

# CPS 17/801

## E-MONITORING PROCESS STANDARDS FOR OBSERVER DATA FIELDS ON PURSE SEINE

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## INTRODUCTION

On-board observers are a critical component of data collection on the WCPFC purse seine fishery. In addition to on-board observers, E-Monitoring (EM) systems are providing increasing opportunity to enhance the efficiency of data collection. The tables presented in this report set out Draft Process Standards for the provision of operational OBSERVER data fields collected in the Purse Seine fisheries through EM systems. They provide the minimum requirements for data entities, data formats and data validation to be established for data submitted to the national and regional fisheries authorities from EM systems. The data fields contained herein are based on information collected under the current regional standard data collection forms<sup>1</sup>. This document acknowledges that national fisheries authorities require certain data fields that are not mandatory WCPFC Regional Observer Programme (ROP) data fields (for example, for anticipated Catch Documentation System – CDS – requirements), so a column in these tables identifies whether the data field is a mandatory WCPFC data field<sup>2</sup> or not.

These Draft Process Standards are consistent with, and should be considered in conjunction with more detailed instructions<sup>3</sup> on how to collect observer data provided by SPC. They are intended for, inter alia, service providers who have been contracted to provide EM systems to record OBSERVER data collected directly by EM systems on purse seine vessels and by officer observers reviewing purse seine EM data.

In accordance with Recommendation 4 of Hosken *et al.* (2014), EM technical service providers should provide a system that allows capture and entry of data that incorporates quality control processes that adhere to the validation business rules for observer data as set out by the SPC (as DCC co-convenors and WCPFC data manager)." The data — meeting the relevant standards — should then be able to be exported to authorised recipients including the WCPFC.

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<sup>1</sup> Note: Have there been recent changes in the Standards not reflected in the current ER standard on which this document is based (e.g. from the last DCC meeting)?

<sup>2</sup> The minimum standard WCPFC Regional Observer programme (ROP) data fields for purse seine data are found in the "WCPFC ROP Minimum Standard Data Fields & Instructions" <http://www.wcpfc.int/doc/table-rop-data-fields-including-instructions>

<sup>3</sup> In addition to the minimum WCPFC ROP data fields, instructions for observer data collection in the WCPFC Area are available with the regional standard observer data collection forms at <http://www.spc.int/oceanfish/en/data-collection/241-data-collection-forms>, general information/instruction for observers at <http://www.spc.int/OceanFish/en/ofpsection/fisheries-monitoring/observers> and <http://www.spc.int/OceanFish/en/certification-and-training-standards>.

## METHODS

### INPUTS AND OUTPUT FORMAT

The format of the Draft EM Process Standard was to generally follow that identified in the Western and Central Pacific Fisheries Commission (WCPFC) E-REPORTING STANDARD DATA FIELDS for OPERATIONAL OBSERVER DATA Draft – Version 2.6 dated 15<sup>th</sup> December 2016.

The Pre-Trial Review of Data Standards for Regional Observer Programme of the Solomon Islands EM trial report (Hosken 20014) was useful in providing an initial summary of the material required for the standard to be developed.

### MODIFICATION OF TABLES FOR E-MONITORING

The procedure to produce the Draft Process Standards began with the WCPFC E-Reporting Standard Data Fields for Purse Seine. Based on previous knowledge of EM programs, the previous work on EM of Solomon Is longliners (Hosken *et al.* 2014), and the Draft WCPFC E-Monitoring Standard Data Fields For Operational Longline Observer Data (WCPFC-2016-ERandEMWG2-04<sup>4</sup>), the capacity for EM to collect purse seine observer data was considered for each field in every table. A workshop comprising participants from SPC, FFA, WCPFC and a range of EM providers was used to assess each field in the following manner.

Each field was rated and colour-coded for EM as follows:

 EM ready	– Able to be easily and immediately collected;
 EM with work	– Potentially collected with further hardware/software modification;
 EM not likely	– Not feasibly or practically collected in the medium term;
 EM Natural Key	– Potential as an internally generated Natural Key <sup>5</sup> ;
 EM new field	– A new field required specifically for E-Monitoring;
 EM redundant	– A field that is potentially redundant as a result of E-Monitoring.

In addition to the codes above, the source from which each field can or could be collected (or not) both currently and in the future was identified. These were coded as follows

SETUP	– Hard-coded or recorded at the time in which the EM equipment is installed on the vessel.
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<sup>4</sup>[https://www.wcpfc.int/system/files/WCPFC-2016-ERandEMWG2-04%20draft%20em%20process%20standard%20for%20longline\\_0.pdf](https://www.wcpfc.int/system/files/WCPFC-2016-ERandEMWG2-04%20draft%20em%20process%20standard%20for%20longline_0.pdf)

<sup>5</sup> A Natural Key is formed of unique logical (real world) attributes and used as an identifier in a relational database independently of the database schema.

- PRE — Hardcopy reporting or preferably E-Reporting from a pre-trip onsite inspection of the vessel and discussion with owner / captain / crew;
- EM-A — Recorded by an EM-Analyst based on visual reference to images / footage / sensors;
- POST — Hardcopy reporting or preferably E-Reporting from a post-trip onsite inspection of the vessel and discussion with owner / captain / crew;
- AG — Automatically generated by the EM system components;
- EM-A -> AG — A special case of the above where an event is detected by the EM Analyst and the EM system automatically generates the field value;
- CF — A calculated field arithmetically generated from one or more of the above field types.

Notes were made on any of the main issues discussed for each field.

## OVERARCHING ISSUES

As reported in WCPFC-2016-ERandEMWG2-04, there are a number of overarching issues with data collection using EM (not specific to any particular field). These issues were largely outside the scope of this project but are briefly described below.

## DATABASE MANAGEMENT

### Record of data source

An EM Analyst (EM-A) will not be able to collect all the PS Observer data fields just from reviewing image/sensor information. These will include specific vessel fields, trip fields and a variety of other fields as mentioned below:

### *Vessel fields*

Some fields will relate specifically to the vessel (e.g. vessel identification fields, fishing gear, and safety equipment) and should not change (or rarely change) over time. When a vessel has EM equipment installed for the first time (SETUP), EM providers may be able to hardcode this information into the software following inspection of the vessel. Alternatively, staff from the licencing fisheries authority could conduct a physical inspection of the vessel to collect vessel data fields which cannot be collected by E-Monitoring.

In theory, once this first inspection has been conducted, there shouldn't be a need to re-inspect the vessel before each trip. The vessel operator would, however, be required to inform the licencing authority of any changes made to the vessel. Alternatively, the licencing authority could conduct 'spot' inspections to ensure the vessel is still compliant with the initial vessel details, this may be particularly relevant for 'high IUU risk' vessels.

### *Trip Fields*

There are a range of fields that will relate specifically to a particular trip and have the potential to change from trip to trip or even during a trip (e.g. Departure Port, Master, Crew, Equipment etc.). As a consequence, a pre-trip (PRE) and/or post-trip (POST) port inspection of the vessel will be required. The inspection could be conducted by a team and include the EM Analyst (although the latter may be cost-prohibitive). For example, during the first inspection all fishing gear could be compliant with fisheries regulations but after a few trips specialized gear used to target sharks (wire traces) could be introduced and these would not necessarily be so evident to see being deployed or hauled when the EM Analyst reviews the footage.

These trip data fields will need to be collected by an authorised fisheries officer using either a paper form (e.g. the Observer PS-1 form) or preferably an equivalent electronic form. When analysis of the EM records begin, the EM Analyst would need to transcribe or download the data collected on the form/E-form onto the specialized EM review software.

### *Other fields*

There are numerous other data fields that may be difficult or impractical for an EM system to feasibly or effectively collect (e.g. air sightings data, pollution data). As above, alternative methods of collection may be possible, such as automatically generating the data from the EM system (AG) or calculating the required data from information in other fields (CF). As noted by the second ERandEM Working Group participants recognised for the longline EW data standard, there are some fields that cannot be feasibly or effectively collected by EM.

### *Source clarification*

Contrasting to the current situation in which an observer (single source) personally records all of the trip information in paper logbooks and journals, the introduction of EM opens the possibility that data will come from multiple sources. Recognising this, it is important that the end user knows the source of each data field. This might be achieved in a number of ways:

- Attach XML attribute to each field stating source as e.g. EM-A, AG, PRE, POST, CF, SETUP;
- Sources allocated at the Extract Transfer Loader level;
- Provide additional “source” fields where required;
- Could be implicit from the version;
- Incorporated in the metadata by service provider to accompany data.

### Description of field calculation from provider

An extension of the above issue is that there are a variety of ways in which some fields can be automatically generated or calculated. Each different field/data calculation method may incorporate different assumptions and biases that need to be understood. Metadata needs to be provided by service providers clearly defining how each field is generated/calculated. This could be done in conjunction with software development process and version control.

### Need to link PRE or POST data with EM TRIP

As indicated above, EM data will be supplemented from data from other databases.

- How will access to necessary auxiliary databases be managed?

- Standardised definitions will be required that enable links with other databases provide an alternative;
- Is there an application that collects the auxiliary data needed by service providers?
  - E.g. Webservice
- Is there enough data to populate the Natural Keys?

### Data certainty / reliability

There may be a number of factors that influence the certainty / accuracy / precision of data collected by EM (e.g. lens clarity, field of view, light levels, resolution etc.) and interpreted by an office observer. For example, an EM Analyst may see that a fish is caught but may be unable to identify the fish accurately despite the ability to replay images/footage. In these instances, it is necessary for different users to be able to associate the level of uncertainty with the data field. This might be achieved in a number of ways:

- Attach XML attribute to each field stating source as certainty (e.g. 1, 2, 3 Hi Med Low);
- Provide additional “certainty” fields where required.

### EM compatibility with current observer database

Given the above, it is possible that the database for EM will be somewhat different from that used for onboard observers<sup>6</sup>. The pros and cons of trying to integrate the two sources of similar information into one database needs to be considered.

- Need (or otherwise) for separate databases?
- EM database will need integration of data from other sources (databases)
  - Eg Pre-departure data suggested to augment EM observer data

### Cross-validation of EM data

Cross-validation of data from different databases can improve data quality by highlight areas of

- E.g. with VMS, logsheets, port inspections, port sampling
- EM is likely to facilitate improved cross-validation processes through improved timeliness of data.
  - Eg. Use of Natural Keys
- This is a current issue that applies more generally than just for EM.

### Different methods of collection of the same data

EM provides the potential for the same information to be collected by different methods. This enable the most cost-effective or accurate method to be explored and determined. Some examples of this are provided.

- Automatically generated fields vs EM Analyst generated
  - E.g. smart gear<sup>7</sup> vs observer time

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<sup>6</sup> Note that SPC has been able to incorporate the EM Longline data into the regional observer database without too many problems and the addition of only a few extra fields.

<sup>7</sup> “Smart Gear” is loosely described as fishing gear (e.g. hook, float, line, scale) equipped with a transmitting/receiving device which is linked to the EM system. Information collected via the smart gear can be used to auto-generate EM data.

- Explore the cost trade-offs.
- Using EM possibilities versus access other data
  - E.g. for counting crew numbers. This could potentially be done by EM (by identifying different crew members using cameras) but may be far more effective and cost-efficient to conduct a pre-trip inspection.

### Change management needs to be controlled

There will be ongoing changes and improvements as EM becomes more established throughout the fishery. Appropriate standards need to be established to document and implement these changes across the system, including:

- Database
- XML
- Version control
- Protocols for correcting data post-submission

### Duplicate fields.

There are duplicated fields across the different paper forms. An EM system could resolve these redundant fields.

- Eg. SSI fields could be linked to the catch table through catch ID and species (SSI only)
- Field codes may need to be revisited to ensure consistency.

### Trip Reports

The current hardcopy Trip Report has been designed with a focus on onboard observers. The fields required in an EM Trip Report need to be reviewed.

## **QUALITY ASSURANCE**

### Quality control

There are numerous stages and processes by which quality control of onboard observer data is maintained and improved. Systems need to be developed to ensure EM systems have a similar level of quality control.

- Provide service providers with a comprehensive list of validation rules;
  - Some validation rules already available from current observer program that can be transferred to EM (e.g. Provision of XSD for XML)
- Feedback to service providers;
- Image interpretation
  - Standard required for re-reviewing by same or second analyst?
- Provide a test environment for EM providers;
- Develop mechanisms for successful data upload flag / response;
- Minimum qualifications (sea time?) for the office observer;
- Calibration of digital measuring tools;
- EM Debriefing and auditing process;
- All of the above will likely be an ongoing process.

### Standard time measurement

Instructions on PS datasheets says onboard observers should record the ship's time on all forms except the GEN-1 form, and since vessels use a variety of times, observers are asked to collect a second time, or standard time, so people reviewing several observer trips can compare the time of day when activities took place. There was general agreement that UTC data and time should be the standard used in all EM data fields.

### Equipment failure (hardware and/or software)

There will need to be standards and procedures put in place to deal with minor and major failures that may occur with EM hardware and software. These may need to address the following questions:

- Who will identify what has occurred and how important it is?
- How will people identify when failures have occurred?
- How to deal with missing / corrupt data that may result?
- What are the quality control mechanisms?
- Who needs to know?
- Who needs (is authorized) to respond / fix the issue?
  - E.g. MOU between coastal or flag state / service provider / vessel
- How is the flagged in the database (at all levels)?

### Security

There are a range of issues regarding equipment and data security.

- The need for tamper-evident systems.
- What is the chain of custody requirements for hardware/software / images?
- Does a system need to meet minimum security requirements?
- Are standards for commercial-in-confidence for providers and staff (including office observers) required?
- Will the data rules and procedures already available for observer data need to be changed or improved to allow for EM data?

### Standards for camera placement and number

There is no clear definition of the standards required for the number and placement of cameras and sensors on purse vessels — this has basically been left to service providers to determine given the expected outputs. Is there a need for more specific guidance required? Issues that may need to be considered include:

- What requirement is there to detect specific events?
  - Gear setting
  - Gear hauling
  - Catch identification / measuring
  - Fish processing areas
  - Sightings
  - Transhipment
- Is there a need to determination event priorities?

