Western and Central Pacific Fisheries Commission

SECOND E- REPORTING AND E-MONITORING INTERSESSIONAL WORKING GROUP MEETING (ERandEMWG2)

The Stones Hotel, Bali, INDONESIA
1 – 2 August 2016

DRAFT WCPFC E-MONITORING STANDARD DATA FIELDS FOR OPERATIONAL LONGLINE OBSERVER DATA

E-MONITORING PROCESS STANDARDS
FOR DATA EXTRACTION TO LONGLINE OBSERVER DATA FIELDS

July 2016

CURRENT VERSION:	*1.00*
DATE:	*08 July 2016*
STATUS:	*Draft – yet to be approved*

Version Number	Date Approved	Approved by	Brief Description
			_

INTRODUCTION

These tables set out Draft Process Standards for the provision of operational OBSERVER data fields collected in the WCPFC longline (LL) fisheries through E-monitoring (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[1]. 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 WCFPC data field[2] or not.

These Draft Process Standards are consistent with, and should be considered in conjunction with more detailed instructions[3] 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 and by officer observers reviewing 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 are equivalent to those of the TUBS system. The data — meeting the relevant standards — should then be able to be exported to authorised recipients including the WCPFC.

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 1.0 dated 10th June 2015 (as reflected in the WCPFC EREM WG1 meeting report).

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.

---

[1] Note: there have been some recent changes in the Standards not reflected in the current ER standard on which this document is based. These include 1) changes that were considered by the DCC in 2014 and 2) changes agreed by the last Commission meeting but yet to be considered by the DCC. These updates will need to be included during 2017 – after the next DCC meeting.

[2] 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

[3] 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.

MODIFICATION OF TABLES FOR E-MONITORING

The procedure to produce the Draft Process Standards began with the WCPFC E-Reporting Standard Data Fields. Based on previous knowledge of EM programs and the recent work on EM of Solomon Is longliners (Hosken *et al.* 2014), the capacity for EM to collect 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[4];
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.
PRE	—	Hardcopy reporting or preferably E-Reporting from a pre-trip onsite inspection of the vessel and discussion with owner / captain / crew;
OO	—	Recorded by an Office Observer (OO) 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;
OO -> AG	—	A special case of the above where an event is detected by the Office observer 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 issued discussed for each field.

---

[4] 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.

OVERARCHING ISSUES

As workshop participants went through the above process, a number of overarching issues (not specific to any particular field) were noted. These issues were largely outside the scope of the workshop but are briefly described below.

DATABASE MANAGEMENT

Record of data source

An "office observer" (OO) will not be able to collect all the LL 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 office observer (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 office observer 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 LL-1 form) or preferably an equivalent electronic form. When analysis of the EM records begin, the office observer 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). Workshop participants recognised that 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. OO, 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 office observer 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 quite possible that the database for EM will be significantly different from that used for onboard observers. 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 issues 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 office observer generated
  - E.g. smart gear[5] vs observer time
  - 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)
  - E.g. certain field from a marine turtle encounter in LL-4 could be automatically filled into the GEN2 (SSI)

---

[5] "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.

- Field codes may need to be revisited to ensure consistency.

<u>Trip Reports</u>

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

<u>Quality control</u>

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.

<u>Standard time measurement</u>

The LL observer guide 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.

<u>Equipment failure (hardware and/or software)</u>

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 longline 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 electrics (LL1) 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 were quite a number of overarching SSI issues that need to be reviewed, including EM capacity for detection.

Protocols for sub-sampling sets determined

EM has the potential to monitor every longline set and 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.

- Difficult logistics on board longliners;
- 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 office observer 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.:
    - Individual fish catch;
    - Float deployment and retrieval;
    - Hook deployment and retrieval;
    - Line cuts and retrieval;
    - 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.

LONGLINE OBSERVER EM PROCESS STANDARDS

DATA MODEL DIAGRAM

The following basic data model diagram outlines the structure of the entities and their relationships for longline 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.
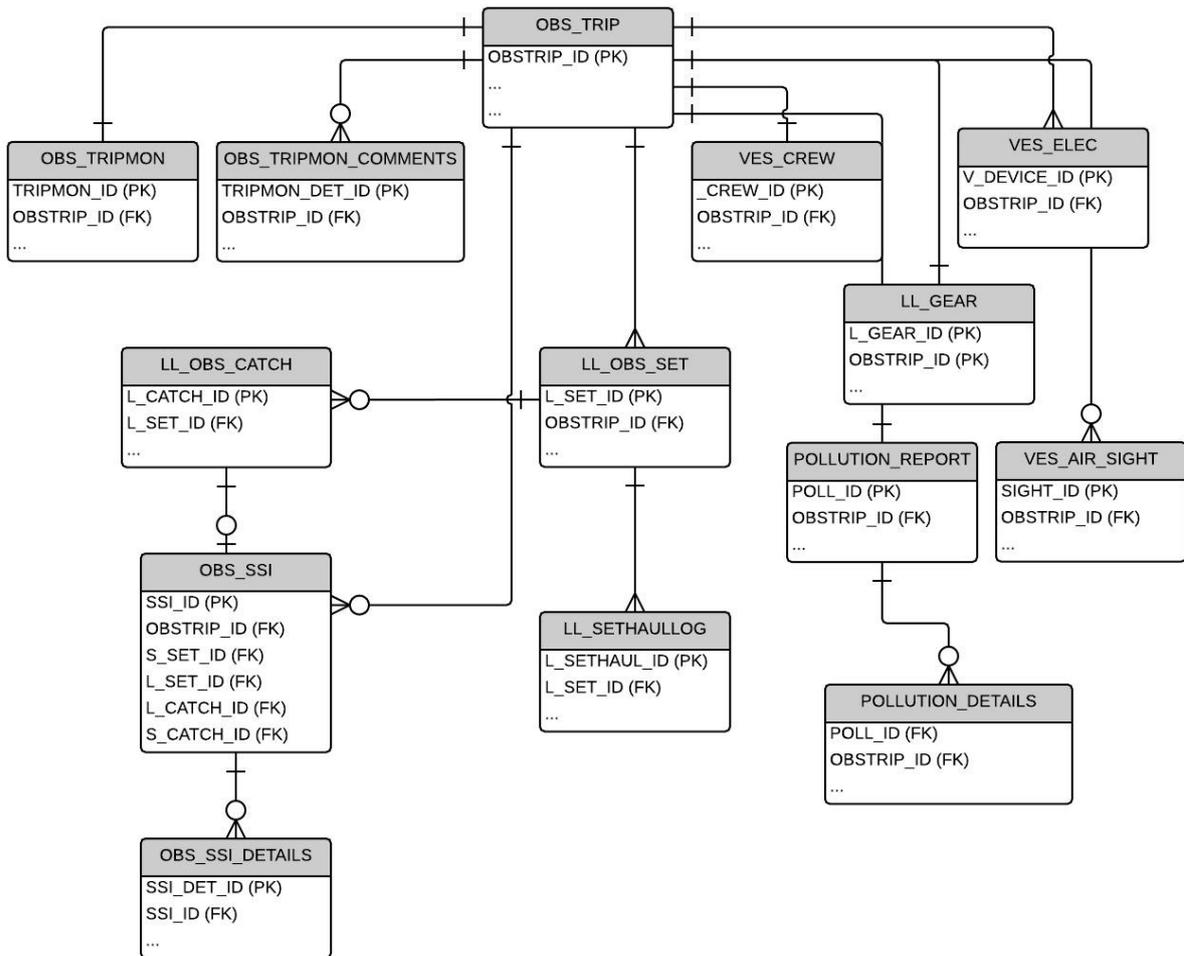
TRIP-LEVEL DATA

- OBS_TRIP
- VES_CREW
- VES_ELEC
- LL_GEAR
- LL_TRIP_REPORT

		Current Entry Source	Future Entry Source				WCPFC	
FIELD	**Data Collection Instructions**	**SETUP PRE OO POST AG CF**	**SETUP PRE OO POST AG CF**	**Field format notes**	**Validation rules**	**XML TAG**	**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	
obsprg_code	OBSERVER SERVICE PROVIDERS identification- National or sub-regional observer programmes For national programmes, this is the COUNTRY_CODE + 'OB' for example, 'PGOB' – 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	OO	OO AG	Char (4)	Observer programme code must be must 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. "PGOO" or "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	OO	OO	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 (office observer) Does this field need to be modified to include a fifth character "V" for vessel observer and "O" for Office observer? 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.	OO	OO					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

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

| | | Current Entry Source | Future Entry Source | | | | WCPFC | |
FIELD	Data Collection Instructions	SETUP PRE OO POST AG CF	SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	FIELD	Notes
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								
								Provide the link to the specific versions metadata
Software_vers_B	Identifies the EM equipment software version							Identifies the data analysis software version 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 FOR THAT OBSERVER. 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 office observer 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	Depart DATE/TIME for the observer trip (Observer's 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	OO PRE	AG OO PRE	REFER TO APPENDIX A1	Use UTC DATE for the departure date. **Should this be ships date and time?** **Must adhere to the ISO 8601 format in Appendix A1**	<dep_date>	Y	Transhipment at sea is an issue A standard is required defining a database of each port and a geofence. *Needs tobe reviewed / agreed by DCC / WCPFC* This may need to refer to start of trip (that can include transhipment) rather than return to port. Need to be reviewed by DCC / WCPFC.

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
DATE AND TIME OF ARRIVAL IN PORT	Return DATE/TIME for the observer trip (from the observer's point of view) 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	OO POST	AG OO POST	REFER TO APPENDIX A1	Use UTC DATE for the return date. **Should this be ships date and time?** **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 transhipment) 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. *Needs tobe reviewed / agreed by DCC / WCPFC*
gear_code	Link to ref_gears table Selected by the office observer Could be determine by pre-trip vessel inspection or licencing information Automatically generarated from the vessel identifier and hardwired into the software	OO PRE	AG SETUP	Char (1)	Must be a valid GEAR: 'L' – Longline; 'S' – Purse seine; 'P' – Pole-and-line	\<gear_code\>	Y	In future it will almost certainly be derived from the vessel identfier 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 preiod 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
VESSEL IDENIFIER	REFER TO APPENDIX A4	SETUP	SETUP					Ideally this would be UVI and programmed into the sogware during setup The service provider needs to have access to this data and vessel names
versn_id	Data standards version **This is version of the hardcopy form**			Int		\<versn_id\>	N	
XML_version_id		SETUP	SETUP		Refer to valid ISO two-letter Country Codes - ISO 3166			*Needs to be reviewed / agreed by DCC / WCPFC*
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\>	Y	This is identical to the first two letter of OBSPRG

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

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
								Review by the DCC / WCPFC
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	OO PRE	AG OO PRE	REFER TO APPENDIX A3	Must be valid United Nations – Code for Trade and Transport Locations (UN/LOCODE) – see http://www.unece.org/cefact/locode/service/location **Not mandatory?**	\<DEP_PORT\>	Y	A standard is required defining a database of each port and a geofence. *Needs to be reviewed / agreed by DCC / WCPFC* 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	OO POST	AG OO POST	REFER TO APPENDIX A3	Must be valid United Nations - Code for Trade and Transport Locations (UN/LOCODE) **Not mandatory?**	\<RET_PORT\>	Y	A standard is required defining a database of each port and a geofence. *Needs to be reviewed / agreed by DCC / WCPFC* Automatically recorded from VMS / GPS
dep_lat	The actual depart LAT position for the trip (if departing AT SEA) 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	OO PRE	AG OO PRE	REFER TO APPENDIX A2	**Must adhere to the ISO 6709 – Positions** **Degrees and minutes to 3 decimal places** **Not mandatory?**	\<dep_lat\>	Y	A standard is required defining a database of each port and a geofence. *Needs to be reviewed / agreed by DCC / WCPFC* Automatically recorded from VMS / GPS
	The actual depart LON position for the trip (if departing AT SEA)				**Must adhere to the ISO 6709 – Positions**			

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

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

FIELD	Data Collection Instructions	Current Entry Source / SETUP PRE OO POST AG CF	Future Entry Source / SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
top	**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							
dep_lon	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	OO PRE	AG OO PRE	REFER TO APPENDIX A2	**Degrees and minutes to 3 decimal places** **Not mandatory?**	\<dep_lon\>	Y	A standard is required defining a database of each port and a geofence. *Needs to be reviewed / agreed by DCC / WCPFC* Automatically recorded from VMS / GPS
ret_lat	The actual return LAT position for the trip (if departing AT SEA) 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	OO POST	AG OO POST	REFER TO APPENDIX A2	**Must adhere to the ISO 6709 – Positions** **Degrees and minutes to 3 decimal places** **Not mandatory?**	\<ret_lat\>	Y	A standard is required defining a database of each port and a geofence. *Needs to be reviewed / agreed by DCC / WCPFC* Automatically recorded from VMS / GPS
ret_lon	The actual return LON position for the trip (if departing AT SEA) 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	OO POST	AG OO POST	REFER TO APPENDIX A2	**Must adhere to the ISO 6709 – Positions** **Degrees and minutes to 3 decimal places** **Not mandatory?**	\<ret_lon\>	Y	A standard is required defining a database of each port and a geofence. *Needs tobe reviewed / agreed by DCC / WCPFC* Automatically recorded from VMS / GPS
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	This can be obtained
vescaptain	NAME of the captain of the vessel	PRE	PRE	NVarChar (50)		\<vescaptain\>	Y	
VESCAPT_NATION	NATIONALITY of the captain of the vessel	PRE	PRE	Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166 For example, refer to http://en.wikipedia.org/wiki/ISO_3166-1	\<vescapt_CO_CODE\>	Y	

