# Draft DCC Longline EM minimum data field standards (version DCC-November 2020)

These standards are proposed for member countries to use when embarking on trials or implementation of E-Monitoring (EM) for longline vessels licensed to operate in your waters (and adjacent waters). These standards should be provided to the EM technical provider to ensure the minimum data fields specified here are generated from the EM system, according to the EM Protocol notes provided. These standards are in draft format and will be reviewed from time to time (Latest version: November 2020).

| **SPC/FFA DCC LL E-Monitoring minimum data fields** | | ***Description*** | ***Notes on EM PROTOCOL*** *(How the data are to be acquired)* |
| --- | --- | --- | --- |
| ***VESSEL IDENTIFICATION*** | | | |
| **Vessel identification** | Name of vessel | Name of vessel. This information would normally be linked to a VESSEL reference database (e.g. FFA Vessel Register) which will ensure consistency/standardisation. | The EM system should have linkages into the regional VESSEL REGISTERs (WCPFC and/or FFA) and so these fields must be generated by the EM system to be consistent with these vessel registers. *Refer to* [*https://www.wcpfc.int/record-fishing-vessel-database*](https://www.wcpfc.int/record-fishing-vessel-database) *AND* [*https://www.ffa.int/vessel\_list*](https://www.ffa.int/vessel_list) |
| Flag State Registration Number | Flag registration number of the vessel |
| Flag | Flag or chartering nation of the vessel |
| International Radio Call Sign | International Call sign |
| WCPFC VID, FFA VID and IMO | IMO, WCPFC Vessel ID and the FFA VID would be generated by the EM system using these VESSEL reference databases. |
|  | ***TRIP INFORMATION*** | | |
| **Trip information** | **Date and time of departure from port**, or the departure from the "carrier" vessel immediately after an at-sea transhippment event. | The date and time the vessel leaves port to start its fishing campaign.  If the vessel is departing from a carrier vessel after an at sea transhipment, the date and time of the departure from a carrier vessel will be used. | The EM system will estimate these fields based on auto-analyses of the EM date/time and positional information in a similar way that VMS TRIP data are generated and in conjunction with geo-fenced port areas (6 or 12 nautical mile geo-fence). This generated information will then be confirmed in the EM system by the analyst.  The international standard of Location Code (UNLOCODE) for PORTs must be used. |
| **Port of departure**, or the departure from the "carrier" vessel immediately after an at-sea transhippment event. (Coordinates of at sea transhipment) | Port of departure.  If the vessel is departing from a carrier vessel after an at sea transhipment, this field will be "AT SEA" and the coordinates of the ‘at sea’ transhipment will be generated. |
| **Date and time of return to port**, or the arrival at the "carrier" vessel just before an at-sea transhippment event. | The date and time the vessel returns to a port after a fishing trip.  If the vessel is arriving at a carrier vessel to undertake an at sea transhipment, the date and time of the arrival at the carrier vessel will be used. |
| **Port of return**, or the arrival at the "carrier" vessel just before an at-sea transhippment event. (Coordinates of at sea transhipment) | Port where the vessel returns.  If the vessel is arriving at a carrier vessel to undertake an at sea transhipment, “AT SEA” will be used and the coordinates of the ‘at sea’ transhipment will be generated. |
|  | **EM ANALYSIS INFORMATION** | | |
| **EM Analysis** | EM Analyst name and code | EM Analyst's name and EM Analyst code. | Entered into EM system by EM Analyst. The EM Analyst code should correspond to the regional EM Analyst code reference table. |
| EM Country provider | EM programme provider code - e.g. FJEM (Fiji E-Monitoring Programme) | Entered into EM system by EM Analyst. It should adhere to the format "xxEM" where xx is the ISO two-letter country code of the country providing the data, and appropriate two-letter codes for any sub-regional programme. |
| EM Data Review Centre | Name of EM Data Review Centre where EM records where analysed (e.g. 1 Fiji E-Monitoring Pogramme; e.g. 2 Digital Observer Services) | Entered into EM system by EM analyst from a pre-loaded list of established DRCs |
| EM Data Quality Reviewer | EM Data Quality Reviewer. | Entered into EM system by EM Analyst (from a list of recognised EM staff). **The EM data quality review SSPs have yet to be established and agreed.** |
| EM Data Quality Review conducted | EM Data Quality Review has been conducted (Y/N) | Entered into EM system by EM Reviewer. **The EM data quality review SSPs have yet to be established and agreed.** |
| HAUL coverage strategy for SCIENCE and COMPLIANCE | Options   1. All hauls for this trip analysed, or 2. x% of randomly selected hauls analysed for **both SCIENCE and COMPLIANCE.** (Noting that this will also allow the analysis and recording of COMPLIANCE EVENTS). | The options for HAUL coverage for SCIENCE and COMPLIANCE will be elaborated through a study conducted by SPC in 2nd QTR 2020 and then reviewed by member countries to establish an agreed protocol in late 2020. At this stage, it may be either (i) All hauls for this trip analysed, or (ii) **x%** of randomly selected hauls analysed FOR SCIENCE |
| Trip coverage strategy for COMPLIANCE only | Coverage of sets/hauls analysed specifically **for COMPLIANCE**. This information is only required when the HAUL coverage for SCIENCE is not 100% (i.e. when a % of hauls are analysed only). The requirements for COMPLIANCE EVENT information is listed below. | Yet to be discussed and agreed. Coverage of sets/hauls analysed specifically **for COMPLIANCE only** (and in addition to the SCIENCE/COMPLIANCE coverage strategy listed above), noting that coverage objectives for compliance is usually consistent with science objective and this field would only be where additional coverage specifically for COMPLIANCE is required. Coverage related to EEZ only may be a consideration for COMPLIANCE coverage strategy. This strategy will be required when only some HAULs are analysed based on the main coverage protocol, and there is a COMPLIANCE need to analyse ALL HAULS, for example. This review will only need to complete the COMPLIANCE EVENT information listed below. |