- There is a need to consider the cost / benefit of hardware installations.

Use of cameras in the workplace raises a range of issues regarding personal privacy and occupational health and safety. Guidance will be required as to which EM products are appropriate and when they should be used.

- E.g. Use of cameras in the wheelhouse to capture use of vessel electronics (PS1 page 1) is possible but may invade privacy;
- There may be other ways to determine equipment usage than cameras

#### Data timeframes of from EM system

EM systems potentially allow for near real-time collection of some onboard data (date/time/position/sensor).

- Is this required?
- What is the maximum timeframe for obtaining information and how will this be enforced.

#### SSI Interactions

Onboard observers use knowledge, expertise and a range of real-time sensory information to determine whether SSI interactions have occurred and what might be the resultant fate of an animal from such an interaction. An integral part of this is the ability to see an event and follow it (by sight) as it develops. Onboard cameras and sensors have only a limited ability to achieve this. One example of this discussed was whether an SSI can be identified on setting through just the use of a camera – given that the camera will only be focussed on one position of the line-setting with a reasonably limited field of view. This generated more questions than answers.

- Will SSI interactions require redefinition due to limits on camera field of view?
- Are there implications on number of cameras required to meet SSI reporting requirements?
- How will EM-generated data meet CMM requirements?

In addition to the above, there are some codes/fields regardless of EM which are gear specific (e.g. turtle hooking not needed for Purse seine) that warrant reconsideration of whether different SSI fields are needed for different gears

Overall, there are quite a number of overarching SSI issues that need to be reviewed, including EM capacity for detection.

#### Capturing setting the fishing gear

Given the size of purse seines used, it is unlikely that EM will be able to adequately capture SSI interactions that occur during setting with enough resolution to enable the EM Analyst to detect it.

#### Protocols for sub-sampling hauls determined

EM has the potential to monitor every PS haul, potentially automatically. This means that a huge amount of information is potentially available for review and data input.

- Is some level of sub-sampling of these sets required?
- How much and what information needs to be sampled?
- The decisions on this are likely to be part of the regional monitoring strategy.

### Retrieving image / sensor information from vessels (especially during transhipment)

There are a variety of processes used by different service providers to retrieve image and sensor data from a vessel. These are reasonably straight forward when a vessel regularly returns to port, but may become problematic when vessels tranship and undertake multiple trips without returning to port.

- Obligations under licensing agreements;
- How to ensure timeliness of EM data availability;
- Lack / limit of communication options;
- Special case of cross-country trips.

### Retention of image / sensor data

Policies on ownership / storage / access / destruction / confidentiality / duplication of image and sensor data need to be developed.

## **EM POTENTIAL FOR MCS AND CMMS**

There is significant potential for EM to play a larger role in the management of the WCP tuna fisheries than to augment observer data. One of the most important overarching issues is that guidelines are required for establishing national legal frameworks around EM – both policy and legislation.

### EM within broader MCS capacity (including CDS)

There is general recognition of the benefits and potential use of EM across a broad range of management requirements. These need to be explored.

- E.g. EM generated data verifying catch in a CDS traceability process
- EM as an audit tool?
- The credibility of EM systems and capacity of EM Analyst to be used as a compliance tool need to be established

### Value-adding to the EM generated data

There is underutilised capacity available in EM systems and EM-generated data that needs to be explored.

- E.g. Use of CDS to link catch of individual (barcoded) fish to enable measurement
- Verification of processes for third-party certification schemes.
- Expanding fields that can be captured using EM, e.g. Date/time, position and image can be automatically generated for events that were not previously required. E.g.:
  - Begin hauling;
  - End hauling;
  - Retained images as evidence.

## **RESOURCING**

The introduction and maintenance of EM systems is requiring, and will continue to require significant human and capital resources. The priorities for EM implementation and use need to be

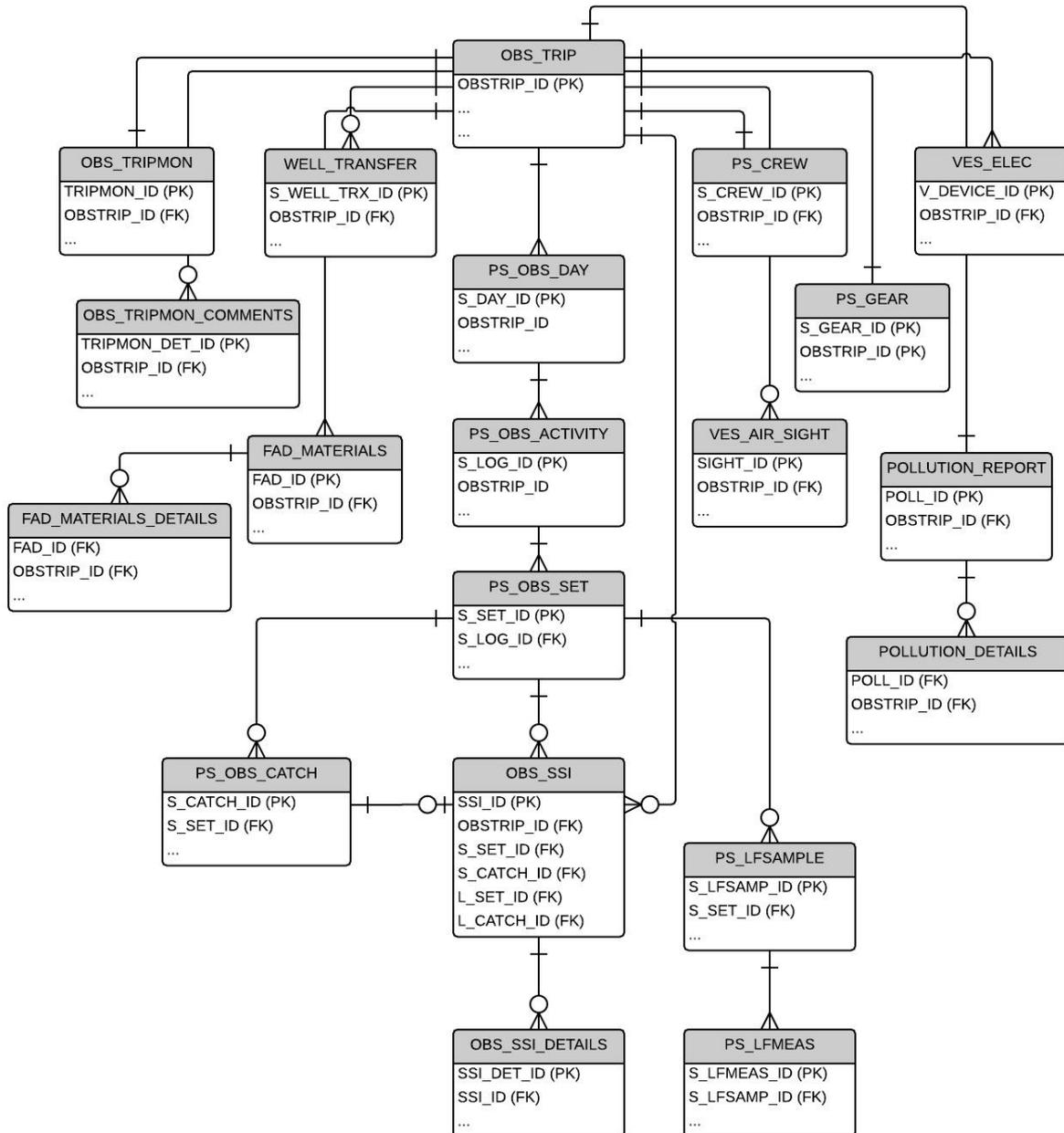
determined and sufficient funds need to be accessed to support its introduction in a planned manner.

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# PURSE SEINE OBSERVER EM PROCESS STANDARDS

## DATA MODEL DIAGRAM

The following basic data model diagram outlines the structure of the entities and their relationships for purse seine operational OBSERVER data collected by E-Reporting systems and submitted to national and regional fisheries authorities. The tables that follow provide more information on the mechanisms of the links (relationships) between the entities.



## **DATA MODEL TABLES AND FIELDS**

The tables in this report are grouped as below together with the suggested order in which we might address them during the workshop.

### **TRIP-LEVEL DATA**

1. PS\_OBS\_TRIP
12. PS\_CREW
13. PS\_VES\_ELEC
14. PS\_GEAR
15. PS\_TRIP\_REPORT

### **DAILY FISHING-RELATED MONITORING**

2. PS\_OBS\_DAY
3. PS\_OBS\_ACTIVITY
4. PS\_OBS\_SET
5. PS\_OBS\_CATCH
6. PS\_OBS\_SSI
7. PS\_OBS\_SSI\_DETAILS
8. PS\_LFSAMPLE
9. PS\_LFMEAS

### **DAILY MCS/CDS/MGMT MONITORING**

10. PS\_OBS\_TRIPMON
11. PS\_OBS\_TRIPMON\_COMM
16. PS\_WELL\_TRANSFER
17. PS\_VESS\_SUPPORT
18. PS\_FAD\_MATERIAL
19. PS\_FAD\_MATERIAL\_DETAILS
20. PS\_VESSEL\_AIR\_SIGHT
21. PS\_OBS\_POLLUTION
22. PS\_OBS\_POLLUTION\_DETAILS
23. PS\_OBS\_JOURNAL

OBS\_TRIP

"The start of a trip is defined to occur when a vessel (a) leaves port after unloading part or all of the catch to transit to a fishing area or (b) recommences fishing operations or transits to a fishing area after transshipping part or all of the catch at sea (when this occurs in accordance with the terms and conditions of article 4 of Annex III of the Convention, subject to specific exemptions as per article 29 of the Convention)."

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
obsprg_code	OBSERVER SERVICE PROVIDERS identification-National or sub-regional observer programmes For national programmes, this is the COUNTRY_CODE + 'OB' for example, 'PJOB' - for the PNG national observer programme. For Sub-regional programmes, the following codes are used. 'TTOB' - US Multilateral Treaty Observer programme 'FAOB' - FSM Arrangement Observer Programme	EM-A	EM-A AG	Char (4)	Observer programme code must be valid country.  Refer to valid ISO two-letter Country Codes - ISO 3166	<obsprg_code>	Y	This should be Observer program code for the person responsible for reviewing the video and compiling ROP information. Will this always be a country code if a third party is providing the EM reading service?  Consider use of another code instead of "OB" to be specific that data was EM collected.(e.g. "PGEM") Needs to be reviewed by DCC WCPFC
staff_code	Observer field staff NAME CODE. This will be unique and link to information kept at the regional level including Observer Name, Nationality of observer, Observer provider.  Currently generated by SPC currently	EM-A	EM-A	VarChar (5)	Staff code must exist in the regional Observer (FIELD_STAFF) Name Table.  The unique 5-letter staff codes are generated and maintained by SPC/FFA.	<staff_code>	Y	This should be staff name code for the person responsible for reviewing the video and compiling ROP information (EM-Analyst)  Does this field need to be modified to include a fifth character "V" for vessel observer and "O" for EM-Analyst? Or should this be a completely separate field OBSTYPE?
staff_code_2	Additional staff NAME CODE. This will be unique and link to information kept at the regional level including Staff Name, Nationality of staff, Staff provider.  Such additional staff may include port data collection officer that collects the PRE and POST data.	EM-A	EM-A					Identifies additional staff  Needs to be reviewed / agreed by DCC WCPFC
Provider_code	Identifies the service provider	SETUP AG	SETUP AG					Identifies the service provider Needs to be reviewed / agreed by DCC WCPFC
Software_vers_A	Identifies the data analysis software version	AG	AG					Identifies the data analysis software version Needs to be reviewed / agreed by DCC WCPFC Provide the link to the specific versions metadata
	Identifies the EM equipment software version							Identifies the data analysis software version

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIP

"The start of a trip is defined to occur when a vessel (a) leaves port after unloading part or all of the catch to transit to a fishing area or (b) recommences fishing operations or transits to a fishing area after transshipping part or all of the catch at sea (when this occurs in accordance with the terms and conditions of article 4 of Annex III of the Convention, subject to specific exemptions as per article 29 of the Convention)."

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
Software_vers_B								Needs to be reviewed / agreed by DCC WCPFC Provide the link to the specific versions metadata
tripno	Unique TRIPNO for each observer in a given year (Regional Standard)  Use the last two digits of the trip year followed by a dash and increment number for each trip in a year <u>FOR THAT OBSERVER</u> . YY-XX, for example, '14-01' would represent the first trip for an observer in the calendar year 2014			Char (5)	Must adhere to the regional standard	<tripno>	N	Does this assume that the EM-Analyst must start and finish a Trip before the next one? If they have multiple trips, then this should be sequential based on which trip was started first.  This can be uniquely identified through combination of vessel, Dep_date and Staff  Incremental increase in trip numbers for an observer should include EM trips reviewed - The alternative is to have a code of EM collected data - which might be needed anyway?
tripno_internal	TRIPNO as allocated and used by the respective Observer service provider. (If this system is different from the regional standard (e.g. the US PS MLT observer programme trip number uses the format '24LP/xxx' )			VarChar (15)		<tripno_INT>	N	This field might provide an opportunity for marking as an EM trip  This can be uniquely identified through combination of vessel, Dep_date and Staff
DATE and TIME OF DEPARTURE from PORT	Depart DATE/TIME the vessel leaves a port to start its fishing campaign Obtained from other sources of data (e.g. VMS)  Automatically generated by the vessel leaving a defined port box geofence.  May be identified by office observer Recorded during a pre-trip inspection	EM-A PRE	AG EM-A PRE	REFER TO APPENDIX A1	Use UTC DATE for the departure date.  Must adhere to the ISO 8601 format in Appendix A1	<DATE_DEP_PORT>	Y	Transshipment at sea is an issue  A standard is required defining a database of each port and a geofence. <b>Needs to be reviewed / agreed by DCC / WCPFC</b>  This may need to refer to start of trip (that can include transshipment) rather than return to port. Need to be reviewed by DCC / WCPFC.
	DATE/TIME the observer leaves the port (departs or embarks) to start their observer trip. If embarking at sea, this will be different from the DATE/TIME of Vessel departure from port.				Use UTC DATE for the departure date.			Transshipment at sea is an issue

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIP

"The start of a trip is defined to occur when a vessel (a) leaves port after unloading part or all of the catch to transit to a fishing area or (b) recommences fishing operations or transits to a fishing area after transshipping part or all of the catch at sea (when this occurs in accordance with the terms and conditions of article 4 of Annex III of the Convention, subject to specific exemptions as per article 29 of the Convention)."