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						
FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Two letter COUNTRY CODE for the country who organise the trip							
VESCAPT_ID_DOC	Captain's Document ID	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>		
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 For example, refer to http://en.wikipedia.org/wiki/ISO_3166-1	\<vescapt_CO_CODE>	Y	
VESMAST_ID_DOC	FISHING MASTERS's Document ID	PRE	PRE	NVarChar (20)		\<VESCAPT_ID_DOC>	Y	
crew_number	Total number of CREW onboard during the trip	PRE	PRE	Int		\<crew_number>	Y	Recorded by the port data collection officer on FORM LL-1 and then entered into data capture screen
spill	FLAG to indicated the trip was a SPILL SAMPLE trip			Bit		\<spill>	N	Don't think this is relevant to LL
cadet	FLAG to indicated whether the trip was observed by a CADET observer			Bit		\<cadet>	N	This could relate to the office observer What credentials 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	
comments	General comments about the trip	OO	OO	NText		\<comments>	N	General comments
EM comments	General comments about EM the trip	OO	OO	NText		\<comments>	N	Comments specifically regarding quality of EM information *Needs tobe reviewed / agreed by DCC / WCPFC*

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

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC	Issues
		SETUP PRE OO POST AG CF	SETUP PRE OO 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 + COUNTRY_CODE	CF	CF			<V_CREW_ID>	Y	
country_code	Nationality of the CREW	PRE SETUP	PRE SETUP	Char (2)	Refer to valid ISO two-letter Country Codes - ISO 3166 For example, refer to http://en.wikipedia.org/wiki/ISO_3166-1	<country_code>	Y	**Will require interview with skipper.**
crewcount	Total number of crew on board during the trip for this COUNTRY OF NATIONALITY	PRE	PRE	SmallInt		<crewcount>	Y	**Will require interview with skipper.**

VES_CREW

PROVIDE the summary details of VESSEL CREW by NATIONALITY on this TRIP.

Legend:
- EM ready
- EM with work
- EM not likely
- EM Natural Key
- 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 OO POST AG CF	SETUP PRE OO 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	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)		<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 ?			Char (3)	Refer to APPENDIX 21		<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			NText	Free text		<comments>	N	As above

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

LL_GEAR								
PROVIDE information on the LONGLINE GEAR on the vessel.								

FIELD	Data Collection Instructions	Current Entry Source **SETUP PRE OO POST AG CF**	Future Entry Source **SETUP PRE OO 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	
LL GEAR IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE	**CF**	**CF**			<L_GEAR_ID>	Y	
mlinehaul_ans	Mainline hauler (Y/N)	**SETUP PRE OO**	**SETUP PRE OO**	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<mlinehaul_ans>	Y	**Can be recorded by the OO only if in field of view of a camera.**
mlinehaul_usage_code	Link to ref_usage table	**OO**	**OO**	Char (3)	[REFER TO APPENDIX 21](#)	<mlinehaul_usage_code>	Y	**Can be recorded by the OO only if in field of view of a camera.**
mlinehaul_comments	Comments on Mainline Hauler	**OO**	**OO**	NVarChar (50)		<mlinehaul_comments>	N	**Can be recorded by the OO only if in field of view of a camera.**
blinehaul_ans	Branchline hauler (Y/N)	**SETUP PRE OO**	**SETUP PRE OO**	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<blinehaul_ans>	Y	**Can be recorded by the OO only if in field of view of a camera.**
blinehaul_usage_code	Link to ref_usage table	**OO**	**OO**	Char (3)	[REFER TO APPENDIX 21](#)	<blinehaul_usage_code>	Y	**Can be recorded by the OO only if in field of view of a camera.**
blinehaul_comments	Comments on Branchline Hauler	**OO**	**OO**	NVarChar (50)		<blinehaul_comments>	N	**Can be recorded by the OO only if in field of view of a camera.**
lshoot_ans	Line shooter (Y/N)	**SETUP PRE OO**	**SETUP PRE OO**	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<lshoot_ans>	Y	**Can be recorded by the OO only if in field of view of a camera.**
lshoot_usage_code	Link to ref_usage table	**OO**	**OO**	Char (3)	[REFER TO APPENDIX 21](#)	<lshoot_usage_code>	Y	**Can be recorded by the OO only if in field of view of a camera.**
lshoot_comments	Comments on Line shooter	**OO**	**OO**	NVarChar (50)		<lshoot_comments>	N	**Can be recorded by the OO only if in field of view of a camera.**
baitthr_ans	Automatic bait thrower (Y/N)	**SETUP PRE OO**	**SETUP PRE OO**	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<baitthr_ans>	Y	**Can be recorded by the OO only if in field of view of a camera.**

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	LL_GEAR PROVIDE information on the LONGLINE GEAR on the vessel.							
baitthr_usage_code	Link to ref_usage table	OO	OO	Char (3)	REFER TO APPENDIX 21	\<baitthr_usage_code>	Y	**Can be recorded by the OO only if in field of view of a camera.**
baitthr_comments	Comments on Automatic Bait thrower	OO	OO	NVarChar (50)		\<baitthr_comments>	N	**Can be recorded by the OO only if in field of view of a camera.**
branchatt_ans	Automatic branchline attacher (Y/N)	SETUP PRE OO	SETUP PRE OO	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	\<branchatt_ans>	Y	**Can be recorded by the OO only if in field of view of a camera.**
branchatt_usage_code	Link to ref_usage table	OO	OO	Char (3)	REFER TO APPENDIX 21	\<branchatt_usage_code>	Y	**Can be recorded by the OO only if in field of view of a camera.**
branchatt_comments	Comments on Automatic Branchline attacher	OO	OO	NVarChar (50)		\<branchatt_comments>	N	**Can be recorded by the OO only if in field of view of a camera.**
wT_Sca_ans	Weighing scales (Y/N)	SETUP PRE OO	SETUP PRE OO	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	\<WT_SCA_ANS>	N	**Can be recorded by the OO only if in field of view of a camera.**
wT_Sca_usage_code	Weighing scales USAGE	OO	OO	Char (3)	REFER TO APPENDIX 21	\<WT_SCA_USAGE_CODE>	N	**Can be recorded by the OO only if in field of view of a camera.**
wT_sca_comments	Comments on Automatic B Weighing scales	OO	OO	NVarChar (50)		\<WT_SCA_COMMENTS>	N	**Can be recorded by the OO only if in field of view of a camera.**
mline_comp	Composition of mainline	SETUP PRE	SETUP PRE	NText		\<mline_comp>	Y	
bline_comp	Composition of branchlines	SETUP PRE	SETUP PRE	NText		\<bline_comp>	Y	
mline_mat	Mainline material	SETUP PRE	SETUP PRE	NVarChar (15)		\<mline_mat>	Y	

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

LL_GEAR								
PROVIDE information on the LONGLINE GEAR on the vessel.								

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
mline_mat_desc	Mainline material description	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<mline_mat_desc>	Y	
mline_len	Mainline length (nm) Recorded by the EM system after being flagged by the office observer.	**OO -> AG**	**OO -> AG CF**	Decimal (5,1)		<mline_len>	Y	This may be able to be calculated automatically using float markers and position
mline_diam	Mainline diameter (mm)	**SETUP PRE**	**SETUP PRE**	Decimal (4,1)		<mline_diam>	Y	
bline_mat1	Composition of branchlines (Material #1)	**SETUP PRE**	**SETUP PRE**	NVarChar (40)		<bline_mat1>	Y	
bline_mat1_desc	Branchlines (Material #1) description	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<bline_mat1_desc>	Y	
bline_mat2	Composition of branchlines (Material #2)	**SETUP PRE**	**SETUP PRE**	NVarChar (40)		<bline_mat2>	Y	
bline_mat2_desc	Branchlines (Material #2) description	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<bline_mat2_desc>	Y	
bline_mat3	Composition of branchlines (Material #3)	**SETUP PRE**	**SETUP PRE**	NVarChar (40)		<bline_mat3>	Y	
bline_mat3_desc	Branchlines (Material #3) description	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<bline_mat3_desc>	Y	
wiretrace_ans	Presence of wire trace (Y/N)	**SETUP PRE OO**	**SETUP PRE OO**	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<wiretrace_ans>	Y	Should be able to be detected by OO if sufficient clarity / definition
	Refrigeration method – Sea water ?				Must be 'Y', 'N' or 'X' (observer did	<seawater		

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

FIELD	Data Collection Instructions	Current Entry Source	Future Entry Source	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
		SETUP PRE OO POST AG CF	SETUP PRE OO POST AG CF					
seawater_ans		SETUP PRE	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<seawater_ans>	Y	
blastfreezer_ans	Refrigeration method - blast freezer ?	SETUP PRE	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<blastfreezer_ans>	Y	
ice_ans	Refrigeration method - Ice ?	SETUP PRE	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<ice_ans>	Y	
chilledseawater_ans	Refrigeration method - Chilled Sea water ?	SETUP PRE	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<chilledseawater_ans>	Y	
otherstorage_ans	Refrigeration method – other ?	SETUP PRE	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<otherstorage_ans>	Y	
otherstorage_desc	Refrigeration method – other description	SETUP PRE	SETUP PRE	NVarChar (50)		<otherstorage_desc>	Y	
hksjapan_size	Japanese hook size	SETUP PRE	SETUP PRE	NVarChar (50)		<hksjapan_size>	Y	
hksjapan_perc	% of Japanese hook	SETUP PRE	SETUP PRE	TinyInt		<hksjapan_perc>	N	
hksjapan_ors	Japanese hook original size	SETUP PRE	SETUP PRE	NVarChar (5)		<hksjapan_ors>	Y	
hkscircle_size	Circle hook size	SETUP PRE	SETUP PRE	NVarChar (50)		<hkscircle_size>	Y	
hkscircle_perc	% of Circle hook	SETUP PRE	SETUP PRE	TinyInt		<hkscircle_perc>	N	
hkscircle_ors	Circle hook original size	SETUP PRE	SETUP PRE	NVarChar (5)		<hkscircle_ors>	Y	
	J hook size						Y	

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
			LL_GEAR PROVIDE information on the LONGLINE GEAR on the vessel.					
hksj_size		**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<hksj_size >	Y	
hksj_perc	% of J hook size	**SETUP PRE**	**SETUP PRE**	TinyInt		<hksj_perc >	N	
hksj_ors	J hook original size	**SETUP PRE**	**SETUP PRE**	NVarChar (5)		<hksj_ors>	Y	
hksoth_type	Other hook types description	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<hksoth_ty pe>	Y	
hksoth_size	Other hook type size	**SETUP PRE**	**SETUP PRE**	NVarChar (50)		<hksoth_si ze>	Y	
hksoth_perc	% of Other hook types	**SETUP PRE**	**SETUP PRE**	TinyInt		<hksoth_pe rc>	N	
hksoth_ors	Others types of hook original size	**SETUP PRE**	**SETUP PRE**	NVarChar (5)		<hksoth_or s>	Y	
bline_mat1_diam	Branchlines (Material #1) diameter	**SETUP PRE**	**SETUP PRE**	Decimal (4,1)		<bline_mat 1_diam>	Y	
bline_mat2_diam	Branchlines (Material #2) diameter	**SETUP PRE**	**SETUP PRE**	Decimal (4,1)		<bline_mat 2_diam>	Y	

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

<table>
<tr><td colspan="9" align="center">**LL_TRIP_REPORT**

PROVIDE descriptive information on the trip.</td></tr>
<tr><td colspan="9" align="center">Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report</td></tr>
<tr>
<td>**FIELD**</td>
<td>**Data Collection Instructions**</td>
<td>**Future Entry Source**
SETUP PRE OO POST AG CF</td>
<td>**Future Entry Source**
SETUP PRE OO POST AG CF</td>
<td>**Field format notes**</td>
<td>**Validation rules**</td>
<td>**XML TAG**</td>
<td>**WCPFC FIELD**</td>
<td>Notes</td>
</tr>
<tr>
<td>TRIP IDENTIFIER</td>
<td>Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE</td>
<td>CF</td>
<td>CF</td>
<td></td>
<td></td>
<td><OBSTRIP_ID></td>
<td>N</td>
<td>The current hardcopy Trip Report has been designed with a focus on onboard observers.
The fields required in an EM trip report needs to be reviewed by DCC / WCPFC.</td>
</tr>
<tr>
<td>1_BACKGROUND</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE
OO
POST</td>
<td>PRE
OO
POST</td>
<td>NText</td>
<td></td>
<td><1_BACKGROUND></td>
<td>N</td>
<td>The following can be populated from data already recorded:
- Observer service provider
- PDCO name
- Office observer name</td>
</tr>
<tr>
<td>2_0_CRUISE_SUMMARY</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE
OO
POST</td>
<td>PRE
OO
POST</td>
<td>NText</td>
<td></td>
<td><2_0_CRUISE_SUMMARY></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.

