**Second Regional E-Monitoring Process Standards Workshop**

20–24 November 2017
Noumea, New Caledonia

**Agenda item 4.1 - Electronic Monitoring Debriefing**

## Introduction

This paper aims to define the premises of Electronic Monitoring debriefing (EM Debriefing) in the context of tuna fisheries monitoring in the WCPO.

Since the first EM trial in 2014, forty three longline vessels and two purse seine vessels are today equipped with Camera EM Systems. This trend is likely to continue in the coming years.

EM Debriefing needs to be designed as a key part of a regional EM vision/Programme supported by member countries.

This workshop is an opportunity to share information between member countries, secretariats of regional organisations and EM Service Providers.

The objective of EM Debriefing is to ensure that EM data is structured and formatted to comply with regional EM Data Process Standards, allowing EM data to flow readily to national and regional database systems.

This concept recognises the PIRFO Programme rationale - STANDARDISED training, data collection and debriefing processes to ensure QUALITY observer data. The PIRFO Debriefing Policy (2010) is recognised as an approved methodology for ensuring curated data.

Within the context of EM systems, records, analysts and data, it is proposed to design EM Debriefing standards under the PIRFO Programme. Similarly it would also make sense to design EM training, assessment and certification standards under PIRFO Programme.

This paper also recognises the work on *eDebriefing* carried out by PNA IFIMS on observer electronically reported data debriefing and the need to integrate this work in an overarching Electronic Debriefing Standard.

**Rationale**

Currently EM can be viewed as a competing tool to observer programmes. However it is the strengths of either tool that would be best used to compliment the other to ensure the truth of data collected for the users of the data (scientists, compliance officers and managers).

Debriefing of fisheries observers is a key quality assurance process used to assess the data and information they record. The same should be applied to debriefing EM analysts.

The importance of debriefing is that observers work without direct supervision and so debriefing by an expert is used to provide 'truth' that the data are complete, collected following established protocols and are accurate. To the contrary EM Data Review Centres involve numerous EM analysts working as a team and under supervision. This implies that debriefing EM analysts can be done gradually throughout the analysis of EM records as well as at the end of an analysis.

Debriefing (by its semantics) is an interview to check data collected of an enumerator by an expert to determine the quality of data or assess the utility of information collected.

Essentially this quality assurance assessment can be separated into two processes: **Verification and Validation**

EM systems benefit the data verification and validation processes as video footage or sensor recording and GPS position recording give a permanent record that may be reviewed and assessed more than once.

1. **EM Verification**: A process of evaluating the completeness and compliance of a collected data set against the required data fields, format, protocols and normal range of expected results.

**Verification Types**
Independent human verification of data through checking:

- Completeness of data fields and formats
- Critical Incident assessment
- Truth of unusual events
- Technique of established protocols followed
- Logic pathways
- A second expert reader

AI checks include:

- range checks
- Allowed character check
- Batch totals – eg LL4
- Cardinality Checks PS4>PS3>PS2
- Check Digits (number of decimal places
- Consistency checks = bycatch = FAD set
- Control Totals
- Cross System consistency checks
- Data Type Checks
- File existence check
- Logic Check = inspect floating object,set

- Presence Check = vessel ID
- Uniqueness check = Trip ID

## EM Verification

Issue is that while EM provides for multiple assessment it does not allow personal first person interpretation of events. So best to use the strengths of EM to validate its weaknesses. One area of weakness is the absence of two important debriefer, interviewer, MCS tools –the Journal and the Trip Report. Instead the strengths of EM are the 'permanent' recordings.
There is an obvious balance between authenticating data and cost effectiveness. Based on the importance of the data collected (we need this to be defined by all users) verification techniques could involve.

1. Utilising innate redundancy of the EM Analyst summarising his data such as with the observer Trip Report.
2. Pre-debriefing as a human interview of data collected as an initial verification could follow established observer debriefing process of to assess completeness, critical incidents, unusual events and protocols for interpreting information.
3. AI checks provide summaries to pre debriefer after first pass of data**. May bias interviews to not interpret within-range errors.**
4. Third party review of EM recordings:
    a. Full rereading of data by a third party debriefer or observer (not the predebriefer).
    b. Partial (50%, 20%, 10%, 5%) of trip?
        i. How selected? Trip based, 'form' based, field based?
        ii. Random section of trip
        iii. Field-based composition of debriefing – e.g. 20% of set, 50% of catch, all incidents, 100% SSIs. This needs to be clearly defined as a protocol though as this method is likely to change with the ebb and flow of regional requirements

2. **EM Validation:** A process to assess accuracy of a set of data using analogous but independently collected sources to substantiate the veracity of data and information.