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
DATE and TIME OF EMBARKATION	Obtained from other sources of data (e.g. VMS)  Automatically generated by the vessel leaving a defined port box geofence. May be identified by office observer  Recorded during a pre-trip inspection	EM-A PRE	AG EM-A PRE	REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1	<DATE_EMBARK>	Y	A standard is required defining a database of each port and a geofence. <b>Needs to be reviewed / agreed by DCC / WCPFC</b>  This could be redundant now?
DATE AND TIME OF RETURN IN PORT	DATE/TIME for the vessel to return to port	EM-A POST	AG EM-A POST	REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1	<ret_date>	Y	This may need to refer to end of trip (that can include transshipment) rather than return to port. Need to be reviewed by DCC / WCPFC.  A standard is required defining a database of each port and a geofence. <b>Needs to be reviewed / agreed by DCC / WCPFC</b>
DATE AND TIME OF DISEMBARKATION	DATE/TIME the observer disembarks from the vessel to end the observer trip.  May be identified by office observer  Recorded during a pre-trip inspection	EM-A POST	AG EM-A POST	REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1	<DATE_DISEMBARK>	Y	This may need to refer to end of trip (that can include transshipment) rather than return to port. Need to be reviewed by DCC / WCPFC.  A standard is required defining a database of each port and a geofence. <b>Needs to be reviewed / agreed by DCC / WCPFC</b>  This could be date and time that EM data is retrieved.
GEAR_TYPE	Link to ref_gears table Selected by the office observer  Could be determine by pre-trip vessel inspection or licencing information  Automatically generated from the vessel identifier and hardwired into the software	EM-A PRE	AG SETUP	Char (1)	Must be a valid GEAR: 'L' - Longline; 'S' - Purse seine; 'P' - Pole-and-line	<GEAR_TYPE>	Y	In future it will almost certainly be derived from the vessel identifier automatically
FISHING PERMIT/LICENSE NUMBERS	PROVIDE License/Permit number that the vessel holds for the period of the TRIP.			CHAR(40)	Where possible, include validation to ensure the Permit format relevant to the agreement (national or sub-regional) complies to the required format.	<License_NO>	N	All that is needed is the vessel identifier and time period of the trip to link to licencing data  The need for this with EM is questionable and the data is not used or accurate  Review by DCC and WCPFC

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIP

"The start of a trip is defined to occur when a vessel (a) leaves port after unloading part or all of the catch to transit to a fishing area or (b) recommences fishing operations or transits to a fishing area after transshipping part or all of the catch at sea (when this occurs in accordance with the terms and conditions of article 4 of Annex III of the Convention, subject to specific exemptions as per article 29 of the Convention)."

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
VESSEL IDENTIFIER								Ideally this would be UVI and programmed into the software during setup The service provider needs to have access to this data and vessel names
versn_id	Data standards version <i>This is version of the hardcopy form</i>			Int		<versn_id>	N	
XML_version_id		SETUP	SETUP					<i>Needs to be reviewed / agreed by DCC / WCPFC</i>
country_code	Two letter COUNTRY CODE for the country who organise the trip			Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166	<country_code>	N	This is identical to the first two letter of OBSPRG <i>Review by the DCC / WCPFC</i>
PORT OF DEPARTURE	PROVIDE the Port of Departure  Obtained from other sources of data (e.g. VMS)  Automatically generated by the vessel leaving a defined port box geofence.  May be identified by office observer  Recorded during a pre-trip inspection	EM-A PRE	AG EM-A PRE	REFER TO APPENDIX A3	<a href="http://www.uncece.org/cefact/locode/ser vice/location">Must be valid United Nations - Code for Trade and Transport Locations (UN/LOCODE) - see http://www.uncece.org/cefact/locode/ser vice/location</a>  <i>Not mandatory?</i>	<DEP_PORT>	Y	A standard is required defining a database of each port and a geofence. <i>Needs to be reviewed / agreed by DCC / WCPFC</i>  Automatically recorded from VMS / GPS
PORT OF RETURN	PROVIDE the Port of Return for Unloading  Obtained from other sources of data (e.g. VMS)  Automatically generated by the vessel leaving a defined port box geofence.  May be identified by office observer  Recorded during a post-trip inspection	EM-A POST	AG EM-A POST	REFER TO APPENDIX A3	Must be valid United Nations - Code for Trade and Transport Locations (UN/LOCODE)  <i>Not mandatory?</i>	<RET_PORT>	Y	A standard is required defining a database of each port and a geofence. <i>Needs to be reviewed / agreed by DCC / WCPFC</i>  Automatically recorded from VMS / GPS
EMBARK LAT	The actual depart LAT position for the trip (if departing AT SEA)	EM-A		REFER TO	<i>Must adhere to the ISO 6709 - Positions degrees and minutes to 3 decimal places</i>	<EMBARK LAT>	Y	Redundant

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
		PRE		APPENDIX A2				Not needed as the EM wont disembark at sea
EMBARK_LON	The actual depart LON position for the trip (if departing AT SEA)	EM-A PRE		REFER TO APPENDIX A2	Must adhere to the ISO 6709 - Positions degrees and minutes to 3 decimal places	<EMBARK_LON>	Y	Redundant Not needed as the EM wont disembark at sea
DISEMBARK_LAT	The actual return LAT position for the trip (if departing AT SEA)	EM-A POST		REFER TO APPENDIX A2	Must adhere to the ISO 6709 - Positions degrees and minutes to 3 decimal places	<DISEMBARK_LAT>	Y	Redundant Not needed as the EM wont disembark at sea
DISEMBARK_LON	The actual return LON position for the trip (if departing AT SEA)	EM-A POST		REFER TO APPENDIX A2	Must adhere to the ISO 6709 - Positions degrees and minutes to 3 decimal places	<DISEMBARK_LON>	Y	Redundant Not needed as the EM wont disembark at sea
vesowner	NAME of the vessel owner	PRE	PRE	NVarChar (50)	Name and contact if possible of the owner of the vessel, if it is owned by a company, then use the company name.	<vesowner>	Y	
HULL MARKINGS	Check compliance with CMM2004-03 and its successor measures	PRE	PRE		The hull markings should be consistent with CMM2014-03 and its successor measures; these are virtually the same as the FAO standards on vessel markings except that a few letters	<HULL_MARKINFS>	Y	No format supplied for this. Check spelling of XML Tag
WIN MARKINGS	Check compliance with CMM2004-03 and its successor measures	PRE	PRE			<WIN_MARKINFS>	Y	No format supplied for this. Check spelling of XML Tag
VESCAPT_NAME	NAME of the captain of the vessel	PRE	PRE	NVarChar (50)		<vescaptain>	Y	
VESCAPT_NATION	NATIONALITY of the captain of the vessel  Two letter COUNTRY CODE for the country who organise the trip	PRE	PRE	Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166 for example, refer to <a href="http://en.wikipedia.org/wiki/ISO_3166-1">http://en.wikipedia.org/wiki/ISO_3166-1</a>	<vescapt_CO_CODE>	Y	The EM standard includes hull markings, win markings
VESCAPT_ID_DOC	The Document that confirms nationality of the captain.	PRE	PRE	NVarChar (20)		<VESCAPT_ID_DOC>	Y	
vesmaster	NAME of the fishing master	PRE	PRE	NVarChar (50)	Is there a annual list? (I doubt it)	<vesmaster>		the "WCPFC field" is not there in the ER DS.

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OBS\_TRIP

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
VESMAST_NATION	NATIONALITY of the vessel MASTER  Two letter COUNTRY CODE for the country who organise the trip	PRE	PRE	Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166 <a href="http://en.wikipedia.org/wiki/ISO_3166-1">for example, refer to http://en.wikipedia.org/wiki/ISO_3166-1</a>	<vescapt_CO_CODE>	Y	
VESMAST_ID_DOC	FISHING MASTERS's Document ID	PRE	PRE	NVarChar (20)		<VESCAPT_ID_DOC>	Y	
CREW_TOTAL	Total number of CREW on-board, including captain and officers, during the trip (does not include observer).	PRE	PRE	Int		<crew_number>	Y	Recorded by the port data collection officer on FORM LL-1 and then entered into data capture screen
CREW_OTHERS	Total number of the crews excluding captain and fishing master.	PRE	PRE	Int		<CREW_OTHERS>	Y	Recorded by the port data collection officer on FORM LL-1 and then entered into data capture screen
BOARD_NATION	Nationality of any boarding vessel. When at sea indicate if any patrol vessels made a boarding name and nationality of the vessel making the boarding	POST	POST	Char (2)	Refer to valid WCPFC alpha-2 two-letter Country Codes  For example, refer to WCPFC Codes web page	<CAPT_CO_CODE>	Y	Would need to be obtained from skipper in post trip interview.  Im not sure if this is right? The description doesnt match the name
spill	FLAG to indicated the trip was a SPILL SAMPLE trip	PRE	PRE	Bit		<spill>	N	Was not relevant to LL, but is for PS  Uncertain who or how this is decided
cadet	FLAG to indicated whether the trip was observed by a CADET observer	PRE	PRE	Bit		<cadet>	N	This could relate to the EM-Analyst  wnat creentiaals would indicate that officer observer is no longer a "cadet"
sharktarget	FLAG to indicate a trip has targeted SHARKS (LONGLINE trips only)			Bit		<sharktarget>	N	This is only relevent to LL
comments	General comments about the trip	EM-A	EM-A	NText		<comments>	N	General comments
EM comments	General comments about EM the trip	EM-A	EM-A	NText		<comments>	N	Comments specifically regarding quality of EM information  Needs to be reviewed / agreed by DCC / WCPFC

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OBS\_TRIP

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	

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- EM new field
- EM redundant

PS\_CREW

PROVIDE the details of each PURSE SEINE CREW member on this TRIP.

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Issues
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
CREW IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + CREW NAME	CF	CF			<V_CREW_ID>	Y	
VSJOB_ID	CREW JOB TYPE	PRE SETUP	PRE SETUP	INT REFER TO APPENDIX 19	Must be a valid CREW JOB code	<VSJOB_ID>	N	Will require interview with skipper.
NAME	Name of the person in this position	PRE SETUP	PRE SETUP	NVarChar (50)	Maybe not setup as crew likely change out	<NAME>	N	Will require interview with skipper.
country_code	Nationality of the person in this position	PRE SETUP	PRE SETUP	Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166 <a href="http://en.wikipedia.org/wiki/ISO_3166-1">For example, refer to http://en.wikipedia.org/wiki/ISO_3166-1</a>	<country_code>	N	Will require interview with skipper.
EXP_YR	Experience in Years	PRE	PRE	SmallInt		<EXP_YR>	N	Will require interview with skipper.

- EM ready
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- EM not likely
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- EM new field
- EM redundant

VES\_ELEC

PROVIDE information on the standard Marine Electronic devices.

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
TRIP/VESSEL DEVICE IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DEVICE_ID	CF	CF			<V_DEVICE_ID>	Y	
device_id	Marine Device CODE.	PRE SETUP	PRE SETUP	Int	<a href="#">Refer to APPENDIX 20 - the DEVICES should only be available according to the respective gear code (e.g. "S" for purse seine or "L" for longline is in the GEAR LIST CODES column )</a>	<device_id>	Y	Will require pre-inspection interview with skipper and tour of wheelhouse.
ONBOARD_code	Is this DEVICE SIGHTED ONBOARD ?	PRE SETUP	PRE SETUP	Char (1)	'Y' or 'N'	<ONBOARD_code>	Y	As above
usage_code	Is this DEVICE USED ?	PRE SETUP	PRE SETUP	Char (3)	<a href="#">Refer to APPENDIX 21</a>	<usage_code>	N	Use of cameras in the wheelhouse to capture use of vessel electrics is possible but may invade privacy May be able to be automatically generated from electrical monitoring of wheelhouse devices (other than cameras) e.g.sensors?
make_desc	Description of Make	PRE SETUP	PRE SETUP	NVarChar (30)	Dropdown List?	<make_desc>	N	As above
model_desc	Description of Model	PRE SETUP	PRE SETUP	NVarChar (30)	Dropdown List - Child of Make?	<model_desc>	N	As above
comments	Comments	PRE	PRE	NText	Free text	<comments>	N	As above

- EM ready
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- EM new field
- EM redundant

PS\_GEAR

PROVIDE information on the PURSE SEINE GEAR on the vessel.

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
PS GEAR IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<S_GEAR_ID>	Y	
PB_MAKE	Power block make	SETUP PRE	SETUP PRE	NVarChar (20)		<PB_MAKE>	N	Can these be selected from a reference table? Or linked to the vessel details
PB_MODEL	Power block model	SETUP PRE	SETUP PRE	NVarChar (20)		<PB_MODEL>	N	Can these be selected from a reference table? Or linked to the vessel details
PW_MAKE	Purse winch model	SETUP PRE	SETUP PRE	NVarChar (20)		<PW_MAKE>	N	Can these be selected from a reference table? Or linked to the vessel details
PW_MODEL	Purse winch model	SETUP PRE	SETUP PRE	NVarChar (20)		<PW_MODEL>	N	Can these be selected from a reference table? Or linked to the vessel details
NET_DEPTH	Max depth of the net	SETUP PRE	SETUP PRE AG	SmallInt		<NET_DEPTH>	Y	Could be recorded with a sensors on the bottom of the net during operation?
NET_DEPTH_UNIT_ID	Net Depth unit of measurement M - metres; Y- Yards; F-Fathoms	SETUP PRE	SETUP PRE AG	Int	Must be M, Y, F or blank	<NET_DEPTH_UNIT_ID>	Y	Automatically generated from above
NET_LENGTH	Max length of the net	SETUP PRE	SETUP PRE AG	SmallInt		<NET_LENGTH>	Y	Could be recorded with a sensors on the headline of the net during operation?
NET_LENGTH_UNIT_ID	Net Length unit of measurement M - metres; Y- Yards; F-Fathoms	SETUP PRE	SETUP PRE AG	Int	Must be M, Y, F or blank	<NET_LENGTH_UNIT_ID>	Y	Automatically generated from above
NET_STRIPS	Number of net strips	SETUP PRE EM-A	SETUP PRE EM-A	SmallInt		<NET_STRIPS>	N	Each net is made up of strips of netting sewn together to create the depth of the net. Can be recorded by the EM-Analyst only if in field of view of a camera.
NET_HANG_RATIO	Max net hang ratio	SETUP PRE	SETUP PRE	SmallInt		<NET_HANG_RATIO>	N	

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PS\_GEAR

PROVIDE information on the PURSE SEINE GEAR on the vessel.