The following can be populated / calculated from data already recorded:
- Port of departure
- Date and time of departure
- Time between departure and start of first set
- the number of fishing operations fully monitored by the office observer
.   The summary table in Appendix 1</td>
</tr>
<tr>
<td>2_1_Area_FISHED</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE
OO
POST</td>
<td>PRE
OO
POST</td>
<td>NText</td>
<td></td>
<td><2_1_Area_FISHED></td>
<td>N</td>
<td>Recorded by the office observer.

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</td>
</tr>
<tr>
<td>2_2_END_OF_TRIP</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE
OO
POST</td>
<td>PRE
OO
POST</td>
<td>NText</td>
<td></td>
<td><2_2_END_OF_TRIP></td>
<td>N</td>
<td>Recorded by the office observer 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:
- Time between end of last set and date and time of return</td>
</tr>
</table>

<table>
<tr><td>■ EM ready</td><td>■ EM Natural Key</td></tr>
<tr><td>■ EM with work</td><td>■ EM new field</td></tr>
<tr><td>■ EM not likely</td><td>■ EM redundant</td></tr>
</table>

<table>
<tr><td colspan="8" align="center">LL_TRIP_REPORT

PROVIDE descriptive information on the trip.</td><td rowspan="2"></td></tr>
<tr><td colspan="8" align="center">Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report</td></tr>
<tr>
<th>FIELD</th>
<th>Data Collection Instructions</th>
<th>Future Entry Source
SETUP PRE OO POST AG CF</th>
<th>Future Entry Source
SETUP PRE OO POST AG CF</th>
<th>Field format notes</th>
<th>Validation rules</th>
<th>XML TAG</th>
<th>WCPFC FIELD</th>
<th>Notes</th>
</tr>
<tr>
<td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td>
<td>- total number of fishing operations made by the vessel
- the number of fishing operations fully monitored by the office observer
- average number of hooks set per fishing operation</td>
</tr>
<tr>
<td>3_0_DATA_COLLECTED</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE OO POST</td>
<td>PRE OO POST</td>
<td>NText</td>
<td></td>
<td><3_0_DATA_COLLECTED></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.

A lot of this could be automatically completed by the EM database.</td>
</tr>
<tr>
<td>3_1_OTHER_DATA_COLL</td>
<td>(Refer to relevant section in link above)</td>
<td>PRE OO POST</td>
<td>PRE OO POST</td>
<td>NText</td>
<td></td>
<td><3_1_OTHER_DATA_COLL></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.</td>
</tr>
<tr>
<td>4_0_COC</td>
<td>Refer to relevant section in link above)</td>
<td>PRE OO POST</td>
<td>PRE OO POST</td>
<td>NText</td>
<td></td>
<td><4_0_COC></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_1_VESS_INFO</td>
<td>Refer to relevant section in link above)</td>
<td>PRE OO POST</td>
<td>PRE OO POST</td>
<td>NText</td>
<td></td>
<td><5_1_VESS_INFO></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.

Vessel details could be automatically populated from the vessel register (https://www.wcpfc.int/record-fishing-vessel-database) including:

- Owner
- Tonnage
- Length
- Freezer capacity</td>
</tr>
<tr>
<td>5_2_CREW_NATION</td>
<td>Refer to relevant section in link above)</td>
<td>PRE POST</td>
<td>PRE POST</td>
<td>NText</td>
<td></td>
<td><5_2_CREW_NATION></td>
<td>N</td>
<td>Recorded Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_2_1_PIC</td>
<td>Refer to relevant section in link above)</td>
<td>PRE POST</td>
<td>PRE POST</td>
<td>NText</td>
<td></td>
<td><5_2_1_PIC></td>
<td>N</td>
<td>Recorded Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_3_ELEC</td>
<td>Refer to relevant section in link above)</td>
<td>PRE POST</td>
<td>PRE POST</td>
<td>NText</td>
<td></td>
<td><5_3_ELEC></td>
<td>N</td>
<td>Recorded Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_3_1_RADIO_BUOYS</td>
<td>Refer to relevant section in link above)</td>
<td>PRE POST</td>
<td>PRE POST</td>
<td>NText</td>
<td></td>
<td><5_3_1_RADIO_BUOYS></td>
<td>N</td>
<td>Recorded Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_4_FISHING_GEAR</td>
<td>Refer to relevant section in link above)</td>
<td>PRE POST</td>
<td>PRE POST</td>
<td>NText</td>
<td></td>
<td><5_4_FISHING_GEAR></td>
<td>N</td>
<td>Recorded Pre- and Post-inspections.</td>
</tr>
<tr>
<td>5_4_1_MAINLINE</td>
<td>Refer to relevant section in link above)</td>
<td>PRE OO POST</td>
<td>PRE OO POST</td>
<td>NText</td>
<td></td>
<td><5_4_1_MAINLINE></td>
<td>N</td>
<td>Recorded by the office observer and Pre- and Post-inspections.</td>
</tr>
</table>

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

FIELD	Data Collection Instructions	Future Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
5_4_2_BRANCHLINES	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_4_2_BRANCHLINES>	N	Recorded by the office observer and Pre- and Post-inspections. The following can be calculated from data already recorded: - Average branchline length for trip - Average branchline length per set - Average number of branchlines used - Average number of sharklines per set from sum(FLOAT_HOOK_N) / number of sets
5_4_3_FLOATLINES	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_4_3_FLOATLINES>	N	Recorded by the office observer and Pre- and Post-inspections. The following can be calculated from data already recorded: - Average float line (FLOAT_LENGTH) - Average float line per set (FLOAT_LENGTH)
5_4_4_bline_wts	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_4_4_bline_wts>	N	Recorded by the office observer and Pre- and Post-inspections.
5_4_5_FISH_HOOKS	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_4_5_FISH_HOOKS>	N	Recorded by the office observer and Pre- and Post-inspections. The following can be calculated from data already recorded: - Total number and percentage of hooks per set by hook type - Total number and percentage of hooks per trip by hook type
5_5_safety_eq	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<5_5_safety_eq>	N	Not really relevant, but could be reported by PDCO.
5_6_REGRIG	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_6_REGRIG>	N	Recorded by the office observer and Pre- and Post-inspections.
5_7_OTHER_GEAR	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<5_7_OTHER_GEAR>	N	Recorded by the office observer and Pre- and Post-inspections.
6_0_fISH_STRATEGY	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_0_fISH_STRATEGY>	N	Recorded by the office observer and Pre- and Post-inspections.
6_1_FISHERY_INFO	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_1_FISHERY_INFO>	N	Recorded by the office observer and Pre- and Post-inspections.

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

<table>
<tr><td colspan="9">LL_TRIP_REPORT

PROVIDE descriptive information on the trip.</td></tr>
<tr><td colspan="9"></td></tr>
</table>

FIELD	Data Collection Instructions	Future Entry Source **SETUP PRE OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
6_2_OCEAN_fEATURES	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_2_OCEAN_fEATURES>	N	Recorded by the office observer and Pre- and Post-inspections.
6_3_set_hAUL	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_3_set_hAUL>	N	Recorded by the office observer and Pre- and Post-inspections. A summary table could be automatically generated from the data already recorded for each set: - Start set time - Set duration - Start haul time - Haul duration - Average number of hooks per basket
6_4_TARGET_DEPTH	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_4_TARGET_DEPTH>	N	Recorded by the office observer and Pre- and Post-inspections.
6_5_BAITING	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_5_BAITING>	N	Recorded by the office observer and Pre- and Post-inspections. Bait sequence could be automatically summarised from data provided in LL-2/3 for each set.
6_6_MITIGATION	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_6_MITIGATION>	N	Recorded by the office observer and Pre- and Post-inspections. A list of mitigation methods automatically summarised from data provided in LL-2/3 for each set.
6_6_1_FISH_OFFAL	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_6_1_FISH_OFFAL>	N	Recorded by the office observer and Pre- and Post-inspections. The Sol Is report stated that "This information can only be collected onboard the fishing vessel during the trip. It would require the video to adequately identify the vessel's practice with respect to disposal of offal." But it could be obtained from interview with the skipper.
6_7_hAUL_PROCESS	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<6_7_hAUL_PROCESS>	N	Recorded by the office observer and Pre- and Post-inspections.
6_8_UNUSUAL_SET	Refer to relevant section in link above) **Recorded by the OO.**	OO	OO	NText		<6_8_UNUSUAL_SET>	N	Recorded by the OO.

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

LL_TRIP_REPORT								
PROVIDE descriptive information on the trip.								
Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report								
FIELD	**Data Collection Instructions**	**Future Entry Source** **SETUP PRE OO POST AG CF**	**Future Entry Source** **SETUP PRE OO POST AG CF**	**Field format notes**	**Validation rules**	**XML TAG**	**WCPFC FIELD**	Notes
6_9_CHANGES_SETS	Refer to relevant section in link above)	OO	OO	NText		<6_9_CHANGES_SETS>	N	Recorded by the OO. Summary tables of select set characteristics could be automatically generated.
7_1_WEATHER	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<7_1_WEATHER>	N	Recorded by the office observer and Pre- and Post-inspections.
7_2_sEA_cond	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<7_2_sEA_cond>	N	Recorded by the office observer and Pre- and Post-inspections.
7_3_MOOn_phase	Refer to relevant section in link above)	OO	OO	NText		<7_3_MOOn_phase>	N	Recorded by the PDCO from interviews and moon phase table / calculation. Summary graph of catch by species against moon phase could be automatically produced.

8_1_tARGET_cATCH	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_1_tARGET_cATCH>	N	Recorded by the office observer and Pre- and Post-inspections.
								
								Summary table could be automatically produced for each shot showing
								    - Target species (common name followed by the scientific name and FAO code)
								    - Appendix 2 - Catch statistics and catch fate

8_1_1_tARGET_pROC	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_1_1_tARGET_pROC>	N	Recorded by the office observer and Pre- and Post-inspections. The quality of this information could depend on wheter there is a camera over the area of processing.
8_1_2_Target_disc	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_1_2_Target _disc>	N	Recorded by the office observer (discards) and Pre- and Post-inspections. Summary table could be automatically produced for the trip showing - Target species (common name followed by the scientific name and FAO code) discarded for each fate category
	Refer to relevant section in link above)							Recorded by the OO.

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

<table>

	LL_TRIP_REPORT							
	PROVIDE descriptive information on the trip.							
	Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report							
FIELD	Data Collection Instructions	Future Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
8_1_3_Target_da mage		PRE OO POST	PRE OO POST	NText		<8_1_3_Tar get_damage >	N	Summary table could be automatically produced for the trip showing - Target species (common name followed by the scientific name and FAO code) retained or discarded for each "damage" fate category
8_2_1_Other_tun _bill	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_2_1_Oth er_tun_bil l>	N	Recorded by the office observer 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 - Species (common name followed by the scientific name and FAO code) - Summary details listed Appendix 2
8_2_2_Sharks_ra ys	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_2_2_Sha rks_rays>	N	Recorded by the office observer 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 - Species (common name followed by the scientific name and FAO code) - Summary details listed Appendix 2
8_2_3_Other_by-catch	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_2_3_Oth er_by-catch>	N	Recorded by the office observer 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 - Species (common name followed by the scientific name and FAO code) - Summary details listed Appendix 2
8_3_Unspec_sp_c odes	Refer to relevant section in link above)			NText		<8_3_Unspe c_sp_codes	N	Recorded by the OO.

</table>

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

FIELD	Data Collection Instructions	Future Entry Source **SETUP PRE OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
odes						>		

8_4_1_Ssi_land	Refer to relevant section in link above)	OO	OO	NText		<8_4_1_Ssi _land>	N	Recorded by the OO.
								
								Table of all landed SSI individuals automatically produced for the trip showing
								    - Species (common name followed by the scientific name and FAO code)
								    - Gender
								    - Size
								    - Description of interaction (including prior sighting, treatment, problems with ID)
								    - Condition when landed
								    - Condition when released

8_4_2_Ssi_interact	Refer to relevant section in link above)	OO	OO	NText		<8_4_2_Ssi _interact>	N	Recorded by the OO.
								