**EM Validation Processes:**
Cross checking of EM data with:

- On-board observer
- VMS
- Logsheet
- Unloadings
- Boarding or port inspections
- Automated AI analysis

## EM Validation

Comparison with

1. Fisheries Observer

This is why it is important to keep separate terms for the monitoring tools EM Analyst and Observer. Because there should be a defined coverage based on the amount of validation of either monitoring tool.

2. Integrated Data:

AI checks of VMS, port and boarding inspection, unloading, CDS, and any automated data collection (e.g. winch sensors) will require integrated data storage systems.

3. Other EM data sets for the same EM records

The same ER records can be analysed by different EM analysts to validate correct specimens identification, catch and length data. This can be done in several ways:

- an entire trip or set(s) is reviewed by different analysts,
- an experienced analyst confirms specimens identification only for a selected section of the footage (e.g. big rush on deck, low light, camera lens dirty etc) or for a random section of the footage,
- EM records can occasionally be reviewed by third party analysts.
- Some of the above can occur at regular intervals during the analysis, at the end of analysis or both. A combination is likely to allow quality data to be generated from the onset and avoid major errors at the start which would be time consuming to correct when the analysis if finished.

**Providing feedback to EM analysts**

Providing feedback to EM analysts on their performance is also an important process to design. This will require a standard for collecting analytics information automatically: number and types of trips analysed, number and species analysed, time metrics (time per set, time between receiving a storage device and completing analysis), reporting compliance or unusual events. This meta data could be generated from standardised data provided by Data Review Centres and queried for analyses and providing feedback.

**General thoughts**

There is a need to plan for different Debriefing processes for different EM analysts. This is to take into account differences in the EM analysts' experiences or familiarity with either EM work or observer work, in particular number of sea days on specific gear type fishing vessels, office working style, computer literacy skills etc. Similarly, different EM Debriefing process should apply to different EM records, I.e. A longline trip on a 'on ice' vessel (10-15 days at sea), a longline trip on a 'freezer' vessel (30 to 90 days at sea), a purse seine trip during the FAD closure season, a purse seine trip in 'normal' times. An EM Debriefing process should be based on the need for generating specific types of EM data for specific purposes. For example, it can be envisaged that in the interest of time and available resources, some countries might consider different types of EM records analyses. This could include rapid analyses focusing on only tuna target species, analyses focusing only on compliance related events, etc…

**Defining the concept at the 2nd EM process standards workshop 20-24 November 2017, SPC Noumea.**

This workshop is an opportunity for participants to share information with the aim to define the concept of EM Debriefing.

EM service providers are kindly requested to provide input into the computing processes which allow to analyses EM records to produce EM data. Specifically, what are some of the exiting or envisaged tools embedded in the review/analysis softwares that address verification of EM data?

Participants are kindly asked to split into four groups for workshopping some key questions before convening to summarise the information offered.

The groups will form as indicated in the table below and will work for 45 min.
A person will facilitate the work while another will take notes.

Participants will be asked to provide comments on a series of open questions and will also be able to provide unsolicited information.

| **Groups** | **Group 1** | **Group 2** | **Group 3** | **Group 4** |
|---|---|---|---|---|
| **Countries** | Cooks Islands | Kiribati | PNG | Tonga |
| | Fiji | Marshall Isl. | PNG | Tuvalu |
| | Fiji | Nauru | PNG | Vanuatu |
| | Fiji | Nauru | Samoa | AFMA - Australia |
| | FSM | Palau | Solomon | Solomon |
| **EMSPs** | Archipelago | Satlink | Saltwater | Marine instruments |
| **Facilitators** | MH | TP | DB | SF |
| **Note takers** | VF | DP | PW | PL |
| **Locations** | Main Conference | OFP room B4L1 | Small meeting room | Main Conference |