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
MESH_MAIN	Main Mesh size	SETUP PRE	SETUP PRE	SmallInt		<MESH_MAIN>	Y	
MESH_MAIN_UNIT_ID	Main mesh size unit of measurement C - centimetres; I - Inches	SETUP PRE	SETUP PRE	Int	Must be M, Y, F or blank	<MESH_MAIN_UNIT_ID>	Y	
BRAIL_SIZE1	Brail #1 Capacity	SETUP PRE	SETUP PRE	Decimal (5,1)		<BRAIL_SIZE1>	Y	
BRAIL_SIZE2	Brail #2 Capacity	SETUP PRE	SETUP PRE	Decimal (5,1)		<BRAIL_SIZE2>	Y	
BRAIL_TYPE	Brailing Type Description	SETUP PRE EM-A	SETUP PRE EM-A	Ntext		<BRAIL_TYPE>	N	Can be recorded by the EM-Analyst only if in field of view of a camera. Are there standards sizes?

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PS\_TRIP\_REPORT

PROVIDE descriptive information on the trip.

Refer to the relevant sections in in [http://www.spc.int/OceanFish/en/publications/doc\\_download/1334-2014-ps-trip-report-](http://www.spc.int/OceanFish/en/publications/doc_download/1334-2014-ps-trip-report-)

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID >	N	The current hardcopy Trip Report has been designed with a focus on onboard observers. <b>The fields required in an EM trip report needs to be reviewed by DCC / WCPFC.</b>
1_BACKGROUND	(Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<1_BACKGROUND>	N	The following can be populated from data already recorded: - Observer service provider - PDCO name - Office observer name
2_0_CRUISE_SUMMARY	(Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<2_0_CRUISE_SUMMARY>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  The following can be populated / calculated from data already recorded: - Port of departure - Date and time of departure  The summary table in Appendix 1
2_1_Area_FISHED	(Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<2_1_Area_FISHED>	N	Recorded by the EM-Analyst.  The following can be populated from data already recorded: - Range of latitudes and longitudes Or region / 5 degree blocks - Date and time of departure and return
2_2_END_OF_TRIP	(Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<2_2_END_OF_TRIP>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  The following can be populated from data already recorded: - Port of return - Date and time of return  The following can be calculated from data already recorded:  - total number of fishing operations made by the vessel - catch by species

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PS\_TRIP\_REPORT

PROVIDE descriptive information on the trip.

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
3_0_DATA_COLLECTED	(Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<3_0_DATA_COLLECTED>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  A lot of this could be automatically completed by the EM database.
4_0_VESSEL_CREW	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<4_0_VESSEL_CREW>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
4_1_VESS_INFO	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST AG	NText		<4_1_VESS_INFO>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  <u>Vessel details could be automatically populated from the vessel register (<a href="https://www.wcpfc.int/record-fishing-vessel-database">https://www.wcpfc.int/record-fishing-vessel-database</a>) including:</u> <ul style="list-style-type: none"> <li>- Owner</li> <li>- Tonnage</li> <li>- Length</li> <li>- Freezer capacity</li> </ul>
4_2_CREW_NATION	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_2_CREW_NATION>	N	Recorded Pre- and Post-inspections.
4_2_1_PIC	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_2_1_PIC>	N	Recorded Pre- and Post-inspections.
4_3_FISHING_GEAR	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_3_FISHING_GEAR>	N	Recorded Pre- and Post-inspections.
4_3_1_BRAIL	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_3_1_BRAIL>	N	Recorded Pre- and Post-inspections.
4_3_2_NET	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_3_2_NET>	N	Recorded Pre- and Post-inspections.  Could be an opportunity here to add and image field for drawing of the net
4_4_ELEC	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_3_ELEC>	N	Recorded Pre- and Post-inspections.
4_5_safety_eq	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<4_5_safety_eq>	N	Not really relevant, but could be reported by PDCO.
4_6_OTHER_GEAR	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<4_6_OTHER_GEAR>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
4_7_WASTE_DISPOSAL	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		?????	N	Recorded by the EM-Analyst and Pre- and Post-inspections.

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PS\_TRIP\_REPORT

PROVIDE descriptive information on the trip.

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
5_0_FISH_STRATEGY	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_0_fish_strategy>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_1_1_FLOAT_SCHS_FADS	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_1_FLOAT_SCHS_FADS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_1_2_FLOAT_SCHS_LOGS	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_1_FLOAT_SCHS_LOGS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_1_3_FLOAT_SCHS_ANIMAL	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_1_FLOAT_SCHS_ANIMAL>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_2_FREE_SCHS	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_2_FREE_SCHS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_3_SET_TECH	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_3_SET_TECH>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_4_1_VESS_ADV_SETS	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_4_VESS_ADV_SETS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_4_2_VESS_ADV_ASSIS	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_4_VESS_ADV_ASSIS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_5_HELICOPTER	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_5_HELICOPTER>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
5_6_FISH_SUCC	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST CF	NText		<5_6_FISH_SUCC>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. Could populate with catch rate by fishing area but reasons could not really be determined.
5_7_FISH_INFO	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<5_7_FISH_INFO>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. There is potential to integrate with some sensors and/or weather service
	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText				Recorded by the EM-Analyst and Pre- and Post-inspections.

- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- EM redundant

PS\_TRIP\_REPORT

PROVIDE descriptive information on the trip.

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
6_0_COC		PRE EM-A POST	PRE EM-A POST	NText		<6_0_COC>	N	This might be redundant unless the people doing the pre- and post-trip inspections are involved in witnessing catch for CDS
7_0_ENVIRON	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<7_0_ENVIRON>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  There is potential to integrate with some sensors and/or weather service
8_1_TARGET_RET	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST CF	NText		<8_1_TARGET_RET>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  Summary table of all target species could be automatically produced for the trip showing - target species weight/number by species
8_2_TARGET_DISC	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<8_2_TARGET_DISC>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.  The quality of this information could depend on whether there is a camera over the area of discarding.  Summary table of all target species could be automatically produced for the trip showing - target species weight/number by species
8_3_TARGET_LOG	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<8_3_TARGET_LOG>	N	Recorded by the EM-Analyst (discards) and Pre- and Post-inspections.  Summary table could be automatically produced for the trip showing - Total catch by species for comparison with vessel logsheet data
8_4_BYCATCH	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<8_4_BYCATC_H>	N	Recorded by the EM-Analyst (discards) and Pre- and Post-inspections.
8_4_1_BYC_LOG_COMP	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST CF	NText		<8_4_1_BYC_LOG_COMP>	N	Recorded by the EM-Analyst.  Logbook catch obtained by officer conduction post trip visit.  Summary table could be automatically produced for the trip showing - bycatch weight/number by species to compare with logsheet

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PS\_TRIP\_REPORT

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FIELD	Data Collection Instructions	Current Entry Source		Future Entry Source		Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes	
		SETUP	PRE	EM-A	POST						AG
8_4_2_BILL	Refer to relevant section in link above)		PRE	EM-A	POST			<8_4_2_BILL>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. (for processing is not visible to EM).  Summary table of all non-target tuna and billfish could be automatically produced for the trip showing - BILLFISH weight/number by species to compare with logsheet	
8_4_3_SHARKS_RAYS	Refer to relevant section in link above)		PRE	EM-A	POST			<8_4_3_SHARKS_RAYS>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. (for processing is not visible to EM).  Summary table of all sharks and rays could be automatically produced for the trip showing - Shark and Ray species (common name followed by the scientific name and FAO code) catch number	
8_4_4_OTHER_BY-CATCH	Refer to relevant section in link above)		PRE	EM-A	POST			<8_4_4_OTHER_BY-CATCH>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. (for processing is not visible to EM).  Summary table of all other bycatch species could be automatically produced for the trip showing - Shark and Ray species (common name followed by the scientific name and FAO code) catch number - Summary details listed Appendix 2	
8_4_5_Unspec_sp_codes	Refer to relevant section in link above)		EM-A	POST				<8_4_5_Unspec_sp_codes>	N	Recorded by the EM-Analyst. Opportunity to add image field.	
8_4_6_SSI_LAND	Refer to relevant section in link above)		EM-A					<8_4_6_SSI_LAND>	N	Recorded by the EM-Analyst.  Table of all SSIs that were sighted automatically produced from OBS_SSI for the trip showing - species (common name followed by the scientific name and FAO code) - Gender - Size	

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PS\_TRIP\_REPORT

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
								<ul style="list-style-type: none"> <li>- Description of interaction (including prior sighting, treatment, problems with ID)</li> <li>- Condition when landed</li> <li>- Condition when released</li> </ul> Opportunity to add image field.
8_4_7_SSI_INTERACT	Refer to relevant section in link above)	EM-A	EM-A CF	NText		<8_4_7_SSI_INTERACT>	N	Recorded by the EM-Analyst.  Table of all SSIs that were sighted automatically produced from OBS_SSI for the trip showing <ul style="list-style-type: none"> <li>- species (common name followed by the scientific name and FAO code)</li> <li>- Condition at start of interaction</li> <li>- Condition at end of interaction</li> </ul> Check to see if this is just for Purse seine Opportunity to add image field.
8_4_8_SSI_SIGHT	Refer to relevant section in link above)	EM-A	EM-A CF	NText		<8_4_8_SSI_SIGHT>	N	Recorded by the EM-Analyst.  Table of all SSIs that were sighted automatically produced from OBS_SSI for the trip showing <ul style="list-style-type: none"> <li>- species (common name followed by the scientific name and FAO code)</li> <li>- Condition at start of interaction</li> <li>- Condition at end of interaction</li> </ul> Opportunity to add image field.
9_0_SAMPLING	Refer to relevant section in link above)	PRE EM-A POST	PRE POST	NText		<9_0_SAMPLING>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
9_1_GRAB	Refer to relevant section in link above)	PRE EM-A POST	PRE POST	NText		<9_1_GRAB>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
9_2_SPILL	Refer to relevant section in link above)	PRE EM-A POST	PRE POST	NText		<9_2_SPILL>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
	Refer to relevant section in link above)	PRE EM-A	PRE	NText		<9_3_OTHER>	N	Not applicable unless industry take data for other projects.

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PS\_TRIP\_REPORT

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
10_0_OTHER_PROJ	Refer to relevant section in link above)	POST	POST	NText		<10_0_OTHER_PROJ>	N	Not applicable unless industry take data for other projects.
11_0_WELL_LOAD	Refer to relevant section in link above)			NText		<10_2_Stomach>	N	Not applicable unless industry take stomach samples.
12_0_VESS_DATA	Refer to relevant section in link above)	PRE EM-A POST	PRE POST	NText		<12_0_VESS_DATA>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
13_0_GENERAL	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<13_0_TRIP_MON>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
14_0_TRIP_MON	Refer to relevant section in link above)	PRE EM-A POST	PRE POST	NText		<14_0_TRIP_MON>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
14_1_Clarify	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<14_1_Clarify>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
14_2_Recommend	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<14_2_Recommend>	N	Recorded by the EM-Analyst and Pre- and Post-inspections. This should be under 13 - General
14_3_Crew_info	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<14_3_Crew_info>	N	Recorded from Pre- and Post-inspections.
14_4_Medical	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<14_4_Medical>	N	Recorded from Pre- and Post-inspections.
14_5_Photos	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<14_5_Photos>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
14_6_other info	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<14_6_other info>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
15_0_PROBs	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<15_0_PROBs>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
15_1_FORM CH PR	Refer to relevant section in link above)	PRE EM-A	PRE EM-A	NText		<15_1_FORM_>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.

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- EM new field
- EM not likely
- EM redundant

PS\_TRIP\_REPORT

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FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
CS		POST	POST			CH_RECS>		
16_0_CONCL	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<16_0_CONCL >	N	Recorded by the EM-Analyst and Pre- and Post-inspections.
17_0_ACKs	Refer to relevant section in link above)	PRE EM-A POST	PRE EM-A POST	NText		<16_7_ACKs>	N	Recorded by the EM-Analyst and Pre- and Post-inspections.

- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- EM redundant

PS\_OBS\_DAY

The observer must provide the information in this table (daily logged DAY) for EACH DAY AT SEA for the period of the trip

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
DAY LOG IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + LOCAL DAY LOG DATE	CF	CF			<S_DEVICE_ID>	Y	
DAY_start	Local/Ship's Date and time at the start of daily activities.	EM-A AG	EM-A -> AG AG	<a href="#">REFER TO APPENDIX A1</a>	Use SHIPS DATE/TIME. Must adhere to the ISO 8601 format in Appendix A1	<start_date>	N	
UTC_DAY_START	"UTC DATE & TIME - Date &Time when net skiff comes on-board i.e. end of set. Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components"	EM-A AG	EM-A -> AG AG	<a href="#">REFER TO APPENDIX A1</a>	Use UTC DATE/TIME. Must adhere to the ISO 8601 format in Appendix A1	<UTC_start_date>	N	
log_nofish_n	Provide the Number of logs sighted but no schools association.			SmallInt		<log_nofish_n>	N	Unlikely with EM
log_fish_n	Provide the Number of log associated schools sighted.			SmallInt		<log_fish_n>	N	Unlikely with EM
sch_fish_n	Provide the numbers of school sighted at that day.			SmallInt		<sch_fish_n>	Y	Unlikely with EM
fad_fish_n	Provide the Number of anchored FADS sighted.			SmallInt		<fad_fish_n>	N	Unlikely with EM
fad_nofish_n	Provide the Number of anchored FADS sighted but no schools association.			SmallInt		<fad_nofish_n>	N	Unlikely with EM
gen3today_ans	For the entire logged day, provide the FLAG to indicate that incident has occurred on GEN3.			Char (1)	Must be consistent with the GEN-3 data.	<gen3today_ans>	N	Unlikely with EM
diarypage	Journal page # which has detail explanations of the incident			VarChar (50)		<diarypage>	N	

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_ACTIVITY

The observer must PROVIDE a record of EACH change in ACTIVITY for EACH DAY AT SEA for the period of the trip. This is effectively the OBSERVER's ACTIVITY LOG

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Notes
		SETUP PRE EM-A POST AG CF	SETUP PRE EM-A POST AG CF				FIELD	
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
ACTIVITY LOG IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG DATE + ACTIVITY LOG TIME	CF	CF			<S_LOG_ID>	Y	
DAY_start	Local/Ship's Date and time at the start of daily activities.	EM-A AG	EM-A -> AG AG	<a href="#">REFER TO APPENDIX A1</a>	(Identical to field in PS_OBS_DAY)	<start_date>	N	Recorded when flagged by the EM-Analyst
UTC_DAY_START	UTC equivalent of DAY_START	EM-A AG	EM-A -> AG AG	<a href="#">REFER TO APPENDIX A1</a>	(Identical to field in PS_OBS_DAY)	<UTC_start_date>	N	Recorded when flagged by the EM-Analyst
act_TIME	Record ships time for each activity as indicated on the activity code table.	EM-A AG	EM-A -> AG AG	SmallInt	Must be consistent with the start of DAY log DATE. The combined DATE/TIME may be provided in this field.	<act_TIME>	Y	Recorded when flagged by the EM-Analyst
UTC_act_TIME	UTC equivalent of ACT_TIME	EM-A AG	EM-A -> AG AG	SmallInt	Must be consistent with the start of DAY log UTC DATE. The combined UTC DATE/TIME may be provided in this field.	<UTC_ACT_TIME>	N	Recorded when flagged by the EM-Analyst
lat	Latitude at which this ACTIVITY LOG recorded	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	<b>Must adhere to the ISO 6709 format in Appendix A2</b>	<lat>	Y	Recorded when flagged by the EM-Analyst
lon	Longitude at which this ACTIVITY LOG recorded.	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	<b>Must adhere to the ISO 6709 format in Appendix A2</b>	<lon>	Y	Recorded when flagged by the EM-Analyst
s_activ_id	Purse seine activity code.			<a href="#">REFER TO APPENDIX A5</a>		<s_activ_id>	Y	
schas_id	School association code.			<a href="#">REFER TO APPENDIX A6</a>		<schas_id>	Y	
deton_id	Provide method of detection of fish. Use Detection id. code. Must be 1-6 or 0 for no information.			<a href="#">REFER TO APPENDIX A7</a>		<deton_id>	Y	
beacon	Beacon number where available. (there may be a regional standard numbering system in the future).			NVarChar (20)	Can only be recorded where an activity is related to an event for investigating, deploying, retrieving or setting on a floating object. REFER TO APPENDIX A5	<beacon>	N	
comments	Observer comments related to this activity			NText		<comments>	N	

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSSTRIP_ID>	Y	
SET IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF		Must be consistent with PS_OBS_ACTIVITY record where S_ACTIV_ID = 1 (A fishing set).	<S_SET_ID>	Y	
set_number	Unique # for the SET in this trip Can be filled out by an office observe viewing footage or automatically generated from a variety of the EM system components	EM-A AG	EM-A AG	Int		<set_number>	N	Increases sequentially throughout the trip in the order that they happen. Set number will normally be the same as the vessel's set number.
observed_yn	Flag to indicate whether set was observed or not. Were all the start and end positions observed directly	EM-A	EM-A	Bit		<observed_yn>		This is not a clear/appropriate definition for the EM process. <i>Needs to be reviewed by DCC / WCPFC.</i>
SKIFFOFF_TIME	LOCAL DATE/TIME for the START OF SET.  DEFINED as the START of SET - Local DATE/Time when net skiff off with net  Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use local DATE/TIME.  <b>Ship's date was the standard for hardcopy forms</b>  <b>Must adhere to the ISO 8601 format in Appendix A1</b>  <b>Must be after Date and time of departure from port and before date and time of return to port</b>	<SKIFFOFF_TIME>	Y	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
SKIFFOFF_UTC	UTC DATE/TIME for the START OF SET.  Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use UTC DATE/TIME.  Must be aligned to skiffoff_time  <b>Must adhere to the ISO 8601 format in Appendix A1</b>	<SKIFFOFF_UTC>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere

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PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
WINCHON_TIME	<p>LOCAL DATE/TIME when winches start to haul the net.</p> <p>Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components</p>			REFER TO <a href="#">APPENDIX A1</a>	<p>Ship's date was the standard for hardcopy forms</p> <p>Must adhere to the ISO 8601 format in Appendix A1</p> <p>Must be after Date and time of departure from port and before date and time of return to port</p>	<WINCHON_TIME>	N	<p>Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).</p> <p>Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere</p>
WINCHON.UTC	<p>UTC DATE/TIME when winches start to haul the net.</p> <p>Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components</p>	EM-A AG	EM-A -> AG AG	REFER TO <a href="#">APPENDIX A1</a>	<p>Use UTC DATE/TIME.</p> <p>Must be aligned to winchon_time</p> <p>Must adhere to the ISO 8601 format in Appendix A1</p>	<WINCHON.UTC>	N	<p>Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).</p> <p>Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere</p>
RINGUP_TIME	<p>LOCAL DATE/TIME when purse ring is raised from the water.</p> <p>Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components</p>	EM-A AG	EM-A -> AG AG	REFER TO <a href="#">APPENDIX A1</a>	<p>Use LOCAL DATE/TIME.</p> <p>Must adhere to the ISO 8601 format in Appendix A1</p>	<RINGUP_TIME>	N	<p>Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).</p> <p>Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere</p>
	<p>UTC DATE &amp; TIME when purse ring is raised from the water.</p>				Use UTC DATE/TIME.			Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).

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PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
RINGUP_UTC	Can be filled out by an office observer viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Must be aligned to ringup_time  Must adhere to the ISO 8601 format in Appendix A1	<RINGUP_UTC>	N	Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
SBRAIL_TIME	LOCAL DATE/TIME when brailing begins.  Can be filled out by an office observer viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use LOCAL DATE/TIME.  Must adhere to the ISO 8601 format in Appendix A1	<SBRAIL_TIME>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
SBRAIL_UTC	UTC DATE/TIME when brailing begins.  Can be filled out by an office observer viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use UTC DATE/TIME.  Must be aligned to sbrail_time  Must adhere to the ISO 8601 format in Appendix A1	<SBRAIL_UTC>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
EBRAIL_TIME	LOCAL DATE/TIME when brailing ends.	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use LOCAL DATE/TIME.	<EBRAIL_TIME>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere

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PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components				Must adhere to the ISO 8601 format in Appendix A1			
EBRAIL_UTC	UTC DATE & TIME when brailing ends.  Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use UTC DATE/TIME.  Must be aligned to ebrail_time  Must adhere to the ISO 8601 format in Appendix A1	<EBRAIL_UTC>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
STOP_TIME	LOCAL DATE/TIME for the END of SET - Time when net skiff comes on-board i.e. end of set.  Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use LOCAL DATE/TIME.  Must adhere to the ISO 8601 format in Appendix A1	<STOP_TIME>	Y	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
STOP_UTC	UTC DATE & TIME - Date & Time when net skiff comes on-board i.e. end of set.  Can be filled out by an office observe viewing images or automatically generated from a variety of the EM system components	EM-A AG	EM-A -> AG AG	REFER TO APPENDIX A1	Use UTC DATE/TIME.  Must be aligned to stop_time  Must adhere to the ISO 8601 format in Appendix A1	<STOP_UTC>	N	Recorded by the EM system when flagged by the office observer (or is this flagged by the gear sensors?).  Inherent in most EM systems using EM-Analyst visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere
	Sum of all brails							

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
LD_BRAILS	After calculating the total number of brails on the PS-4 form (for the same set) transfer your answer here.	EM-A	EM-A	Decimal (8,3)		<LD_BRAILS>	N	
LD_BRAILS2	Sum of brails (#2)- only where a second type of brailer was used	EM-A	EM-A	Decimal (8,3)		<LD_BRAILS2>	N	Not sure if this is supposed to be separate from LD_BRAILS or the sum from the two brail types. I assume it's the first.
MTTOTAL_OBS	Total observed catch (TUNA and BYCATCH) (mt)	EM-A	EM-A	Decimal (8,3)		<MTTOTAL_OBS>	N	or is calculated from the number of brails?
MTTUNA_OBS	TOTAL amount of TUNA observed (mt)	EM-A	CF	Decimal (8,3)	Derived from and consistent with MTTOTAL_OBS minus all the bycatch (mt) listed under PS_OBS_CATCH for this SET	<MTTUNA_OBS>	N	Calculated from MTTOTAL_OBS- all bycatch
TOTSKJ_ANS	FLAG to indicate whether SKJ is presence in the set catch	EM-A	EM-A	Char (1)	Must be either "Y" or "N"	<TOTSKJ_ANS>	N	Check Y or N
PERC_SKJ	% of SKJ in the set catch	EM-A	EM-A	Int		<PERC_SKJ>	N	
MTSKJ_OBS	Metric Tonnes of SKJ in the set catch	EM-A	CF	Decimal (8,3)	Determined from MTTUNA_OBS and PERC_SKJ fields	<MTSKJ_OBS>	N	Calculated from MTTUNA_OBS and PERC_SKJ

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TOTYFT_ANS	FLAG to indicate whether YFT is presence in the set catch	EM-A	EM-A	Char (1)	Must be either "Y" or "N"	<TOTYFT_ANS>	N	Check Y or N
PERC_YFT	% of YFT in the set catch	EM-A	EM-A	Int		<PERC_YFT>	N	
MTYFT_OBS	Metric Tonnes of YFT in the set catch	EM-A	CF	Decimal (8,3)	Determined from MTTUNA_OBS and PERC_YFT fields	<MTYFT_OBS>	N	Calculated from MTTUNA_OBS and PERC_YFT
LARGEYFT_ANS	FLAG to indicate YFT in the set catch  LARGE (> 75 cm)	EM-A	EM-A	Char (1)	Must be either "Y" or "N"	<LARGE_YFT_ANS>	N	Check Y or N
PERC_LARGE_YFT	% of large YFT in the set catch  N.B.: % of small (or large) YFT (or BET) is the % of TOTAL TUNA ! NOT % of that species of tuna.	EM-A	EM-A	Int		<PERC_LARGE_YFT>	N	
NB_LARGE_YFT	# of large YFT in the set catch  If there are not many large YFT or BET and good estimate of number can be made record number of large YFT (or BET)  If a good estimate (counts) is not easy, dash the 'number' field. Do not make a rough estimate !	EM-A	EM-A	Int		<NB_LARGE_YFT>	N	
	FLAG to indicate whether BET is presence in the set catch				Must be either "Y" or "N"			Check Y or N

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TOTBET_ANS		EM-A	EM-A	Char (1)		<TOTBET_ANS>	N	
PERC_BET	% of BET in the set catch	EM-A	EM-A	Int		<PERC_BET>	N	
MTBET_OBS	Metric Tonnes of BET in the set catch	EM-A	CF	Decimal (8,3)	Determined from MTTUNA_OBS and PERC_BET fields	<MTBET_OBS>	N	Calculated from MTTUNA_OBS and PERC_BET
LARBEBT_ANS	FLAG to indicate BET in the set catch  LARGE (> 75 cm)	EM-A	EM-A	Char (1)	Must be either "Y" or "N"	<LARGE_BET_ANS>	N	Check Y or N
PERC_LARGE_BET	% of large BET in the set catch  N.B.: % of small (or large) BET (or BET) is the % of TOTAL TUNA ! NOT % of that species of tuna.	EM-A	EM-A AG?	Int		<PERC_LARGE_BET>	N	Requires EM species and length identification or estimation by office observer
NB_LARGE_BET	# of large BET in the set catch  If there are not many large BET or BET and good estimate of number can be made record number of large BET (or BET)  If a good estimate (counts) is not easy, dash the 'number' field. Do not make a rough estimate !	EM-A	EM-A	Int		<NB_LARGE_BET>	N	Requires EM species and length recognition or estimation by office observer
COMMENTS	comments	EM-A	EM-A	Ntext		<COMMENTS>	N	Comments by Office Observer

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_SET

The observer must PROVIDE the following information for EACH FISHING SET/HAUL during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD
B_NBTAGS	Record as much information as possible on any Tags recovered	EM-A	EM-A POST	SmallInt ???		<B_NBTAGS>	Y

Notes
<p>It is unlikely these will be seen on EM, and will need to be collected by the crew , with the shot details recorded. Other data (date, location) can then be obtained from the EM-Analyst data.</p> <p>Not sure if SmallInt is right for this?</p>