								Table of all SSIs that interacted with vessel or gear only automatically produced for the trip showing
								
								    - Species (common name followed by the scientific name and FAO code)
								    - Condition at start of interaction
								
								    - Condition at end of interaction
								
								Check to see if this is just for Purse seine

8_4_3_Ssi_mam	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_4_3_Ssi _mam>	N	Recorded by the office observer and Pre- and Post-inspections.

8_4_4_Ssi_sight	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<8_4_4_Ssi _sight>	N	Recorded by the office observer and Pre- and Post-inspections.
								
								Table of all SSIs that interacted with vessel or gear only automatically produced for the trip showing
								
								    - Species (common name followed by the scientific name and FAO code)
								    - Number of adults/juvs
								
								    - Condition at end of interaction
								
								    - Sight distance
								    - Sight behaviour

EM ready   EM Natural Key

EM with work   EM new field

EM not likely   EM redundant

LL_TRIP_REPORT **PROVIDE descriptive information on the trip.** Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report									
FIELD	**Data Collection Instructions**	**Future Entry Source** **SETUP PRE OO POST AG CF**	**Future Entry Source** **SETUP PRE OO POST AG CF**	**Field format notes**	**Validation rules**	**XML TAG**	**WCPFC FIELD**	**Notes**
								From the Sol Is report "E-Monitoring is useful for collecting information on the landings of Species of Special Interest (SSIs), but the equipment may not be appropriately placed to collect information on the sightings of SSIs."
9_0_TRANS	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<9_0_TRANS >	N	Recorded by the office observer and Pre- and Post-inspections. Some mention of EM being hooked up to cranes to collect transhipment data.
10_1_Tags	Refer to relevant section in link above)			NText		<10_1_Tags >	N	Not applicable unless industry tag animals.
10_2_Stomach	Refer to relevant section in link above)			NText		<10_2_Stom ach>	N	Not applicable unless industry take stomach samples.
10_3_Other	Refer to relevant section in link above)			NText		<10_3_Othe r>	N	Not applicable unless industry take data for other projects.
11_0_ TRIP_MON	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<11_0_ TRIP_MON>	N	Recorded by the office observer and Pre- and Post-inspections.
11_1_Clarify	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<11_1_Clar ify>	N	Recorded by the office observer and Pre- and Post-inspections. This should be under 13 - General
11_2_Recommend	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<11_2_Reco mmend>	N	Recorded by the office observer and Pre- and Post-inspections. This should be under 13 - General
11_3_Crew_info	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<11_3_Crew _info>	N	Recorded from Pre- and Post-inspections. This should be under 13 - General
11_4_Medical	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<11_4_Medi cal>	N	Recorded from Pre- and Post-inspections. This should be under 13 - General
11_5_Photos	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<11_5_Phot os>	N	Recorded by the office observer and Pre- and Post-inspections. This should be under 13 - General
11_6_other_info	Refer to relevant section in link above)	PRE OO	PRE OO	NText		<11_6_othe	N	Recorded by the office observer and Pre- and Post-inspections.

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

		LL_TRIP_REPORT						
		PROVIDE descriptive information on the trip.						
		Refer to the relevant sections in http://www.spc.int/OceanFish/en/publications/doc_download/1318-2014-ll-trip-report						
FIELD	**Data Collection Instructions**	**Future Entry Source** **SETUP PRE OO** **POST AG CF**	**Future Entry Source** **SETUP PRE OO** **POST AG CF**	**Field format notes**	**Validation rules**	**XML TAG**	**WCPFC FIELD**	**Notes**
11_6_Other Info		OO POST	OO POST	NText		r info>	N	This should be under 13 – General
12_0_VESS _DATA	Refer to relevant section in link above)	PRE POST	PRE POST	NText		<12_0_VESS _DATA>	N	Recorded from Pre- and Post-inspections.
13_0_GENERAL	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<13_0_GENE RAL>	N	Recorded by the office observer and Pre- and Post-inspections. This could include problems with the EM system including location and angle of cameras.
14_0_PROBs	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<14_0_PROB s>	N	Recorded by the office observer and Pre- and Post-inspections.
14_1_Form_ch_re cs	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<14_1_Form _ch_recs>	N	Recorded by the office observer and Pre- and Post-inspections.
15_0_CONCL	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<15_0_CONC L>	N	Recorded by the office observer and Pre- and Post-inspections.
16_0_ACKs	Refer to relevant section in link above)	PRE OO POST	PRE OO POST	NText		<16_0_ACKs >	N	Recorded by the office observer and Pre- and Post-inspections.

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

SET-LEVEL DATA

- LL_OBS_SET
- LL_SETHAULLOG
- LL_OBS_CATCH

		LL_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 OO POST AG CF**	Future Entry Source **SETUP PRE OO 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			<L_SET_ID>	Y		
set_number	Unique # for the SET in this trip Can be filled out by an office observer viewing footage or automatically generated from a variety of the EM system components	OO AG	OO 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	OO	OO	Bit		<observed_yn>	N	This is not a clear/appropriate definition for the EM process. *Needs to be reviewed by DCC / WCPFC.*	
set_date	Start Date/time for set. Date/time when the first bouy is thrown into the water (radio bouy or normal bouy) Can be filled out by an office observer viewing images or automatically generated from a variety of the EM system components	OO AG	OO -> AG AG	REFER TO APPENDIX A1	Use UTC DATE/TIME. **Ship's date was the standard for hardcopy forms** **Must adhere to the ISO 8601 format in Appendix A1** **Must be after Date and time of departure from port and before date and time of return to port**	<set_date>	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 OO visual or combination of camera / sensor / GPS Position is also a requirement but captured elsewhere	
	Number of hooks between floats							This was an issue in the Sol Is trial. Observers frequently lost count. They found this was the "most difficult to compile based issues identified in the comparison between the data collected by the on-board and office observers".	

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

LL_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 OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	**WCPFC FIELD**	Notes
hk_bt_flt	Office observer interpret from images. Determine whether it is more efficient / accuate done on set or haul. Could be evaluated by total hooks per basket and then total floats per basket. Longer term there is potential for AG through serial interface connection with Linemaster or electronic tagging of hooks and floats	OO	OO CF **Possible AG**	SmallInt	Must be 1-60, or -1 for no information.	\<hk_bt_flt\>	Y	They recommended that float and hook counts be built into the EM systems if possible to ensure accurate and time efficient data collection. Potential for use of EM equipment to count hooks exists but there is a trade off with costs. It is also time intensive for OO to record from visual On LL-2/3, there is only one record per set, and the instructions call it the "most common or average data during setting".
bask_set	Number of baskets set. Office observer interpret from images. Can be calculated as the total number of floats - 1	OO	OO **Possible AG**	SmallInt		\<bask_set\>	Y	Not as big an issue, but as for HK_BT_FLT
bask_observed	Number of baskets observed (bottom of form, Nov 07 version) Office observer interpret from images. The intent is to monitor the entire haul of a set (not a subset of baskets)	OO	OO CF AG	SmallInt		\<bask_observed\>	Y	Field is critical for CPUE This can be different from above due to tangles / equipment malfunction. The office observer should record the number of baskets observed.
hook_set	Total number of hooks set. Office observer interpret from images. Determine whether it is more efficient / accuate done on set or haul. Could be calculated by hooks per basket x no. of baskets Longer term there is potential for AG through serial interface connection with Linemaster or electronic tagging of hooks and floats	CF	CF **Possible AG**	SmallInt	If no information (-1) in HK_BT_FLT or BASK_SET, then HOOK_SET = -1	\<hook_set\>	Y	Automatically calculated from the number of hooks between baskets x the number of baskets. That is how its calculated for the datasheet, and there is no point the observer doing the calculation.
hook_observed	Number of hooks observed and data recorded. Could be calculated from HK_BT_FLT x bask_observed	OO	OO CF AG	SmallInt		\<hook_observed\>	Y	This could be calculated from HK_BT_FLT x bask_observed

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

	LL_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 OO POST AG CF	**Future Entry Source** SETUP PRE OO POST AG CF	**Field format notes**	**Validation rules**	**XML TAG**	**WCPFC FIELD**	**Notes**
float_length	Length of floatline (m) **Very difficult to monitor**	PRE	PRE	SmallInt		\<float_length\>	Y	Recorded by the port data collection officer on FORM LL-2/3 and then entered into data capture screen
lspeed	Line setting speed. Can be calculated from rotational speed of roller on shooter Possisbly CF from	AG	AG CF?	Decimal (5,1)	If no information (-1) in HK_BT_FLT or BRANCH_DIST or HOOK_SET, then LSPEED = 1	\<lspeed\>	Y	Observers only record this when there is a line shooter onboard with a visible line setting guide, otherwise they indicate its absence with a "-".
lspeed_unit_id	Link to ref_ids table	AG	AG	CHAR(1)	Must be 'M' for metres/second or 'K' for knots	\<lspeed_unit_id\>	Y	If this was calculated as above, the units should always be m/s
branch_intvl	Time interval (secs.) between branchline sets. Use timestamp for sequential branchlines **Serial interface with linemaster (AG)** Total time beacon to beacon and number of branchline sets Use audio beeps	OO CF	OO CF AG	SmallInt		\<branch_intvl\>	Y	In accordance with the LL Observer Guide, they should calculate the average time between two branchlines are attached over at least three baskets. Although this could be calculated by the EM syster
branch_dist	Mainline distance between branchlines (m).	CF	CF	Decimal (4,1)	If no information (-1) in LSPEED or BRANCH_INTVL, then BRANCH_DIST = -1	\<branch_dist\>	Y	Automatically calculated from LSPEED (m/s) x BRANCH_INTVL
vessel_SET_speed	Vessel setting Speed (Knots). Automatically generated from EM system components (VMS, GPS)	AG CF	AG CF	Decimal (5,1)		\<vessel_SET_speed \>	N	This should be available from the VMS / GPS. The LL Observer Guide is fairly loose about what the average vessel speed is "Use the GPS to record the average vessel setting speed in knots. It is best to watch the GPS for several seconds at a time and also to check it a number of times during setting"

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Calculated from waypoints / time							Average vessel speed could be calculated by the EM system as the average speed between start_set and end_set time?
lightsticks	Number of lightsticks used Very difficult to monitor Use PRE to identify presence / absence. Compare this field with targeting field.	PRE OO	PRE OO	SmallInt		\<lightsticks\>	Y	The office observershould record the number of light sticks between one basket per set. This could be automatically multiplied by the number of baskets with the addition of another field in the EM system "LIGHTSTICKS_BASKET" which is for data entry of the number of light sticks used in one basket. That field is then not picked up by the data loaded for the TUBS system. Sub-sampling may not be appropriate for accuracy. Full monitoring may be required The Sol Is report suggests that "The existence of TDRs and light-sticks can be checked prior to the trip and so it is not necessary to attE-Monitoring to obtain information for these fields on a set by set basis (but the pre-trip inspection would need to identify this)." But this only informs of their presence, not the number used. The observer Guide says "If the vessel is using light sticks, count the total number of light sticks used during the set. Generally, they are not placed on every single hook, so calculate the number of light sticks that are placed in one basket and multiply that number by the total number of baskets to get the total number of light sticks"

LL_OBS_SET

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

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

	LL_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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
TDRs	Number of Time Depth recorders used Very difficult to monitor Use PRE to identify presence / absence. Compare this field with targeting field.	PRE OO	PRE OO	SmallInt	There should be something in here that requires a value so that you know a 0 means none were used.	<TDRs>	Y	The Sol Is report suggests that "The existence of TDRs and light-sticks can be checked prior to the trip and so it is not necessary to attE-Monitoring to obtain information for these fields on a set by set basis (but the pre-trip inspection would need to identify this)." But this only informs of their presence, not the number used. The Observer Guide talks about them as if they are deployed by the observer. And just asks was at least one deployed ("Y" or "N"). Same with the datasheet LL – 2/3 But the ROP and Sol Is report specify the number of TDRs, and the ROP states that this field refers to "Does the vessel use TDRs on its line, record the number it may use and where along the mainline they attach them to the branch lines."
branch_length	Length of branchline (m) (If all are of a consistent length, otherwise use next set of fields). SEE FLOATLINE Potential use of colour-coded branchlines	PRE	PRE	Decimal (4,1)		<branch_length>	Y	Very difficult for OO to determine
branch_0_20	Number of branchlines between successive floats that are < 20 m.	-	-	SmallInt		<branch_0_20>	Y	Very difficult for OO to determine
branch_20_34	Number of branchlines between successive floats that are 20-35 m.	-	-	SmallInt		<branch_20_34>	Y	Very difficult for OO to determine
branch_35_50	Number of branchlines between successive floats that are 35-50 m.	-	-	SmallInt		<branch_35_50>	Y	Very difficult for OO to determine
branch_50_99	Number of branchlines between successive floats that are > 50 m.	-	-	SmallInt		<branch_50_99>	Y	Very difficult for OO to determine

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

LL_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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
FLOAT_hook_n	The total number of hooks that have been hung directly from the floatline for this set. INCLUDE FLOAT HOOK LENGTH AS NEW FIELD	OO	OO	SmallInt		\<FLOAT_hook_n\>	Y	The office observer should record the shark lines observed being attached to floats during setting. Assume this is the "SHARK LINES on floats (Hook No.99s)" on the datasheet.
FLOAT_hook_l						\<FLOAT_hook_l\>		This needs to be checked was not in observer ER
tar_sp_code	Target Species id recorded on the form for this set (refer to the SPECIES table)	OO	OO	Char (3)	REFER TO APPENDIX 8.	\<tar_sp_code\>	Y	The Sol Is reported noted "Target species" at the set level should be determined from a combination of setting attributes (e.g. gear configuration and bait). Otherwise, the main target species should be known prior to and after the trip (e.g. examination of species composition of the catch)." Will need to be inferred by the OO from the gear.
target_tun_yn	ADDITIONAL FLAG indication for MULTIPLE targeting	OO	OO	Bit		\<target_tun_yn\>	Y	A combination of information from the pre-inspection and the gear configuration in the video, with the final decision made by the office observer.
target_swo_yn	ADDITIONAL FLAG indication for MULTIPLE targeting	OO	OO	Bit		\<target_swo_yn\>	Y	As above
target_skh_yn	ADDITIONAL FLAG indication for MULTIPLE targeting	OO	OO	Bit		\<target_skh_yn\>	Y	As above
setdetails	General notes on the setting procedures. Any comments relating to the setting strategy. For example has there been any specific targetting of shark in this set.	OO	OO	NText		\<setdetails\>	N	The office observer should record the general comments of set details.

