: - Image of location of the Drum Sensor	Drum Rotation Sensor details:
Hydraulic Pressure Sensor: - Image of location of the Hydraulic Pressure Sensor	Hydraulic Pressure Sensor details:

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

Camera 1 - Deck Camera	
Image of Location of Camera 1	View and Objectives
Image 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 XX Camera	Camera Settings
Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives
Image XX Camera	Camera Settings
Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives
Image XX Camera	Camera Settings
Camera XX - XX Camera	
Image of Location of Camera XX	View and Objectives
Image 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 service provider)

1. EM User Guide
 - a) Description on how to retrieve hard drives
 - 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 service provider)

List of EMS service providers contact information:

<i>Name and Last Name</i>	<i>Phone</i>	<i>Email</i>	<i>Office address</i>

Part E

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

This part should certify that the vessel owner/operators have been trained in the function and operation on the Electronic Monitoring System (EMS) system installed on the vessel, and that the operator agrees to comply to the Vessel Monitoring Plan (VMP).

Vessel operator name and last name: _____

Vessel owner/operator signature: _____

Date and time: _____

EMS Service provider Name and Last name: _____

EMS Service provider signature: _____

Date and time: _____

[...]
[...]
[...]