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_CATCH

The observer must PROVIDE the following CATCH DETAILS for EACH FISHING HAUL for the period of the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SET IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF		Must be consistent with PS_OBS_ACTIVITY record where S_ACTIV_ID = 1 (A fishing set).	<S_SET_ID>	Y	
CATCH IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME + CATCH EVENT DATE + CATCH EVENT TIME	CF	CF			<S_CATCH_ID>	Y	
sp_code	Species code. Identified by office observer Possible AG through video recognition software	EM-A	EM-A Possible AG	Char (3)	<a href="#">REFER TO APPENDIX 8.</a>	<sp_code>	Y	Camera lens clarity is important
RET_DISC	Use 'R' for Retained or 'D' for Discarded	EM-A	EM-A	Char (1)	Must be 'R' or 'D'	<RET_DISC>	Y	
FATE_CODE	FATE of this catch. This field provides more detail on FATE and indicates whether it was RETAINED, DISCARDED or ESCAPED, and any specific processing.  Office observer to use range of cameras to determine the fate.	EM-A	EM-A	Char (3)	<a href="#">REFER TO APPENDIX 9</a>	<FATE_CODE>	N	Recorded by EM-Analyst but need to ensure that all positions on deck can be observed for the fate
COND_CODE	CONDITION of this catch. Relevant for the Species of Special Interest.	EM-A	EM-A	Char (3)	<a href="#">REFER TO APPENDIX 10</a>	<COND_CODE>	N	This might be difficult, especially with small animals  Need to ensure consistency in the collection of condition (life status) information
OBS_MT	Observer's visual estimate of TOTAL Species catch in metric tonnes. OBTAINED from the visual estimate of % of TUNA SPECIES in the respective fields for SKJ, YFT and BET in the table PS_OBS_SET. For BYCATCH species, this is the visual estimate, where relevant.	EM-A -> AG	EM-A -> AG AG	Decimal (8,3)	The field RET_DET indicates whether this represents retention or discard of this species.	<OBS_MT>	Y	

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_OBS\_CATCH

The observer must PROVIDE the following CATCH DETAILS for EACH FISHING HAUL for the period of the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
OBS_N	Species catch (in numbers). OBTAINED from the visual estimate, which may be relevant for DISCARDS of TUNA, the discards/retained catch of BILLFISH and most other bycatch species.  Entry into this field is mandatory for any Species of Special interest.	EM-A	EM-A	Int	For Species of Special interest (Mammals, Turtles, Birds and Sharks) there must be a corresponding set of records in the Species of Special interest table.	<OBS_N>	N	
comments	Are there any comments for this species catch ? (Y/N)	EM-A	EM-A	Ntext		<comments>	N	

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SET IDENTIFIER - PS	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF		To be used to link to PS_OBS_SET when relevant  Must be consistent with PS_OBS_ACTIVITY record where S_ACTIV_ID = 1 (A fishing set).	<S_SET_ID>	Y	
CATCH IDENTIFIER - PS	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME + SPECIES CODE + FATE CODE	CF	CF		To be used to link to PS_OBS_CATCH when relevant  Must be a link to the corresponding PS_OBS_CATCH record for this SSI	<S_CATCH_ID>	Y	
SET IDENTIFIER - LL	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF		To be used to link to LL_OBS_SET when relevant  Must be consistent with PS_OBS_ACTIVITY record where S_ACTIV_ID = 1 (A fishing set).	<L_SET_ID>	Y	LL or PS
CATCH IDENTIFIER - LL	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME + SPECIES CODE + FATE CODE	CF	CF		To be used to link to LL_OBS_CATCH when relevant  Must be a link to the corresponding PS_OBS_CATCH record for this SSI	<L_CATCH_ID>	Y	LL or PS
SSI CATCH IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SIGHTING TIME + SPECIES CODE + FATE CODE	CF	CF			<SSI_ID>	Y	
sgtype	Type of Interaction : 'L' - Landed; "S"- Sighted; "I" - Interacted with Gear  Recorded by the office observer.	EM-A	EM-A	Char (1)	Must be 'L' - Landed; "S"- Sighted; "I" - Interacted with Gear	<sgtype>	Y	Sightings will not be included  It is likely that only interactions that involve the gear will be captured, and this depends heavily on the positioning of the cameras, particularly for mitigation of seabirds south of 25°S.

- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Needs to be restricted to only landings and interactions with the gear during fishing. Required appropriate placement of cameras focussed towards gear entering exiting water.							Difficult to determine interaction with gear setting.
SSI_date	Record ships date and time of interaction  Generated by EM when flagged by the office observer.	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A1</a>	When SGTTYPE = 'L' or 'I'  Must be consistent with PS_OBS_ACTIVITY record - ACT_DATE  Must adhere to the ISO 8601 format in Appendix A1	<SSI_date>	Y	There was a comment in the LLEM that said "Not using ship's time for EM". Is that the case here too?
UTC_SSI_DATE	UTC equivalent of SSI DATE  Generated by EM when flagged by the office observer.	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A1</a>	When SGTTYPE = 'L' or 'I'  Must be consistent with PS_OBS_ACTIVITY record - UTC_ACT_DATE  Must adhere to the ISO 8601 format in Appendix A1	<UTC_SSI_DATE>	N	Comment on LLEM said "This should be consistent with similar field in OBS_Catch. Potentially redundant for landings"
lat	Latitude at which this SSI was encountered	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	When SGTTYPE = 'L' or 'I'  Must be consistent with PS_OBS_ACTIVITY record - LAT  Must adhere to the ISO 6709 format in Appendix A2	<lat>	Y	This should be consistent with similar field in OBS_Catch. Potentially redundant for landings
lon	Longitude at which this SSI was encountered	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	When SGTTYPE = 'L' or 'I'  Must be consistent with PS_OBS_ACTIVITY record - LON  Must adhere to the ISO 6709 format in Appendix A2	<lon>	Y	Comment on LLEM said "This should be consistent with similar field in OBS_Catch. Potentially redundant for landings"
sp_code	SSI Species encountered. Link to species table  Potential for AG using image recognition	EM-A	EM-A Potentially AG	Char (3)	<a href="#">REFER TO APPENDIX 8.</a>  Must correspond to the PS_OBS_CATCH record	<sp_code>	Y	Comment on LLEM said "This should be consistent with similar field in OBS_Catch. Potentially redundant for landings"
sp_desc	Extended Species Description Recorded by the office observer.	EM-A	EM-A	NText		<sp_desc>	N	
landed_cond_code	Condition when landed on Deck or at start of interaction with vessel's gear Condition code on LANDING	EM-A	EM-A	Char (2)	<a href="#">REFER TO APPENDIX 10</a>	<landed_cond_code>	Y	Below are the comments from the LLEM - Probably redundant - recorded in OBS_CATCH  Work to improve the consistency in the collection of condition (life status) information

- EM ready
- EM with work
- EM Natural Key
- EM new field
- EM not likely
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Recorded by the office observer.							Potentially redundant if OBS_CATCH has correct codes. DCC / WCPFC need to review codes for consistency and relevance to the field
landed_cond_desc	Description of Condition on Landing or at start of interaction with vessel's gear Recorded by the office observer.	EM-A	EM-A	NText		<landed_cond_desc>	N	Work to improve the consistency in the collection of condition (life status) information
landed_handling	Description of handling on landing Recorded by the office observer.	EM-A	EM-A	NText		<landed_handling>	N	Work to improve the consistency in the collection of condition (life status) information
landed_len	Length of landed species	EM-A	EM-A	Decimal (5,1)		<landed_len>	Y	Needs to be reviewed / agreed by DCC / WCPFC
len_code	Length code of the individual	EM-A	EM-A	Char (2)	<a href="#">REFER TO APPENDIX 11</a>	<len_code>	Y	Needs to be reviewed / agreed by DCC / WCPFC
GENDER	Sex code of the individual	EM-A	EM-A	Char (1)	<a href="#">REFER TO APPENDIX 12</a>	<landed_sex_code>	Y	Needs to be reviewed / agreed by DCC / WCPFC
RELEASE_COND_CODE	Condition on RELEASE/DISCARD, or at the END of interaction with vessel's gear. Condition code on RELEASE/DISCARD, or at the END of interaction with vessel's gear	EM-A	EM-A	Char (2)	<a href="#">REFER TO APPENDIX 10</a>	<REL_COND_CODE>	Y	Needs to be reviewed / agreed by DCC / WCPFC
RELEASE_COND_DESC	Description of Condition on RELEASE/DISCARD, or at the END of interaction with vessel's gear	EM-A	EM-A	NText		<REL_COND_DESC>	N	Recorded by the EM-Analyst.
SP_GR_CODE	Species/Gear interaction	AG	AG	Char (3)	<a href="#">APPENDIX A32 - SPECIES/GEAR INTERACTION CODES</a>	<SP_GR_CODE>	N	Automatically generated for PS as "G01 Entangled". Although this won't always be the best description. Another code for "Caught in net" would be better.
	Estimated SHARK FIN WEIGHT (kgs)							

- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
shk_fin_wt_kgs		POST	POST	Decimal (5,0)		<SHK_FIN_WT_KGS>	Y	Alternate sampling means (e.g. sampling elsewhere) to ensure the requirements are met.
shk_fin_body_kgs	Estimated SHARK CARCASS WEIGHT (kgs)	POST	POST	Decimal (5,0)		<SHK_FIN_BODY_KGS>	Y	
tag_ret_no	Tag Number recovered from animal  Record if tag fish encountered. Endeavour to complete tag recovery information	POST -> EM-A	POST -> EM-A	NVarChar (7)		<tag_ret_no>	Y	Unlikely that tag number will be recorded  These are the comments from the LL EM "Flagged by EM- Analyst and then probably best collected at post-inspection. On the Gen - 2 form, they will also need to record the time and date of landing and species to be able to match it up with the video."
tag_ret_type	Type of Tag recovered from animal  Office observer record the tag type	POST	POST	NVarChar (5)		<tag_ret_type>	N	These are the comments from the LL EM "Flagged by EM- Analyst and then probably best collected at post-inspection. On the Gen - 2 form, they will also need to record the time and date of landing and species to be able to match it up with the video."
tag_ret_org	Origin of Tag recovered from animal (Organisation)	POST	POST	NVarChar (10)		<tag_ret_org>	N	Unlikely that organisation will be identified
tag_place_no	Tag number placed on animal			NVarChar (14)		<tag_place_no>	N	Not applicable. But noting that this is a ROP minimum requirement, additional tagging could be conducted during onboard observer trips.

- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
tag_place_type	Type of Tag placed on animal			NVarChar (8)		<tag_place_type>	Y	Not applicable
tag_place_org	Origin of Tag placed on animal (Organisation)			NVarChar (10)		<tag_place_org>	Y	Not applicable
intact_id	Vessel activity when INTERACTION occurs Recorded by the office observer.	EM-A CF	EM-A CF	Int	<a href="#">REFER TO APPENDIX 13</a>	<intact_id>	Y	Recorded automatically by the EM system.
intact_other	Other types of interaction Recorded by the office observer.	EM-A	EM-A	NVarChar (20)		<intact_other>	N	Not applicabel because we have limited office observations to only setting and hauling Unlikely this would be used with EM
int_describe	Description of the interaction Recorded by the office observer.	EM-A	EM-A	NText		<int_describe>	Y	
sgact_id	Vessel activity when SIGHTING occurs			Int	<a href="#">REFER TO APPENDIX 13</a>	<sgact_id>	N	General sightings will not be recorded by PS EM
sgact_other	Indicates "other" Vessel Activity			NVarChar (20)		<sgact_other>	N	General sightings will not be recorded by PS EM
sight_n	Number of individuals sighted			SmallInt		<sight_n>	Y	General sightings will not be recorded by PS EM
sight_adult_n	Number of adults sighted			SmallInt		<sight_adult_n>	N	General sightings will not be recorded by PS EM
sight_juv_n	Number of juveniles sighted			SmallInt		<sight_juv_n>	N	General sightings will not be recorded by PS EM
	Estimated overall length (Average if more than one individual)							

- EM ready
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- EM Natural Key
- EM new field
- EM not likely
- EM redundant

OBS\_SSI

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. There may be one or many records for each SSI record in PS OBS CATCH. When SIGHTED only, then this table is linked to the OBS TRIP database table.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
sight_len				NText		<sight_len>	N	General sightings will not be recorded by PS EM
sight_dist	Distance of sighted animals from vessel			Decimal (7,3)		<sight_dist>	N	General sightings will not be recorded by PS EM
sight_dist_unit	Units used for SIGHT_DIST			INT	1 = Metres; 2 = kilometres; 3 = Nautical miles	<sight_dist_unit>	N	General sightings will not be recorded by LL EM
sight_dist_nm	Distance in nautical miles			Decimal (10,4)		<sight_dist_nm>	N	General sightings will not be recorded by LL EM
sight_behav	Description of behaviour of Sighted animals			NText		<sight_behav>	N	General sightings will not be recorded by LL EM

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_SSI\_DETAILS

The observer must PROVIDE the following SPECIES OF SPECIAL INTEREST CATCH DETAILS for EACH FISHING SET for the period of the trip. The specific detail of each interaction needs to be recorded/stored here.