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

LL_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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
bait1_sp_code	Bait species id. # 1	**PRE OO**	**PRE OO**	Char (3)	REFER TO APPENDIX 8.	<bait1_sp_code>	Y	The office observer should record the bait species. Camera position and resolution needs to enable this identification
bait2_sp_code	Bait species id. # 2	**PRE OO**	**PRE OO**	Char (3)	REFER TO APPENDIX 8.	<bait2_sp_code>	Y	As above
bait3_sp_code	Bait species id. # 3	**PRE OO**	**PRE OO**	Char (3)	REFER TO APPENDIX 8.	<bait3_sp_code>	Y	As above
bait4_sp_code	Bait species id. # 4	**PRE OO**	**PRE OO**	Char (3)	REFER TO APPENDIX 8.	<bait4_sp_code>	Y	As above
bait5_sp_code	Bait species id. # 5	**PRE OO**	**PRE OO**	Char (3)	REFER TO APPENDIX 8.	<bait5_sp_code>	Y	As above
bait1_w	Weight of bait species #1 used, (kg) Determined by camera placement and view during setting. May be difficult	**OO?**	**OO?**	SmallInt		<bait1_w>	N	Camera will need to be positioned so that it can view the baiter
bait2_w	Weight of bait species #2 used, (kg)	**OO?**	**OO?**	SmallInt		<bait2_w>	N	As above
bait3_w	Weight of bait species #3 used, (kg)	**OO?**	**OO?**	SmallInt		<bait3_w>	N	As above
bait4_w	Weight of bait species #4 used, (kg)	**OO?**	**OO?**	SmallInt		<bait4_w>	N	As above
bait5_w	Weight of bait species #5 used, (kg)	**OO?**	**OO?**	SmallInt		<bait5_w>	N	As above
bait1_h	Hook number(s) in basket that Bait 1 was placed	**OO?**	**OO?**	NVarChar (25)	(Hook numbers separated by commas)	<bait1_h>	N	The office observer should record the hook numbers for each bait type.
bait2_h	Hook number(s) in basket that Bait 2 was placed	**OO?**	**OO?**	NVarChar (25)	(Hook numbers separated by commas)	<bait2_h>	N	As above
bait3_h	Hook number(s) in basket that Bait 3 was placed	**OO?**	**OO?**	NVarChar (25)	(Hook numbers separated by commas)	<bait3_h>	N	As above
bait4_h	Hook number(s) in basket that Bait 4 was placed	**OO?**	**OO?**	NVarChar (25)	(Hook numbers separated by commas)	<bait4_h>	N	As above
bait5_h	Hook number(s) in basket that Bait 5 was placed	**OO?**	**OO?**	NVarChar (25)	(Hook numbers separated by commas)	<bait5_h>	N	As above
bait1_dyed_yn	FLAG indication on dyed on bait #1	**PRE OO**	**PRE OO**	SmallInt		<bait1_dyed_yn>	Y	As above

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

LL_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 OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
bait2_dyed_yn	FLAG indication on dyed on bait #2	PRE OO	PRE OO	SmallInt		<bait2_dyed_yn>	Y	As above
bait3_dyed_yn	FLAG indication on dyed on bait #3	PRE OO	PRE OO	SmallInt		<bait3_dyed_yn>	Y	As above
bait4_dyed_yn	FLAG indication on dyed on bait #4	PRE OO	PRE OO	SmallInt		<bait4_dyed_yn>	Y	As above
bait5_dyed_yn	FLAG indication on dyed on bait #5	PRE OO	PRE OO	SmallInt		<bait5_dyed_yn>	Y	As above
tori_poles_yn	FLAG indication on tori poles used	PRE OO	PRE OO	SmallInt		<tori_poles_yn>	Y	Presence should be determined from pre-inspection but use should be verified for each set by the office observer Camera will need to be positioned so that it can view the extent of the tori line
bird_curtain_yn	**PRE to determine whether they are onboard** **OO to determine whether they are used if yes for above**	PRE OO	PRE OO	SmallInt		<bird_curtain_yn>	Y	Presence should be determined from pre-inspection but use should be verified for each set by the office observer Camera will need to be positioned so that it can view both bird curtains while deployed.
wT_lines_yn	FLAG indication on weighted lines used Difficult to detect if weight is away from the hook	OO	OO	SmallInt		<wT_lines_yn>	Y	Presence should be determined from pre-inspection but use should be verified for each set by the office observer
uW_chute_yn	FLAG indication on underwater chute used	PRE OO	PRE OO	SmallInt		<uW_chute_yn>	Y	Although the presence of an underwater chute might be recorded from pre inspection, it can not be assumed that this will always be used. Could be hard to see with a camera.

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

LL_SETHAULLOG **The E-Reporting system must PROVIDE the following log information for EACH SET/HAUL during the period of the trip, typically on a 60-minute basis.**								
FIELD	**Notes on Data Collection Guidelines**	**Current Entry Source** **SETUP PRE OO POST AG CF**	**Future Entry Source** **SETUP PRE OO 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			\<L_SET_ID\>	Y	
SETHAUL LOG IDENTIFIER	Internally generated. Can be NATURAL KEY or unique integer. NATURAL KEY would be VESSEL + DEPARTURE DATE + SET START DATE + SET START TIME + LOG DATE + LOG TIME	CF	CF			\<L_SETHAULOG_ID\>	Y	
log_date	Date/TIME of log reading The date/time of the beginning of haul	OO -> AG	OO -> AG	REFER TO APPENDIX A1	**Must adhere to the ISO 8601 format in Appendix A1**	\<log_date\>	Y	In accordance with instructions on the back of logsheet FORM LL2/3, this could be set to automatically record details every half or 1 hour.
sethaul	Status of gear at this logged date/time : Set (S) Haul (H), Soak (K) or Float retrieved (F)	OO	AG	Char (4)	Must be either 'S', 'H', 'K' or 'F'	\<sethaul\>	Y	Datasheets and Observer Guide only ask for the haul log on hauling. But this could easily be recorded by the person responsible for reviewing the video and compiling ROP information. *Now redundant due to field below - DCC / WCPFC tro review*
stend_id	Indicator for status of the SET-HAUL 83 – First log record for the SET (start of SET information) 84 – Last log record for the SET (end of SET information) 85 – First log record for the HAUL (start of HAUL information) 86 – Last log record for the HAUL (end of HAUL information) 87 - Location during setting per time period 88 - Location during haul per time period 91 - Float retrieval	OO OO OO OO CF CF OO	OO AG OO AG OO AG OO AG CF CF OO AG	Int	Must be 83, 84, 85, 86, 91 or NULL	\<stend_id\>	Y	As above, but this could easily be recorded by the person responsible for reviewing the video and compiling ROP information. Need to date/time each float retreived is being reviewed Can be calculated after the event For OO - only needs to record Start_Set End_Set Start_Haul End_Haul. Time period may be changed in future from 60 minutes All events are timestamp and position Should match VMS At this stage we don't know exactly how this will be done

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

LL_SETHAULLOG								
The E-Reporting system must PROVIDE the following log information for EACH SET/HAUL during the period of the trip, typically on a 60-minute basis.								
FIELD	Notes on Data Collection Guidelines	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	Potential additions for review by DCC / WCPFC - Line Breaks - Line retrieval - Line tangles - Line rehaul - and others							Should we just mark float set and float haul events. If floats are electronically tagged then this will be AG.
lat		OO -> AG	AG	REFER TO APPENDIX A2	**Must adhere to the ISO 6709 format in Appendix A2**	<lat>	Y	This could be set to automatically record details at a finer timescale
lon		OO -> AG	AG	REFER TO APPENDIX A2	**Must adhere to the ISO 6709 format in Appendix A2**	<lon>	Y	This could be set to automatically record details at a finer timescale
comments	Office observer records any comments	OO	OO	NText		<comments>	N	Recorded by the office observer.
FLOAT_ID	Unique identifier for the Float retrieved Could be sequential or Timestamp In future could use tagged bouys (RFID for example)	OO	OO AG	NVARCHAR(15)	Only used when Float retrieved (STEND_ID = 91) **E-Monitoring ONLY**	<FLOAT_ID>	N	Maybe whenever a float comes onboard, the observer flags it " Float retrieved", and each float is given a sequential number from 1 to … Review by DCC or WCPFC
HK_BT_FLT	Hooks between this float retrieved and the next float Collect through the timestamp	OO	OO AG	SmallInt	Must be 1-60, or -1 for no information. Only used when Float retrieved (STEND_ID = 91)	<hk_bt_flt> Maybe needs to be renaemd so as not to conflict <log_hk_bt_flt>	N	Recorded by the person responsible for reviewing the video and compiling ROP information. If this could be done then this field could be used for the LL_OBS_SET

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

LL_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 OO POST AG CF**	**Future Entry Source** **SETUP PRE OO 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**			\<L_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**			\<L_CATCH_ID>	Y	
CATCH_date	Date/TIME of individual catch event Recorded by the EM system after being flagged by the office observer. Possible AG through video recognition software of catch events	**OO -> AG**	**OO -> AG** **AG**	REFER TO APPENDIX A1	**Must adhere to the ISO 8601 format in Appendix A1**	\<catch_date>	Y	
lat	Latitude (long format) Recorded by the EM system after being flagged by the office observer.	**OO -> AG**	**OO -> AG** **AG**	REFER TO APPENDIX A2	Position of each catch event **E-Monitoring ONLY**	\<lat>	N	
lon	Longitude (long format) Recorded by the EM system after being flagged by the office observer.	**OO -> AG**	**OO -> AG** **AG**	REFER TO APPENDIX A2	Position of each catch event **E-Monitoring ONLY** **Must adhere to the ISO 6709 format in Appendix A2**	\<lon>	N	
hook_no	Hook number (since the last float). Hook number=99 represents catch on a hook hanging directly from the floatline. Counted by the office observer. Can also be counted as the 'No. of hooks per basket' minus the count of hooks until the next float. Automatically generated possible if Smart Hooks/Clips or rotation of line coiler. Could also use timestamp of catch event (down to second) against float event as a calculated field.	**OO** **CF**	**OO** **CF** **Possible AG**	SmallInt		\<hook_no>	Y	**Recorded by the office observer.** If smarthooks then this field can link to set_haul log automatically
	Species code. Identified by office observer		**OO**					Camera lens clarity is important

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

LL_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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
sp_code	Possible AG through video recognition software	OO	OO **Possible AG**	Char (3)	REFER TO APPENDIX 8.	<sp_code>	Y	
fate_code	FATE of this catch. This indicates whether it was RETAINED, DISCARDED or ESCAPED, and any specific processing. Office observer to use range of cameras to determine the fate.	OO	OO	Char (3)	REFER TO APPENDIX 9 Only shark species can have a FATE as 'RFR' and 'DFR'.	<fate_code>	Y	Need clear definitions.
cond_code	CONDITION of this catch on LANDING. Relevant for the Species of Special Interest. Identified by office observer	OO	OO	Char (2)	REFER TO APPENDIX 10	<cond_code>	Y	Need to ensure consistency in the collection of condition (life status) information
cond_REL_code	CONDITION of this catch on RELEASE/DISCARD. Relevant for the Species of Special Interest. Identified by office observer	OO	OO	Char (2)	REFER TO APPENDIX 10	<cond_REL_code>	Y	Need to ensure consistency in the collection of condition (life status) information Video camera(s) need to be directed to the area where discarding/release would always occur.
len	Length (cm). Recorded by the office observer using a digital measuring tool	OO	OO **AG Possible POST**	SmallInt	Refer to SPECIES RANGE table for these species	<len>	Y	Define the resolution / precision (e.g. 2cm or 1cm) Office observer needs to be properly trained in digital measuring tool Calibration and algoithm need to be well defined and validated. Use a rule on the vessel? Fish may be barcoded in future for CDS allowing measurement at port
len_code	Length measurement code Recorded by the office observer. EM could provide default code dependent on species ID	OO	OO **Possible AG Possible POS**	Char (2)	REFER TO APPENDIX 11	<len_code>	Y	**Recorded by the office observer.**
wt	Weight (kgs) – must be measured weight and not a visual estimate			Decimal (5,1)		<wt>	N	Image (or serial connection) of weight from motion compensated scales Potential to calculate it from a length weight relationship.
wt_code	Weight code.			Char (2)	REFER TO APPENDIX 22	<wt_code>	N	
	SEX of fish							**Will not cover all species**

EM ready
EM with work
EM not likely

EM Natural Key
EM new field
EM redundant

LL_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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
sex_code	Identified by office observer where possible	OO	OO	Char (1)	REFER TO APPENDEX 12	<sex_code>	Y	**Investigate how to improve the consistency in the collection of sex information, if possible.** **The Observer Guide shows some examples of fish species where there are external differences in sex: Shark, Mahi mahi, Opah**
gstage_CODE	GONAD STAGE CODE			Char (1)	REFER TO APPENDIX 23	<gstage_CODE>	N	
comments	Comments Record if tag fish encountered. Endeavour to complete tag recovery information	OO	OO	NVarChar (40)		<comments>	N	

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

OBSERVER (DAILY) MONITORING DATA

- OBS_TRIPMON
- OBS_TRIPMON_COMM
- VESSEL_AIR_SIGHT
- OBS_POLUTION
- OBS_POLUTION_DETAILS
- OBS_JOURNAL

			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 OO PRE POS AG	Future Entry Source OO PRE POS 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 interefere with observers in the performance of their duties	OO AG	OO 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	OO	OO				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	OO	OO				N	Observer can recognise
	NR-C	Use a fishing method other than the method the vessel was designed or licensed	OO	OO				Y	Observer can recognise if in field of view
	NR-D	Not display or present a valid (and current) licence document onboard	PRE POS	PRE POS				N	
	NR-E	Transfer or transship fish from or to another vessel	OO AG	OO AG				Y	Likely to be able to be detected by office observer EM system could detect this to automatically generate

Legend:
- 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 OO PRE POS AG	Future Entry Source OO PRE POS AG	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Issues
question_code	NR-F		Was involved in bunkering activities	OO AG	OO AG	Char (4)	REFER TO APPENDIX 16	<question_code>	N	Likely to be able to be detected by office observer EM system could detect this to automatically generate
	NR-G		Fail to stow fishing gear when entering areas where vessel is not authorised to fish	OO	OO				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)	OO	OO				Y	Some CMMs may be able to be detected by office observer
	WC-B		High-grade the catch	OO POS -> CF	OO POS -> CF				Y	Compare lfreq of discarded
	WC-C		Fish on FAD during FAD Closure						N	N/A - purse seine
	LP-A		Inaccurately record vessel position on vessel log sheets for sets, hauling and catch	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LP-B		Fail to report vessel positions to countries where required	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LC-A		Inaccurately record retained 'Target Species' in the Vessel logs [or weekly reports]	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LC-B		Inaccurately record 'Target Species' Discards	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LC-C		Record target species inaccurately [eg. combine bigeye/yellowfin/skipjack catch]	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LC-D		Not record bycatch discards	POS -> CF	POS -> CF				N	Reconcile EM observer data with logsheet data
	LC-E		Inaccurately record retained bycatch Species	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	LC-F		Inaccurately record discarded bycatch species	POS -> CF	POS -> CF				Y	Reconcile EM observer data with logsheet data
	SI-A		Land on deck Species of Special Interest (SSIs)	OO	OO				N	Observer can recognise
	SI-B		Interact (not land) with SSIs	OO	OO				Y	Observer can recognise
	PN-A		Dispose of any metals, plastics, chemicals or old fishing gear	OO	OO				Y	Only in the visible field of the cameras
	PN-B		Discharge any oil	OO	OO				Y	Only in the visible field of the cameras
	PN-C		Lose any fishing gear	OO	OO				Y	Only in the visible field of the cameras
	PN-D		Abandon any fishing gear	OO	OO				Y	Only in the visible field of the cameras
	PN-E		Fail to report any abandoned gear	OO	OO				Y	Only in the visible field of the cameras

Legend:
- EM ready
- EM Natural Key
- EM with work
- EM new field
- EM not likely
- 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** **OO PRE POS AG**	**Future Entry Source** **OO PRE POS AG**	**Field format notes**	**Validation rules**	**XML TAG**	**WCPFC** **FIELD**	**Issues**
	SS-A	Fail to monitor international safety frequencies						Y	
	SS-B	Carry out-of-date safety equipment	PRE POS	PRE POS				N	
answer	FLAG to indicate whether has been answered or NOT				Char (1)	MUST BE 'Y', 'N' or 'X'– not answered	<answer>	Y	See above
journal_page	Detail description of the incident	OO			NText		<journal_page>	Y	– Is a journal being kept by the office observer?

EM ready   EM Natural Key

EM with work   EM new field

EM not likely   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 OO POST AG CF	Future Entry Source SETUP PRE OO 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	OO -> AG	OO -> AG	REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1	<gen3_date>	Y	
comments	Detail description of the incident	OO	OO	NText		<comments>	Y	A list of events is required that the office observer needs to note depending on the camera?

EM ready
EM with work
EM not likely

EM Natural Key
EM new field
EM redundant

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
			1. VES_AIR_SIGHT					
		2.	PROVIDE the details on the GEN-1 form -- VESSEL AND AIRCRAFT SIGHTINGS / FISH, BUNKERING and OTHER TRANSFERS LOGS					
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			REFER TO APPENDIX A1	**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			REFER TO APPENDIX A2	**Must adhere to the ISO 6709 format in Appendix A2**	<lat>	Y	**As above.**
lon	Longitude of SIGHTING			REFER TO APPENDIX A2	**Must adhere to the ISO 6709 format in Appendix A2**	<lon>	Y	**As above.**
VESSEL IDENIFIER			REFER TO APPENDIX A4					
vatyp_id				Int	REFER TO APPENDIX 17	<vatyp_id>	Y	
bearing_dir				SmallInt		<bearing_dir>	Y	
distance				Decimal (7,3)		<distance>	Y	
dist_unit				INT	1 = Metres; 2 = kilometres; 3 = Nautical miles	<dist_unit>	Y	
action_code				Char (2)	REFER TO APPENDIX 18 for Vessel/Aircraft sightings only – only allow actions where FORM USED = 'GEN-1'	<action_code>	Y	
comments				NText		<comments>	Y	

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

		1. VES_AIR_SIGHT						
	2. 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 OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
Comments				Ntext		<Comments>	1	

<table>
<tr>
<td colspan="9" align="center">**OBS_POLLUTION**

PROVIDE information any Pollution observed during the trip.</td>
<td></td>
</tr>
</table>

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO 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	OO	OO -> AG	REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1.	\<inc_dtime\>	Y	Can be recorded by the OO 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	OO	OO -> AG	REFER TO APPENDIX A2	Must adhere to the ISO 6709 Appendix A2.	\<lat\>	Y	Can be recorded by the OO only if in field of view of a camera.
lon	Longitude where incident occurred	OO	OO -> AG	REFER TO APPENDIX A2	Must adhere to the ISO 6709 in Appendix A2.	\<lon\>	Y	Can be recorded by the OO only if in field of view of a camera.
port_id	PORT where incident occurred	OO	OO -> AG	REFER TO APPENDIX A3	Must adhere to the UN/LOCODE standard UN/LOCODE standard Appendix A3.	\<port_id\>	N	Can be recorded by the OO only if in field of view of a camera.
activ_id	Activity when event occurred	OO	OO	REFER TO APPENDIX A5		\<activ_id\>	N	Can be recorded by the OO only if in field of view of a camera.
VESSEL IDENIFIER				REFER TO APPENDIX A4				
vatyp_id	Vessel / Aircraft type			Int	REFER TO APPENDIX 17	\<vatyp_id\>	N	It is very unlikely that EM will be able to be used effectively to monitor pollution by other vessels.
bearing_dir	Compass Bearing to offending vessel			SmallInt		\<bearing_dir\>	N	As above

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

	OBS_POLLUTION
	PROVIDE information any Pollution observed during the trip.

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
distance	Distance to offending vessel			Decimal (7,3)		<distance>	N	**As above**
comments	Additional comments			NText		<comments>	N	**As above**
stickers_ans	Response to "Stickers" question			Char (1)	'Y' or 'N'	<stickers_ans>	N	**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.**
aware_ans	Response to "MARPOL" question	POST	POST	Char (1)	'Y' or 'N'	<aware_ans>	N	**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**
advised_ans	Response to "INFRINGEMENTS" question	POST	POST	Char (1)	'Y' or 'N'	<advised_ans>	N	**This is not applicable – the question is "If there were any infringements to the MARPOL Regulations did you advise the Captain of these infringements?"**
photos_ans	Response to "PHOTOS" question			Char (1)	'Y' or 'N'	<photos_ans>	N	**Recorded by the office observer from EM video.**
photo_numbers	Number of photos taken on the incident			NVarChar (50)		<photo_numbers>	N	**Recorded by the office observer.**

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
	OBS_POLLUTION_DETAILS **PROVIDE information on any Pollution details observed during the trip.**							
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	OO	OO	REFER TO APPENDIX A31	For example, Disposal of OFFAL MANAGEMENT is a WCFPC required field.	<pollutiontype_id>	Y	**Can be recorded by the OO only if in field of view of a camera.**
material_id	Pollution Materials code	OO	OO	REFER TO APPENDIX A29		<material_id>		**Can be recorded by the OO only if in field of view of a camera.**
POLL_GEAR_ID	Pollution Gear code	OO	OO	REFER TO APPENDIX A28		<POLL_GEAR_ID>		**Can be recorded by the OO only if in field of view of a camera.**
POLL_SRC_ID	Pollution Source code	OO	OO	REFER TO APPENDIX A30	For example, Disposal of OFFAL MANAGEMENT is a WCFPC required field.	<POLL_SRC_ID>	Y	**Can be recorded by the OO only if in field of view of a camera.**
poll_desc	Description of pollution type	OO	OO	NText	For example, Disposal of OFFAL MANAGEMENT is a WCFPC required field.	<poll_desc>	Y	**Can be recorded by the OO only if in field of view of a camera.**
poll_qty	Description of pollution quantity	OO	OO	NText	For example, Disposal of OFFAL MANAGEMENT is a WCFPC required field.	<poll_qty>	Y	**Can be recorded by the OO only if in field of view of a camera.**

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 OO POST AG CF**	Future Entry Source **SETUP PRE OO 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	
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	
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.	OO	OO	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 25ºS.