FIELD	Data Collection Instructions	Current Entry Source EM-A POST AG CE	Future Entry Source EM-A POST AG CE	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SSI CATCH IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SIGHTING TIME + SPECIES CODE + FATE CODE	CF	CF		Link to OBS_SSI table	<SSI_ID>	Y	
SSI DETAILS IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SIGHTING TIME + SPECIES CODE + FATE CODE	CF	CF			<SSI_DET_ID>	Y	
start_end	Indication of "START" or "END" of interaction  Recorded by the EM system after being flagged by the office observer.	EM-A -> AG	EM-A -> AG	Char (1)	Must be either 'S' for START or 'E' for END	<start_end>	N	Likely to be birds or large animal entangled in net or ropes
SSI_number	Number of animals interacted  Counted by the office observer	EM-A	EM-A	Int		<SSI_number>	N	Need good definitions of interactions to maintain consistency between observers
cond_code	CONDITION at the point of recording (either START or END)			Char (2)	<a href="#">REFER TO APPENDIX 10</a>	<cond_code>	N	This differs from landed_cond_code from the previous table in that it can be an interaction with the vessel or gear before the animal is landed on deck.
description	Descriptions of the interaction  <b>Recorded by the office observer</b>	EM-A	EM-A	VarChar (100)		<description>	N	<b>For example fin caught in net.</b>

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_LFSAMPLE

PROVIDE the information related to the size (length) and species composition SAMPLE from each FISHING SET.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SET IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF			<S_SET_ID>	Y	
LF SAMPLE IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SET START DATE + SET START TIME + SAMPLE_TYPE	CF	CF			<S_LFSAMP_ID>	Y	
SAMPLETYPE_ID	Sample Type	SETUP EM-A	SETUP EM-A	CHAR(1)	REFER TO APPENDIX 14	<SAMPLETYPE_ID>	N	An SOP would be needed, which would either specify a method that would always be used, or otherwise a range of options that could be differentiated by the EM-Analyst. If there is only one option, then this could be autoatically populated during setup.
OTHER_DESC	Description other sampling type	SETUP EM-A	SETUP EM-A	Ntext	DA - all discards DT - only discarded tunas  BS - bycatch - select species (one or more different species but not all species) SS - Species of special interest. Include the sex with the length eg. "male" 26cm = M 26, "unknown" 56cm = U 56 LB - Live-fish Brailing - separate the samples on different pages if live fish brailing is used prior to standard brailing.	<OTHER_DESC>	N	An SOP would be needed, which would either specify a method that would always be used, or otherwise a range of options that could be differentiated by the EM-Analyst. If there is only one option, then this could be autoatically populated during setup.
	Target # of fish for sampling				For GRAB samples only	<FISH_PP>		Again this would need to be in the SOP

- EM ready
- EM with work
- EM Natural Key
- EM new field
- EM not likely
- EM redundant

PS\_LFSAMPLE

PROVIDE the information related to the size (length) and species composition SAMPLE from each FISHING SET.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD
FISH_PER_BRAIL		EM-A	EM-A	SmallInt		<FISH_PER_BRAIL>	N
MEASURE_CODE	MEASURING INSTRUMENT	EM-A	EM-A	CHAR(1)	REFER TO APPENDIX 15	<MEASURE_CODE>	N
COMMENTS	Comments about the sampling	EM-A	EM-A	Ntext		<COMMENTS>	N
BRAIL_FULL_N	# of Full brail count	EM-A	EM-A	SmallInt		<BRAIL_FULL_N>	N
BRAIL_78_N	# of Seven eighths brail count	EM-A	EM-A	SmallInt		<BRAIL_78_N>	N
BRAIL_34_N	# of Three quarter brail count	EM-A	EM-A	SmallInt		<BRAIL_34_N>	N
BRAIL_23_N	# of Two third brail count	EM-A	EM-A	SmallInt		<BRAIL_23_N>	N
BRAIL_12_N	# of Half brail count	EM-A	EM-A	SmallInt		<BRAIL_12_N>	N
BRAIL_13_N	# of One third brail count	EM-A	EM-A	SmallInt		<BRAIL_13_N>	N
BRAIL_14_N	# of One quarter brail count	EM-A	EM-A	SmallInt		<BRAIL_14_N>	N
BRAIL_18_N	# of One eighth brail count	EM-A	EM-A	SmallInt		<BRAIL_18_N>	N
BRAIL_N	Total number of brails	CF	CF	SmallInt		<BRAIL_N>	N
SUM BRAILS	Sum of All Brails	CF	CF	Decimal (7,2)		<SUM_BRAILS>	N
SAMPLED_BRAIL_NUM	# of sampled brails	EM-A	EM-A	Int		<SAMPLED_BRAIL_NUM>	N
MEASURED_N	# of samples measured	CF	CF	Int		<MEASURED_N>	N

Issues
Again this would need to be in the SOP, but recorded by the EM-Analyst.
This would need a new measuring instrument code called something like "EM GRID", and it would always be the same.
Calculate from the sum of the numbers of different filled brails.
Calculate from the sum of the numbers of different filled brails multiplied by the fraction of fullness..
Calculated from the count of length measurements

- EM ready
- EM with work
- EM Natural Key
- EM new field
- EM not likely
- EM redundant

PS\_LFMEAS

PROVIDE the individual fish measurements from the SAMPLE from each FISHING SET.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SET IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME	CF	CF			<S_SET_ID>	Y	
LF SAMPLE IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SET START DATE + SET START TIME + SAMPLE_TYPE	CF	CF			<S_LFSAMP_ID>	Y	
LF MEASURE IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + DAY LOG + SET START DATE + SET START TIME + SAMPLE_TYPE + SEQ_NUMBER	CF	CF			<S_LFMEAS_ID>	Y	
SEQ_NUMBER	Measurement number.	AG	AG	Int		<SEQ_NUMBER>	N	An SOP would be needed, which would either specify a method that would always be used, or otherwise a range of options that could be differentiated by the EM-Analyst. If there is only one option, then this could be automatically populated during setup.
					<a href="#">REFER TO APPENDIX 8.</a>			An SOP would be needed, which would

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_LFMEAS

PROVIDE the individual fish measurements from the SAMPLE from each FISHING SET.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
SP_CODE	Link to species table	EM-A	EM-A AG?	Char (3)		<SP_CODE>	Y	either specify a method that would always be used, or otherwise a range of options that could be differentiated by the EM-Analyst. If there is only one option, then this could be autoatically populated during setup. Automatically generated with image recognition?
LEN	Length (cm).	EM-A	EM-A AG?	SmallInt	Expectation that that the following measurements have been taken by the observers, as instructed. TUNA SPECIES Upper jaw to fork length; LEN_CODE = 'UF' SHARK SPECIES - total length; LEN_CODE = 'TL' BILLFISH SPECIES - Lower jaw to fork length for billfish. LEN_CODE = 'LF'	<LEN>	Y	Need fish held under camera on grid. Automatically generated with image recognition?
LEN_CODE	Record measurement methods given in codes	EM-A	EM-A	CHAR(2)	REFER TO APPENDIX A11	<MEASURE_CODE>	Y	Could be automatically generated if the same length code is used for all measurements of a species.

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIPMON

PROVIDE the details of the OBSERVER GEN-3 "OBSERVER VESSEL TRIP MONITORING FORM". One record per question.

FIELD	Data Collection Instructions	Current Entry Source EM-A PRE POST AG	Future Entry Source EM-A PRE POST AG	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
TRIP MONITORING IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + UNIQUE SEQ NUMBER	CF	CF			<TRIPMON_ID>	Y	
	Unique CODE for each question in GEN3							
RS-A	Did the operator or any crew member assault, obstruct, resist, delay, refuse boarding to, intimidate or interfere with observers in the performance of their duties	EM-A AG	EM-A AG				Y	Was there any damage / tampering of the equipment? Other mischief?
RS-B	Request that an event not be reported by the observer						Y	N/A Interim obstruction? High level request of service provider?
RS-C	Mistreat other crew	EM-A	EM-A				N	Only in the visible field of the cameras
RS-D	Did operator fail to provide observer with food, accommodation, etc.						Y	N/A
NR-A	Fish in areas where the vessel is not permitted to fish	AG	AG				Y	AG
NR-B	Target species other than those they are licenced to target	EM-A	EM-A				N	EM Analyst can recognise
NR-C	Use a fishing method other than the method the vessel was designed or licensed	EM-A	EM-A				Y	EM Analyst can recognise if in field of view
NR-D	Not display or present a valid (and current) licence document onboard	PRE POST	PRE POST				N	
NR-E	Transfer or transship fish from or to another vessel	EM-A AG	EM-A AG				Y	Likely to be able to be detected by EM-Analyst EM system could detect this to automatically generate
NR-F	Was involved in bunkering activities	EM-A AG	EM-A AG				N	Likely to be able to be detected by EM-Analyst EM system could detect this to automatically generate

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIPMON

PROVIDE the details of the OBSERVER GEN-3 "OBSERVER VESSEL TRIP MONITORING FORM". One record per question.

FIELD	Data Collection Instructions		Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Issues
			EM-A PRE POST AG	EM-A PRE POST AG				FIELD	
question_code	NR-G	Fail to stow fishing gear when entering areas where vessel is not authorised to fish	EM-A	EM-A	Char (4)	<a href="#">REFER TO APPENDIX 16</a>	<question_code>	Y	Could get cameras to switch on with geo-fencing (beware accuracy +/- 3nm)
	WC-A	Fail to comply with any Commission Conservation and Management Measures (CMMs)	EM-A	EM-A				Y	Some CMMs may be able to be detected by EM-Analyst
	WC-B	High-grade the catch	EM-A POST -> CF	EM-A POST -> CF				Y	Compare lfreq of discarded
	WC-C	Fish on FAD during FAD Closure	EM-A	EM-A				N	
	LP-A	Inaccurately record vessel position on vessel log sheets for sets, hauling and catch	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LP-B	Fail to report vessel positions to countries where required	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LC-A	Inaccurately record retained 'Target Species' in the Vessel logs [or weekly reports]	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LC-B	Inaccurately record 'Target Species' Discards	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LC-C	Record target species inaccurately [eg. combine bigeye/yellowfin/skipjack catch]	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LC-D	Not record bycatch discards	POST -> CF	POST -> CF				N	Reconcile EM-Analyst data with logsheet data
	LC-E	Inaccurately record retained bycatch Species	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	LC-F	Inaccurately record discarded bycatch species	POST -> CF	POST -> CF				Y	Reconcile EM-Analyst data with logsheet data
	SI-A	Land on deck Species of Special Interest (SSIs)	EM-A	EM-A				N	Observer can recognise
	SI-B	Interact (not land) with SSIs	EM-A	EM-A				Y	Observer can recognise
	PN-A	Dispose of any metals, plastics, chemicals or old fishing gear	EM-A	EM-A				Y	Only in the visible field of the cameras
	PN-B	Discharge any oil	EM-A	EM-A				Y	Only in the visible field of the cameras
	PN-C	Lose any fishing gear	EM-A	EM-A				Y	Only in the visible field of the cameras
	PN-D	Abandon any fishing gear	EM-A	EM-A				Y	Only in the visible field of the cameras
PN-E	Fail to report any abandoned gear	EM-A	EM-A	Y	Only in the visible field of the cameras				
SS-A	Fail to monitor international safety frequencies			Y					
SS-B	Carry out-of-date safety equipment	PRE POST	PRE POST	N					
answer	Record the Answer to each question. There is also an indicator whether this has been answered or NOT			AG?	Char (1)	MUST BE 'Y', 'N' or 'X'- not answered	<answer>	Y	<b>See above</b>

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIPMON

PROVIDE the details of the OBSERVER GEN-3 "OBSERVER VESSEL TRIP MONITORING FORM". One record per question.

FIELD	Data Collection Instructions	Current Entry Source EM-A PRE POST AG	Future Entry Source EM-A PRE POST AG	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
journal_page	Additional explanation and information for any YES response (including reference to the journal page)	EM-A	EM-A	NText		<journal_page>	Y	- Is a journal being kept by the EM-Analyst?

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

OBS\_TRIPMON\_COMMENTS

PROVIDE the details of the OBSERVER GEN-3 "OBSERVER VESSEL TRIP MONITORING FORM". One record per day of trip monitoring reported event/incident.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE					<OBSTRIP_ID>	Y	
TRIP MONITORING COMMENTS IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + UNIQUE SEQ NUMBER					<TRIPMON_DET_ID>	Y	
gen3_date	Date of the incident on GEN3	EM-A -> AG	EM-A -> AG	<a href="#">REFER TO APPENDIX A1</a>	Must adhere to the ISO 8601 format in Appendix A1	<gen3_date>	N	
comments	Detail description of the incident	EM-A	EM-A	NText		<comments>	N	A list of events is required that the EM-Analyst needs to note depending on the camera?

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

WELL\_TRANSFER

PROVIDE information for each transfer to/from storage WELLS during the trip.  
This may become mandatory WCPFC data collection related to CDS.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	N	
WELL TRANSFER IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + TRX_DATE	CF	CF			<S_WELL_TRX_ID>	N	
TRX_DATE	DATE and TIME of fish transfer	EM-A -> AG	EM-A -> AG	REFER TO APPENDIX A1		<TRX_DATE>	N	Recorded by the EM system when flagged by the EM-Analyst (or is this flagged by the gear sensors?).
ACTION_CODE	WELL TRANSFER ACTION CODE	EM-A	EM-A	Char (2)	REFER TO APPENDIX 18 for Well transfers only - only allow actions where FORM USED = 'PS-5	<ACTION_CODE>	N	Recorded by the EM-Analyst. Camera/sensor on ship's derrick?
SOURCE	Fish transfer source Can be the 'NET' and valid well number or a VESSEL	POST	EM-A -> AG POST	VarChar (80)	Can be the 'NET' and valid well number or a VESSEL	<SOURCE>	N	Recorded by the port inspection officer at end of trip from logsheet. Camera/sensor on ship's derrick?
DESTINATION	Description of the transfer destination Can be Well No., vessel, SHORE or DISCARD	POST	EM-A -> AG POST	VarChar (80)	Can be Well No., vessel, SHORE or DISCARD	<DESTINATION>	N	Recorded by the port inspection officer at end of trip from logsheet. Camera/sensor on ship's derrick?
WELL_MT	Weight of the fish transfer	POST	EM-A -> AG POST	Decimal (8,3)		<WELL_MT>	N	Recorded by the port inspection officer at end of trip from logsheet. Camera/sensor on ship's derrick?
CHANGE	Change of transfer - add or remove	POST	POST	Char (1)	Must be either '+', '-' or '0' (for no change)	<CHANGE>	N	Recorded by the port inspection officer at end of trip from logsheet.
NEW_TOTAL	New cumulative total for the transfer	POST	POST	Decimal (8,3)		<NEW_TOTAL>	N	Recorded by the port inspection officer at end of trip from logsheet.
ON_LOGSHEET	FLAG to indicate the transfer has been stated on the logsheet	POST EM-A	POST EM-A	Char (1)		<ON_LOGSHEET>	N	Flagged event compared with port inspection officer data

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

WELL\_TRANSFER

PROVIDE information for each transfer to/from storage WELLS during the trip.  
This may become mandatory WCPFC data collection related to CDS.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
COMMENTS	Comments made on the fish transfer	POST EM-A	POST EM-A	NText		<COMMENTS>	N	Recorded by EM Analyst and the port inspection officer at end of trip from logsheet

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_VESS\_SUPPORT

PROVIDE information on the PURSE SEINE VESSEL SUPPORT information.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
PS VESS SUPPORT IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<S_VESSUP_ID>	Y	
SPEEDBOATS_N	Number of Speedboats	PRE POST	PRE POST	SmallInt		<SPEEDBOATS_N>	Y	Recorded by the port inspection officer either before the start or at end of trip.
TOW_N	Number of Tow boats	PRE POST	PRE POST	SmallInt		<TOW_N>	Y	Recorded by the port inspection officer either before the start or at end of trip.
AUXBOATS_N	Number of Auxiliary boats	PRE POST	PRE POST	SmallInt		<AUXBOATS_N>	Y	Recorded by the port inspection officer either before the start or at end of trip.
LIGHT_N	Number of light boats	PRE POST	PRE POST	SmallInt		<LIGHT_N>	Y	Recorded by the port inspection officer either before the start or at end of trip.
TENDERBOATS_YN	Do other tender boats work with Catcher?	PRE POST	PRE POST	Char(1)		<TENDERBOATS_YN>	N	Recorded by the port inspection officer either before the start or at end of trip.
SKIFF_MAKE	Make of SKIFF	PRE POST	PRE POST	Varchar(20)	Must be M, Y, F or blank	<SKIFF_MAKE>	N	Recorded by the port inspection officer either before the start or at end of trip.
SKIFF_HP	Horsepower of SKIFF	PRE POST	PRE POST	Int		<SKIFF_HP>	N	Recorded by the port inspection officer either before the start or at end of trip.
HELI_MAKE	Make of Helicopter	PRE POST	PRE POST	Varchar(20)		<HELI_MAKE>	Y	Recorded by the port inspection officer either before the start or at end of trip.
HELI_MODEL	Model of helicopter	PRE POST	PRE POST	Varchar(20)		<HELI_MODEL>	Y	Recorded by the port inspection officer either before the start or at end of trip.
HELI_REG_NO	Helicopter registration number	PRE POST	PRE POST	Varchar(20)		<HELI_REG_NO>	Y	Recorded by the port inspection officer either before the start or at end of trip.

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_VESS\_SUPPORT

PROVIDE information on the PURSE SEINE VESSEL SUPPORT information.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
HELI_RANGE	Range of Helicopter (see HELI_RANGE_UNIT)	PRE POST	PRE POST	Int	Must be C, I or blank	<HELI_RANGE>	Y	Recorded by the port inspection officer either before the start or at end of trip.
HELI_RANGE_UNIT	Unit of distance for range of Helicopter	PRE POST	PRE POST	Char(1)	'K' in kms ; 'N' in nautical miles	<HELI_RANGE_UNIT>	Y	Recorded by the port inspection officer either before the start or at end of trip.
HELI_COLOUR	Colour of Helicopter	PRE POST	PRE POST	Varchar(20)		<HELI_COLOUR>	Y	Recorded by the port inspection officer either before the start or at end of trip.
HELI_SERVICES_N	No. of vessels that this helicopter services	PRE POST	PRE POST	SmallInt		<HELI_SERVICES_N>	N	Recorded by the port inspection officer either before the start or at end of trip.

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_FAD\_MATERIAL

PROVIDE information on the FAD MATERIAL observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
FAD EVENT IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + FAD EVENT DATE/TIME	CF	CF			<FAD_ID>	Y	
FAD_EVENT_DATE	DATE/TIME of the FAD sighting (observation event).			REFER TO APPENDIX A1		<FAD_EVENT_DATE>	Y	No feasible way of getting this info using EM
OBJECT_NUMBER	Number allocated for the object. (related to "FAD Markings or numbers")			SmallInt		<OBJECT_NUMBER>	Y	As above.
ORIGIN_CODE	Original CODE of the FAD			REFER TO APPENDIX A24	Code 5 or 6 used for FADs with radio buoy attached	<ORIGIN_CODE>	Y	As above.
FAD_DET_CODE	FAD Detection CODE			SmallInt		<FAD_DET_CODE>	Y	As above.
DEPLOYMENT_DATE	Date of FAD deployment			REFER TO APPENDIX A1		<DEPLOYMENT_DATE>	N	As above.
LAT	LAT position of deployment			REFER TO APPENDIX A2		<LAT>	Y	As above.
LON	LON position of deployment			REFER TO APPENDIX A2		<LON>	Y	As above.
SSI_TRAPPED	FLAG to indicate whether any SSI are trapped on the FAD			Char (1)		<SSI_TRAPPED>	N	As above.
AS_FOUND_CODE	CODE to indicate whether the FAD "as Found"			Int		<AS_FOUND_CODE>	N	As above.

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_FAD\_MATERIAL

PROVIDE information on the FAD MATERIAL observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
AS_LEFT_CODE	CODE to indicate whether the FAD "as Left"			Int		<AS_LEFT_CODE>	N	As above.
MAX_DEPTH_M	Max DEPTH of the FAD in metres			Decimal (5,1)		<MAX_DEPTH_M>	Y	As above.
LENGTH_M	Max LENGTH of the FAD in metres			Decimal (5,1)		<LENGTH_M>	Y	As above.
WIDTH_M	Max WIDTH of the FAD in metres			Decimal (5,1)		<WIDTH_M>	Y	As above.
BUOY_NUMBER	Buoy number stated on the FAD			NVarChar (20)		<BUOY_NUMBER>	Y	As above.
MARKINGS	Markings on the FAD			NVarChar (50)		<MARKINGS>	Y	As above.
COMMENTS	Comments made by the observer about the FAD			Ntext		<COMMENTS>	Y	As above.

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

PS\_FAD\_MATERIAL\_DETAIL

PROVIDE information on the FAD MATERIAL DETAIL observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
FAD EVENT IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + FAD EVENT DATE/TIME	CF	CF			<FAD_ID>	Y	
MATERIAL_CODE	FAD Material CODE			REFER TO APPENDIX A26	Material Code must exist in the ref_ids table	<MATERIAL_CODE>	Y	No feasible way of getting this info using EM, APPART MAYBE FROM POST TRIP INTERVIEW
IS_ATTACHMENT	FLAG to indicate if there is an attachment to the FAD			Char (1)	'Y' or 'N'	<IS_ATTACHMENT>	Y	No feasible way of getting this info using EM, APPART MAYBE FROM POST TRIP INTERVIEW

- EM ready
- EM with work
- EM not likely
- EM Natural Key
- EM new field
- EM redundant

VES\_AIR\_SIGHT

PROVIDE the details on the GEN-1 form -- VESSEL AND AIRCRAFT SIGHTINGS / FISH, BUNKERING and OTHER TRANSFERS LOGS

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
SIGHTING IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SIGHT_DATE_TIME	CF	CF			<sight_ID>	Y	
sight_date_TIME	Date/Time of sighting			<a href="#">REFER TO APPENDIX A1</a>	Must adhere to the ISO 8601 format in Appendix A1	<sighting_date>	Y	It is very unlikely that EM will be able to be used effectively to monitor aircraft sightings.
lat	Latitude of SIGHTING			<a href="#">REFER TO APPENDIX A2</a>	Must adhere to the ISO 6709 format in Appendix A2	<lat>	Y	As above.
lon	Longitude of SIGHTING			<a href="#">REFER TO APPENDIX A2</a>	Must adhere to the ISO 6709 format in Appendix A2	<lon>	Y	As above.
VESSEL IDENTIFIER	PROVIDE the WCPFC VID for the VESSEL sighted (if this is possible)			<a href="#">REFER TO APPENDIX A4</a>	Record VID if the vessel can be identified on the WCPFC RFV	<VID>	N	As above.
S_NAME	Record sighted vessel or aircraft name, where possible				Record VID if the vessel can be identified on the WCPFC RFV	<S_NAME>	Y	As above.
S_IRCS	Record sighted vessel or aircraft call-sign, where possible				Record VID if the vessel can be identified on the WCPFC RFV	<S_IRCS>	Y	As above.
S_FLAG	Record flag of sight vessel, if possible				Record VID if the vessel can be identified on the WCPFC RFV	<S_FLAG>	Y	As above.
S_OTHER-MARKING	Record other vessel markings, if possible				Record VID if the vessel can be identified on the WCPFC RFV	<S_MARK>	Y	As above.

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VES\_AIR\_SIGHT

PROVIDE the details on the GEN-1 form -- VESSEL AND AIRCRAFT SIGHTINGS / FISH, BUNKERING and OTHER TRANSFERS LOGS

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
					<a href="#">REFER TO APPENDIX 17</a>			
vatyp_id	Vessel / Aircraft type			Int	<a href="#">REFER TO APPENDIX 17</a>	<vatyp_id>	Y	As above.
bearing_dir	Bearing (0-360 degrees)			SmallInt		<bearing_dir>	Y	As above.
distance	Record estimated distance from observers vessels to sighted vessel			Decimal (7,3)	Check the sighting on the radar and use the distance indicated, if not available use your estimate.	<distance>	Y	As above.
dist_unit	Units of Distance			INT	1 = Metres; 2 = kilometres; 3 = Nautical miles	<dist_unit>	Y	As above.
action_code	Action of Vessel/Aircraft sighted			Char (2)	<a href="#">REFER TO APPENDIX 18 for Vessel/Aircraft sightings only - only allow actions where FORM USED = 'GEN-1'</a>	<action_code>	Y	As above.
comments	Comments			NText		<comments>	Y	As above.

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OBS\_POLLUTION

PROVIDE information any Pollution observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID >	Y	
POLLUTION EVENT IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + INCIDENT DATE/TIME	CF	CF			<POLL_ID>	Y	
INC_DATE	DATE & TIME of the incident	EM-A	EM-A -> AG	<a href="#">REFER TO APPENDIX A1</a>	Must adhere to the ISO 8601 format in Appendix A1.	<INC_DTIME>	N	Can be recorded by the EM-Analyst only if in field of view of a camera. The Sol Is report stated on page 15 that "monitoring of marine pollution was possible with E-Monitoring", but acknowledged that it is restricted to the viewing range of the cameras.
lat	Latitude where incident occurred	EM-A	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	Must adhere to the ISO 6709 Appendix A2.	<lat>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
lon	Longitude where incident occurred	EM-A	EM-A -> AG	<a href="#">REFER TO APPENDIX A2</a>	Must adhere to the ISO 6709 in Appendix A2.	<lon>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
port_id	PORT where incident occurred	EM-A	EM-A -> AG	<a href="#">REFER TO APPENDIX A3</a>	Must adhere to the UN/LOCODE standard UN/LOCODE standard Appendix A3.	<port_id>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
activ_id	Activity when event occurred	EM-A	EM-A	<a href="#">REFER TO APPENDIX A5</a>		<activ_id>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
VESSEL IDENTIFIER	<a href="#">REFER TO APPENDIX A4</a>							
vatyp_id	Vessel / Aircraft type			Int	<a href="#">REFER TO APPENDIX 17</a>	<vatyp_id>	N	It is very unlikely that EM will be able to be used effectively to monitor pollution by other vessels.
	Compass Bearing to offending vessel					<bearing_id>		As above

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OBS\_POLLUTION

PROVIDE information any Pollution observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD
bearing_dir				SmallInt		<bearing_dir>	N
distance	Distance to offending vessel			Decimal (7,3)		<distance>	N
comments	Additional comments			NText		<comments>	N
stickers_ans	Response to "Stickers" question. "Were there any stickers/ posters displayed to remind the vessel about MARPOL Regulations?"	POST	POST	Char (1)	'Y' or 'N'	<stickers_ans>	N
aware_ans	Response to "MARPOL" question	POST	POST	Char (1)	'Y' or 'N'	<aware_ans>	N
advised_ans	Response to "INFRINGEMENTS" question	POST	POST	Char (1)	'Y' or 'N'	<advised_ans>	N
photos_ans	Response to "PHOTOS" question	POST EM-A	POST EM-A	Char (1)	'Y' or 'N'	<photos_ans>	N
photo_numbers	Number of photos taken on the incident	POST EM-A	POST EM-A	NVarChar (50)		<photo_numbers>	N

Notes
As above
As above
As the GEN-6 form is completed after the port visit, if this field is required then it should be reported for each trip by the PDCO.
As the GEN-6 form is completed after the port visit, if this field is required then it should be reported for each trip by the PDCO
This is not applicable - the question is "If there were any infringements to the MARPOL Regulations did you advise the Captain of these infringements?"
Recorded by the EM-Analyst from EM video, but GEN6 completed post trip.
Recorded by the EM-Analyst from EM video, but GEN6 completed post trip.

- EM ready
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OBS\_POLLUTION\_DETAILS

PROVIDE information on any Pollution details observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	Y	
POLLUTION EVENT IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + INCIDENT DATE/TIME	CF	CF			<POLL_ID>	Y	
pollutiontype_id	Pollution type code	EM-A	EM-A	<a href="#">REFER TO APPENDIX A31</a>	Some, but not all codes in listed in the relevant APPENDICES are WCPFC required fields.  For example, Disposal of OFFFAL MANAGEMENT is a WCPFC required field.	<pollutiontype_id>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
material_id	Pollution Materials code	EM-A	EM-A	<a href="#">REFER TO APPENDIX A29</a>		<material_id>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
POLL_GEAR_ID	Pollution Gear code	EM-A	EM-A	<a href="#">REFER TO APPENDIX A28</a>		<POLL_GEAR_ID>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
POLL_SRC_ID	Pollution Source code	EM-A	EM-A	<a href="#">REFER TO APPENDIX A30</a>		<POLL_SRC_ID>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
poll_desc	Description of pollution type	EM-A	EM-A	NText		<poll_desc>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.
poll_qty	Description of pollution quantity	EM-A	EM-A	NText		<poll_qty>	N	Can be recorded by the EM-Analyst only if in field of view of a camera.

- EM ready
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- EM redundant

OBS\_JOURNAL

PROVIDE a description of the day's activities in a daily journal record for the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE EM-A POST AG CF	Future Entry Source SETUP PRE EM-A POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD
TRIP IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBSTRIP_ID>	N
DAILY JOURNAL IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	CF	CF			<OBS_JRNL_ID>	N
JRNL_date	DATE of Journal entry	EM-A	EM-A	<a href="#">REFER TO APPENDIX A1</a>	Must adhere to the ISO 8601 format in Appendix A1	<JRNL_date >	N
JRNL_TEXT	Daily journal entry	EM-A	EM-A	NText		<JRNL_TEXT >	N

Issues
Recorded by the EM-Analyst.
Recorded by the EM-Analyst.

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