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

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 OO POST AG CF	Future Entry Source SETUP PRE OO 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.
sgtime	Time of Interaction : 'L' – Time of Landing; "I" - Time of Interaction / sighting This is the time first observer sighting			Char (1)	**Must adhere to the ISO 8601 format in Appendix A1**	<sgtime>	Y	
SSI_date	Local/Ship's date and time when this SSI was encountered. Generated by EM when flagged by the office observer.	OO -> AG	OO -> AG	REFER TO APPENDIX A1	When SGTYPE = '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	Not using ship's time for EM
UTC_SSI_DATE	UTC equivalent of SSI_DATE Generated by EM when flagged by the office observer.	OO -> AG	OO -> AG	REFER TO APPENDIX A1	When SGTYPE = '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>	Y	This should be consistent with simialr field in OBS_Catch. Potentially redundant for landings
lat	Latitude at which this SSI was encountered	OO -> AG	OO -> AG	REFER TO APPENDIX A2	When SGTYPE = 'L' or 'I' **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	OO -> AG	OO -> AG	REFER TO APPENDIX A2	When SGTYPE = 'L' or 'I' **Must adhere to the ISO 6709 format in Appendix A2**	<lon>	Y	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	OO	OO **Potentially AG**	Char (3)	REFER TO APPENDIX 8. Must correspond to the PS_OBS_CATCH record	<sp_code>	Y	This should be consistent with similar field in OBS_Catch. Potentially redundant for landings
sp_desc	Extended Species Description Recorded by the office observer.	OO	OO	NText		<sp_desc>	N	

		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 OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
landed_cond_code	Condition code on LANDING Recorded by the office observer.	OO	OO	Char (2)	REFER TO APPENDIX 10	<landed_cond_code>	Y	Probably redundant - recorded in OBS_CATCH Work to improve the consistency in the collection of condition (life status) information 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.	OO	OO	NText		<landed_cond_desc>	Y	Work to improve the consistency in the collection of condition (life status) information
landed_handling	Describe interaction / treatment / release Recorded by the office observer.	OO	OO	NText		<landed_handling>	N	Work to improve the consistency in the collection of condition (life status) information
landed_len	Length of landed species			Decimal (5,1)		<landed_len>	Y	Already recorded in OBS_CATCH. Potentially redundant *Needs to be reviewed / agreed by DCC / WCPFC*
len_code	Length code of the individual			Char (2)	REFER TO APPENDIX 11	<len_code>	Y	Already recorded in OBS_CATCH. Potentially redundant *Needs to be reviewed / agreed by DCC / WCPFC*
landed_sex_code	Sex code of the individual			Char (1)	REFER TO APPENDIX 12	<landed_sex_code>	Y	Already recorded in OBS_CATCH. Potentially redundant *Needs to be reviewed / agreed by DCC / WCPFC*
discard_cond_code	Condition code on RELEASE/DISCARD, or at the END of interaction with vessel's gear			Char (2)	REFER TO APPENDIX 10	<discard_cond_code>	Y	Already recorded in OBS_CATCH. Potentially redundant *Needs to be reviewed / agreed by DCC / WCPFC*

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 OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
discard_cond_desc	Description of Condition on RELEASE/DISCARD, or at the END of interaction with vessel's gear	**OO**	**OO**	NText		<discard_cond_desc>	Y	Recorded by the office observer.
shk_fin_wt_kgs	Estimated SHARK FIN WEIGHT (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	**OO -> POST**	**OO -> POST**	NVarChar (7)		<tag_ret_no>	Y	Unlikely that tag number will be recorded / Flagged by office observer 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			NVarChar (5)		<tag_ret_type>	Y	Flagged by office observer 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>	Y	Unlikely that organisation will be identified
tag_place_no	Tag number placed on animal			NVarChar (14)		<tag_place_no>	Y	Not applicable. But noting that this is a ROP minimum requirement, additional tagging could be conducted during onboard observer trips.
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

Legend:
- 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 OO POST AG CF**	Future Entry Source **SETUP PRE OO POST AG CF**	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
intact_id	Vessel activity when INTERACTION occurs Recorded by the office observer.	OO CF	OO CF	Int	REFER TO APPENDIX 13	`<intact_id>`	Y	Recorded automatically by the EM system. Potentially reduntant because datetime of interaction is recorded and can be linked back to SETHAUL LOG By cross-referencing with set/haul start and end times.
intact_other	Other types of interaction Recorded by the office observer.	OO	OO	NVarChar (20)		`<intact_other>`	Y	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.	OO	OO	NText		`<int_describe>`	Y	Potentailly redundant because description mentioned above. Needs to be reviewed by DCC WCPFC
sgact_id	Vessel activity when SIGHTING occurs			Int	REFER TO APPENDIX 13	`<sgact_id>`	Y	General sightings will not be recorded by LL EM
sgact_other	Indicates "other" Vessel Activity			NVarChar (20)		`<sgact_other>`	N	General sightings will not be recorded by LL EM
sight_n	Number of individuals sighted			SmallInt		`<sight_n>`	Y	General sightings will not be recorded by LL EM
sight_adult_n	Number of adults sighted			SmallInt		`<sight_adult_n>`	N	General sightings will not be recorded by LL EM
sight_juv_n	Number of juveniles sighted			SmallInt		`<sight_juv_n>`	N	General sightings will not be recorded by LL EM
sight_len	Estimated overall length (Average if more than one individual)			NText		`<sight_len>`	N	General sightings will not be recorded by LL EM
sight_dist	Distance of sighted animals from vessel			Decimal (7,3)		`<sight_dist>`	N	General sightings will not be recorded by LL EM

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

FIELD	Data Collection Instructions	Current Entry Source SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO POST AG CF	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Notes
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.*								
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 Natural Key

EM with work   EM new field

EM not likely   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 SETUP PRE OO POST AG CF	Future Entry Source SETUP PRE OO 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	
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.	OO -> AG	OO -> AG	Char (1)	Must be either 'S' for START or 'E' for END	<start_end>	Y	Likely to be birds or large animal entangled in line
SSI_number	Number of animals interacted Counted by the office observer	OO	OO	Int		<SSI_number>	Y	Need good definitions of interactions to maintain consistnecy between observers
cond_code	CONDITION at the point of recording (either START or END)			Char (2)	REFER TO APPENDIX 10	<cond_code>	Y	This differs from landed_cond_code from the previous table in that it can be and interaction with the vessel of gear before the animal is landed on deck.
description	Descriptions of the interaction **Recorded by the office observer**	OO	OO	VarChar (100)		<description>	N	**For example caught on the branch line, tangled in the sharkline?**

EM ready
EM with work
EM not likely

EM Natural Key
EM new field
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 OO POST AG CF**	**Future Entry Source** **SETUP PRE OO 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	
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	OO	OO	REFER TO APPENDIX A1	**Must adhere to the ISO 8601 format in Appendix A1**	<JRNL_date>	N	**Recorded by the office observer.**
JRNL_TEXT	Daily journal entry	OO	OO	NText		<JRNL_TEXT>	N	**Recorded by the office observer.**

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

APPENDICES

APPENDIX A1 – DATE/TIME FORMAT

The DATE/TIME formats must adhere to the following standard:
ISO 8601 - Dates and times format – both local and UTC dates

[YYYY]-[MM]-[DD]T[HH]:[MM]Z   for fields designated as UTC date/time

[YYYY]-[MM]-[DD]T[HH]:[MM]   for fields designated as LOCAL date/time

APPENDIX A2 – POSITION/COORDINATE FORMAT

The Latitude and Longitude coordinates must adhere to the ISO 6709 – Positions
Degrees and minutes to 3 decimal places

LATITUDE   +/- DDMM.MMM
LONGITUDE   +/- DDDMM.MMM

APPENDIX A3 – PORT LOCATION CODES

The PORT LOCATION Codes must adhere to the UN/LOCODE standard UPPERCASE CHAR(5)
United Nations - Code for Trade and Transport Locations (UN/LOCODE) – see
http://www.unece.org/cefact/locode/service/location

APPENDIX A4 – VESSEL IDENTIFICATION

The attributes to be provided for the VESSEL needs to be consistent with several VESSEL registers at the global and regional level. The most important are the proposed IMO/UVI standard vessel identifier (UVI), the WCPFC vessel register and the FFA Vessel register.

FIELD	Data Collection Instructions	Field format notes	Validation rules	XML TAG	WCPFC FIELD
VESSEL NAME	PROVIDE the VESSEL attributes which should be consistent with the attributes stored in the WCPFC and FFA Regional Vessel Registers	CHAR(30) UPPER CASE	Must be consistent with the WCPFC and FFA Vessel Registers	`<VESSELNAME>`	Y
COUNTRY OF VESSEL REGISTRATION		CHAR(2) ISO 3166-1 alpha-2 two-letter country code UPPER CASE	ISO 3166-1 alpha-2 two-letter country code Must be consistent with the WCPFC and FFA Vessel Registers Country of registration is distinct from the chartering nation, where relevant	`<COUNTRYREG>`	Y
VESSEL REGISTRATION NUMBER Fishing Vessels		CHAR(20) UPPER CASE	Must be consistent with the WCPFC and FFA Vessel Registers	`<REGNO>`	Y
FFA VESSEL REGISTER NUMBER		INTEGER(5)	Must be consistent with the FFA Vessel Register	`<FFAVID>`	N
WCPFC RFV VID		INTEGER(10)	Must be consistent with the WCPFC RFV	`<WIN>`	Y
UNIVERSAL VESSEL IDENTIFIER (UVI)		INTEGER(10)	Must be consistent with the WCPFC and FFA Vessel Registers	`<IMO_UVI>`	N
VESSEL INTERNATIONAL CALLSIGN		CHAR(10) UPPER CASE	Must be consistent with the WCPFC and FFA Vessel Registers	`<IRCS>`	Y

APPENDIX A5 –OBSERVER ACTIVITY CODES
(PARTIAL PURSE SEINE)

S_ACTIV_ID	Description	FAD reference (to record BEACON field)	FORM Code version (old)
1	Set	YES	1
2	Searching		2
3	Transit		3
4	No fishing - Breakdown		4
5	No fishing - Bad weather		5
6	In port - please specify		6
7	Net cleaning set		7
8	Investigate free school		8
9	Investigate floating object	YES	9
10	Deploy - raft, FAD or payao	YES	10D
11	Retrieve - raft, FAD or payao	YES	10R
12	No fishing - Drifting at day's end		11
13	No fishing - Drifting with floating object	YES	12
14	No fishing - Other reason (specify)		13
15	Drifting -With fish aggregating lights	YES	14
16	Retrieve radio buoy	YES	15R
17	Deploy radio buoy	YES	15D
18	Transhipping or bunkering		16
19	Servicing FAD or floating object	YES	17
20	*Helicoptor takes off to search*		H1
21	*Helicopter returned from search*		H2

APPENDIX A6 –TUNA SCHOOL ASSOCIATION CODES (PURSE SEINE ONLY)

S_ACTIV_ID	Description	SCHOOL TYPE CATEGORY
1	Unassociated (free school)	UNASSOCIATED
2	Feeding on Baitfish (free school)	UNASSOCIATED
3	Drifting log, debris or dead animal	ASSOCIATED
4	Drifting raft, FAD or payao	ASSOCIATED
5	Anchored raft, FAD or payao	ASSOCIATED
6	Live whale	ASSOCIATED
7	Live whale shark	ASSOCIATED
8	Other (please specify)	
9	No tuna associated	

APPENDIX A7 – PURSE SEINE TUNA SCHOOL DETECTION CODES (PURSE SEINE ONLY)

DETON _ID	Description
1	Seen from vessel
2	Seen from helicopter; Use when vessel gets to the school of tuna that helicopter either: 1. reported on; or 2. dropped buoy on.
3	Marked with beacon
4	Bird radar
5	Sonar / depth sounder
6	Info. from other vessel
7	Anchored FAD / payao (recorded)

APPENDIX A8 – SPECIES CODES

Refer to the FAO three-letter species codes:

http://www.fao.org/fishery/collection/asfis/en

APPENDIX A9 – OBSERVER FATE CODES

FATE CODE	DESCRIPTION
DCF	Discarded - Line cut or Other
DDL	Discarded - Difficult to land
DFR	Discarded - fins removed and trunk discarded
DFW	Discarded - Discarded from well
DGD	Discarded - Gear damage
DNS	Discarded - No space in freezer
DOR	Discarded - other reason (specify)
DPA	Discarded - Protected species - Alive
DPD	Discarded - Protected species - Dead
DPQ	Discarded - poor quality
DPS	Discarded - protected species (e.g. turtles)
DPU	Discarded - Protected Species - Condition unknown
DSD	Discarded - Shark damage
DSO	Discarded - rejected (struck off before landing)
DTS	Discarded - too small
DUS	Discarded - Undesirable species
DVF	Discarded - Vessel fully loaded
DWD	Discarded - Whale damage
ESC	Escaped
RCC	Retained - Crew Consumption
RFL	Retained - Filleted
RFR	Retained - fins removed and trunk retained
RGG	Retained - gilled and gutted (retained for sale)
RGO	Retained - gutted only
RGT	Retained - gilled gutted and tailed (for sale)
RHG	Retained - headed and gutted (Marlin)
RHT	Retained - Headed, gutted and tailed
RMD	Retained - fins removed/trunk retained (MANDATORY)
ROR	Retained - other reason (specify)
RPT	Retained - partial (e.g. fillet, loin)
RSD	Retained - Shark damage
RTL	Retained - Tailed
RWD	Retained - Whale Damage
RWG	Retained - Winged
RWW	Retained - whole
UUU	Unknown - not observed

APPENDIX A10 – OBSERVER CONDITION CODES

CONDITION CODE	Description
A0	Alive but unable to describe condition
A1	Alive and healthy
A2	Alive, but injured or distressed
A3	Alive, but unlikely to live
A4	Entangled, okay
A5	Entangled, injured
A6	Hooked, externally, injured
A7	Hooked, internally, injured
A8	Hooked, unknown, injured
D	Dead
D1	Entangled, dead
D2	Hooked, externally, dead
D3	Hooked, internally, dead
D4	Hooked, unknown, dead
U	Condition, unknown
U1	Entangled, unknown condition
U2	Hooked, externally, condition unknown
U3	Hooked, internally, condition unknown
U4	Hooked, unknown, condition unknown

APPENDIX A11 – LENGTH CODES

Length Code	Description
AN	Anal fin length
BL	Bill to fork in tail
CC	Curved Carapace Length
CK	Cleithrum to anterior base caudal keel
CL	carapace length (turtles)
CW	Carapace width
CX	Cleithrum to caudal fork
EO	Posterior eye orbital to caudal fork
EV	Posterior eye orbital to vent
FF	1st dorsal to fork in tail
FN	Weight of all fins (sharks)
FS	1st dorsal to 2nd dorsal
FW	Fillets weight
GF	Gilled, gutted, headed, flaps removed
GG	Gilled and gutted weight
GH	Gutted and headed weight
GI	Girth
GO	Gutted only (gills left in)
GT	Gilled, gutted and tailed
GX	Gutted, headed and tailed
LF	lower jaw to fork in tail
NM	not measured
OW	Observer's Estimate
PF	pectoral fin to fork in tail
PS	Pectoral fin to 2nd dorsal
SC	Straight Carapace Length
SL	Tip of snout to end of caudal peduncle
TH	Body Thickness (Width)
TL	tip of snout to end of tail
TW	total width (tip of wings - rays)
UF	upper jaw to fork in tail
US	Upper jaw to 2nd dorsal fin
WW	Whole weight

APPENDIX A12 – SEX CODES

Sex Code	Description
F	Female
I	Indeterminate (checked but unsure)
M	Male
U	Unknown (not checked)

APPENDIX A13 – VESSEL ACTIVITY (SSI INTERACTION) CODES

Activity Code for interaction	Description
1	SETTING
2	HAULING
3	SEARCHING
4	TRANSITING
5	OTHER

APPENDIX A14 – SIZE AND SPECIES COMPOSIION SAMPLE PROTOCOL (PURSE SEINE ONLY)

Sample Type	Description
R	Random (GRAB) sample
S	SPILL sample
B	Bycatch only sampling
F	Small-fish only sampling
O	Other type of sampling protocol (please specify)

APPENDIX A15 – MEASURING INSTRUMENTS CODES (MODIFY FOR EM)

Measure Code	Description
B	BOARD
C	CALLIPER - ALUMINIUM
E	EYE
R	RULER
T	TAPE
U	UNKNOWN
W	CALLIPER - WOOD

APPENDIX A16 – TRIP MONITORING QUESTION CODES

QUESTION CODE	Description	WCPFC Question
RS-A	Did the operator or any crew member assault, obstruct, resist, delay, refuse boarding to, intimidate or interefere with observers in the performance of their duties	Y
RS-B	Request that an event not be reported by the observer	Y
RS-C	Mistreat other crew	N
RS-D	Did operator fail to provide observer with food, accommodation, etc.	Y
NR-A	Fish in areas where the vessel is not permitted to fish	Y
NR-B	Target species other than those they are licenced to target	N
NR-C	Use a fishing method other than the method the vessel was designed or licensed	Y
NR-D	Not display or present a valid (and current) licence document onboard	N
NR-E	Transfer or transship fish from or to another vessel	Y
NR-F	Was involved in bunkering activities	N
NR-G	Fail to stow fishing gear when entering areas where vessel is not authorised to fish	Y
WC-A	Fail to comply with any Commission Conservation and Management Measures (CMMs)	Y
WC-B	High-grade the catch	Y
WC-C	Fish on FAD during FAD Closure	N
LP-A	Inaccurately record vessel position on vessel log sheets for sets, hauling and catch	Y
LP-B	Fail to report vessel positions to countries where required	Y
LC-A	Inaccurately record retained 'Target Species' in the Vessel logs [or weekly reports]	Y
LC-B	Inaccurately record 'Target Species' Discards	Y
LC-C	Record target species inaccurately [eg. combine bigeye/yellowfin/skipjack catch]	Y
LC-D	Not record bycatch discards	N
LC-E	Inaccurately record retained bycatch Species	Y
LC-F	Inaccurately record discarded bycatch species	Y
SI-A	Land on deck Species of Special Interest (SSIs)	N
SI-B	Interact (not land) with SSIs	Y
PN-A	Dispose of any metals, plastics, chemicals or old fishing gear	Y
PN-B	Discharge any oil	Y
PN-C	Lose any fishing gear	Y
PN-D	Abandon any fishing gear	Y
PN-E	Fail to report any abandoned gear	Y
SS-A	Fail to monitor international safety frequencies	Y
SS-B	Carry out-of-date safety equipment	N

APPENDIX A17 – VESSEL / AIRCRAFT SIGHTINGS CODES (DIFFICULT FOR EM)

CODE	Description
1	SINGLE PURSE SEINE
2	LONGLINE
3	POLE AND LINE
4	MOTHERSHIP
5	TROLL
6	NET BOAT
7	BUNKER
8	SEARCH, ANCHOR OR LIGHT BOAT
9	FISH CARRIER
10	TRAWLER
11	LIGHT AIRCRAFT
12	HELICOPTER
13	OTHER

APPENDIX A18 – ACTION CODES (PARTIAL PURSE SEINE)

Action Codes	Description	FORM Used
AG	Aground	GEN6
BG	Bunkering (transfer of fuel), vessel observer is on is GIVING	GEN1, GEN6
BR	Bunkering (transfer of fuel), vessel observer is on is RECEIVING	GEN1, GEN6
CR	Retained from a set solely because of catch-retention rules	PS5
DF	Dumping of fish	GEN1
DS	Discarded into the sea	PS5
FI	Fishing	GEN1, GEN6
FO	Fish On-board	PS5
FS	From set	PS5
NF	Not fishing	GEN1
OG	Other, vessel observer is on is GIVING	GEN1
OR	Other, vessel observer is on is RECEIVING	GEN1
PF	Possibly fishing	GEN1
SG	Set sharing, vessel observer is on is GIVING	GEN1
SR	Set sharing, vessel observer is on is RECEIVING	GEN1,PS5
TG	Transferring fish between vessels, vessel observer is on is GIVING	GEN1,PS5, GEN6
TR	Transferring fish between vessels, vessel observer is on is RECEIVING	GEN1,PS5, GEN6
UL	Unloaded at cannery or cool store	PS5
WT	Transferred between wells	PS5

GEN1 – Vessel / Aircraft sightings
GEN6 – Pollution Report
PS-5 – Purse seine Well transfer

APPENDIX A19 –CREW JOB CODES
(PARTIAL PURSE SEINE)

CODE	Description
1	CAPTAIN
2	NAVIGATOR/MASTER
3	MATE
4	CHIEF ENGINEER
5	ASSISTANT ENGINEER
6	DECK BOSS
7	COOK
8	HELICOPTER PILOT
9	SKIFF MAN
10	WINCH MAN
11	HELICOPTER MECHANIC
12	CREW
13	NAVIGATOR
14	FISHING MASTER
15	RADIO OPERATOR
16	TRANSLATOR

APPENDIX A20 – MARINE DEVICES CODES
(SOME DIFFICULT FOR EM)

Code	Description	WCPFC FIELD	GEAR LIST CODES
1	BATHYTHERMOGRAPH MBT	YES	
2	BIRD RADAR	YES	SP
3	CHART PLOTTER	YES	LSP
4	DEPTH SOUNDER	YES	LSP
5	DOPPLER CURRENT MONITOR	YES	
6	SATELLITE BUOY	YES	S
7	FISHERY INFORMATION SERVICES	YES	LSP
8	GPS	YES	LSP
9	NAVIGATIONAL RADAR #1	YES	LP
10	RADIO BUOYS - CALL-UP	YES	LSP
11	RADIO BUOYS - NON CALL-UP	YES	LSP
12	RADIO BEACON DIRECTION FINDER	YES	LSP
13	SATELLITE - HF TELEX	YES	
14	SEA SURFACE TEMP. GAUGE	YES	LP
15	SONAR	YES	LSP
16	HF RADIO TELEPHONE	YES	
17	SMART-LINK PHONE	YES	
18	TRACK PLOTTER	YES	LSP
19	VESSEL MONITORING SYSTEM (VMS)	YES	LSP
20	WEATHER FACSIMILE	YES	LP
21	WEATHER SATELLITE MONITOR	YES	
22	NET SOUNDER		LSP
23	BINOCULARS		P
24	ECHO SOUNDING BUOY		S
25	EPIRB		

APPENDIX A21 – DEVICE USAGE CODES

Code	Description
	Not mentioned
ALL	used all the time for fishing
BRO	broken now but used normally
NA	Not applicable / Not filled
NOL	no longer ever used
OIF	used only in transit
RAR	used rarely
SIF	used often but only in fishing
TRA	used all the time

APPENDIX A22 – WEIGHT MEASUREMENT CODES

Weight measurement code	Description
CW	Captain's Estimate
FN	Weight of all fins (sharks)
FW	Fillets weight
GF	Gilled, gutted, headed, flaps removed
GG	Gilled and gutted
GH	Gutted and headed
GO	Gutted only (gills left in)
GT	Gilled, gutted and tailed
GX	Gutted, headed and tailed
NM	Not measured
OW	Observer's Estimate
TW	Trunk weight
WW	Whole weight

APPENDIX A23 – GONAD STAGE CODES

Gonad stage code	Short description	Description
N	No information	No information
I	Immature	Ovary small and slender. Cross-section round
E	Early Maturing	Enlarged, pale yellow ovaries. Ova not visible.
L	Late Maturing	Enlarged, turgid, orange-yellow ovaries. Ova opaque
M	Mature	Enlarged, richly vascular, orange ovaries, losing turgidity. Ova translucent.
R	Ripe	Greatly enlarged ovaries, not turgid. Ova easily dislodged and extruded by pressure.
S	Spent	Flaccid, vascular ovaries. Most ova gone. Often dark orange-red coloration.
R	Recovering	Vascular ovaries. Next batch of ova developing.

APPENDIX A24 – FAD ORIGIN CODES (PURSE SEINE ONLY)

FAD ORIGIN CODE	Description
1	Your vessel deployed this trip
2	Your vessel deployed previous trip
3	Other vessel (owner consent)
4	Other vessel (no owner consent)
5	Other vessel (consent unknown)
6	Drifting and found by your vessel
7	Deployed by FAD auxiliary vessel
8	Origin unknown
9	Other origin

APPENDIX A25 – FAD DETECTION CODES APPENDIX A25 – FAD DETECTION CODES (PURSE SEINE ONLY)

FAD DETECTION CODE	Description
1	Seen from Vessel (no other method)
2	Seen from Helicopter
3	Marked with Radio beacon
4	Bird Radar
6	Info. from other vessel
7	Anchored (GPS)
8	Marked with Satellite Beacon
9	Navigation Radar
10	Lights
11	Flock of Birds sighted from vessel
12	Other (please specify)
13	Vessel deploying FAD (not detected)

APPENDIX A26 – FAD MATERIAL CODES (PURSE SEINE ONLY)

FAD MATERIAL CODE	Description
1	Logs, Trees or debris tied together
2	Timber/planks/pallets/spools
3	PVC or Plastic tubing
4	Plastic drums
5	Plastic Sheeting
6	Metal Drums (i.e. 44 gallon)
7	Philippines design drum FAD
8	Bamboo/Cane
9	Floats/Corks
10	Unknown (describe)
11	Chain, cable rings, weights
12	Cord/rope
13	Netting hanging underneath FAD
14	Bait containers
15	Sacking/bagging
16	Coconut fronds/tree branches
17	Other (describe)

APPENDIX A27 – FAD TYPE CODES (PURSE SEINE ONLY)

FAD TYPE CODE	Description
1	Man made object (Drifting FAD)
2	Man made object (Non FAD)
3	Tree or log (natural, free floating)
4	Tree or logs (converted into FAD)
5	Debris (flotsam bunched together)
6	Dead Animal (specify; i.e. whale, horse, etc.)
7	Anchored Raft, FAD, or Payao
8	Anchored Tree or Logs
9	Other (please specify)
10	Man made object (Drifting FAD)-changed

APPENDIX A28 – POLLUTION GEAR CODES

POLLUTION GEAR CODE	DESCRIPTION
1	Lost during fishing
2	Abandoned
3	Dumped

APPENDIX A29 – POLLUTION MATERIALS CODES

POLUTION MATERIALS CODES	DESCRIPTION
1	Plastics
2	Metals
3	Waste Oils
4	Chemicals
5	Old fishing gear
6	General garbage

APPENDIX A30 – POLLUTION SOURCE CODES

POLLUTION SOURCE CODES	DESCRIPTION
1	Vessel Aground/Collision
2	Vessel at Anchor/Bearth
3	Vessel Underway
4	Land Based Source
5	Other

APPENDIX A31 – POLLUTION TYPE CODES

POLLUTION TYPE CODES	DESCRIPTION
1	Waste dumped overboard
2	Oil splillages and leakages
3	Abandoned or Lost Fishing Gear