| EM Technical service provider | EM system technical service provider | Generated from EM system |
| EM system software name and version | EM software name and version | Generated from EM system |
|  | **SETTING AND HAULING INFORMATION** | | |
| **Setting and Hauling information** | Date & time start of SET | Date and time the first buoy enters the water to start the setting of line | **Auto-generated by the EM system from the float SET timestamping. Minimum resolution of position is 1/1000 of a minute.** |
| Latitude and longitude of start of SET | GPS reading at time first buoy enters water |
| Date and time of end of SET | Date and time the last buoy enters the water |
| Latitude and longitude of end of SET | GPS reading at time last buoy enters water |
| Date and time of start of HAUL | Date and time the first buoy of the mainline is hauled from the water to start the haul | **Auto-generated by the EM system from the float HAUL timestamping. Minimum resolution of position is 1/1000 of a minute.** |
| Latitude and longitude of start of HAUL | GPS reading at time first buoy is hauled from the water |
| Date and time of end of HAUL | Date and time the last buoy of the mainline is hauled from the water to end the haul |
| Latitude and longitude of end of HAUL | GPS reading at time last buoy is HAULED |
| Date and time stamp for each FLOAT SET | UTC Date and time (to nearest second) of each FLOAT SET | Generated by the EM Analyst declaration in the EM system. Analysis of this information usually takes 30-60 minutes per set. Potential to do this using technical enhancements in the future (i.e. RFID[[1]](#footnote-1)s or other sensors on FLOATS). Minimum resolution of position is 1/1000 of a minute. |
| Latitude and longitude of each FLOAT SET | GPS reading of each FLOAT SET (as recorded by EM equipment) |
| Date and time stamp for each FLOAT HAULED | UTC Date and time (to nearest second) of each FLOAT HAULED (depending on target coverage) | Generated by the EM Analyst declaration in the EM system. Potential to do this using technical enhancements in the future (i.e. RFIDs or other sensors on FLOATS). These data are important for estimation of hook number of catch event, only the timestamps for the hauled floats either side of catch event may only be required (to be discussed further). Minimum resolution of position is 1/1000 of a minute. |
| Latitude and longitude of each FLOAT HAULED | GPS reading of each FLOAT HAULED (as recorded by EM equipment) (depending on target coverage) |
| Total number of baskets or floats | Number of baskets set; usually it is the same as the number of floats set minus one | **With each float timestamped, the EM system should automatically calculate this.** |
| Number of hooks between floats or number of hooks per basket | Number of hooks between floats | **PROTOCOL is to count hooks from first 3 baskets, middle 3 baskets and last 3 baskets and the average HOOKS per BASKET (successive floats) can then be determined.** |
| Total number of hooks used in a set | Total number of hooks set, calculated by multiplying the number of baskets by number of hooks between floats | **EM system calculates total number of HOOKS SET, calculated by multiplying the number of baskets by number of hooks between floats** |
| Bait species | At the set level record the bait species used. Should cater for more than one species. | **PROTOCOL is to review the BAIT used during the analyses conducted over the setting of the first 3 baskets, the middle 3 baskets and the last 3 baskets. This should be possible using appropriate placement of the camera mounted to view the SETTING process.**  **Pending further discussions if this field is to be required, then there would be an additional ACTION for DCC to develop a protocol for how the EM Analyst will record this field.** |
| Total amount of baskets, floats monitored by EM Analyst in a single HAUL | How many floats or baskets monitored by the EM Analyst | **EM System calculates total number of BASKETS monitored using the FLOAT HAUL TIMESTAMP data.** |
|  | **SPECIAL GEAR ATTRIBUTES**  Note that under WCPFC CMM 2018-03 - between 25°S and 23°N: longline vessels are encouraged to employ one or more of the seabird mitigation measures listed in Table 1. (though encouraged, this is not mandatory) – This means it is unlikely that LL Vessels operating in and adjacent to FFA member countries will be deploying this gear (in the context of DCC EM minimum data fields). However, recording data (Y/N) against these 4 fields is not something that would take EM analyst more than 30 seconds per trip – and these data fields are required for other WCPFC fisheries and therefore a need for consistency, it is recommended these fields are populated even if the vessel is operating within 25°S and 23°N. | | |
| **Special gear attributes** | Tori line | Recorded at the set level whether the vessel uses a single or double tori lines when setting (Y/N) | **BIRD MITIGATION. PROTOCOL is to review the TORI POLE usage during the video analyses conducted over randomly selected video periods of the SET based on the compliance coverage strategy (yet to be established).** |
| Blue dyed bait | Recorded at the set level, whether the vessel used bait that has been dyed especially to look blue (Y/N) | **BIRD MITIGATION. PROTOCOL is to review the BLUE DYED BAIT usage during the video analyses conducted over randomly selected video periods of the SET based on the compliance coverage strategy (yet to be established).** |
| Deep setting line shooter | Recorded at the set level whether the vessel used a deep setting line shooter (Y/N) | **BIRD MITIGATION. PROTOCOL is to review the DEEP SETTING Line shooter during the video analyses conducted over randomly selected video periods of the SET based on the compliance coverage strategy (yet to be established).** |
| Strategic offal disposal | Recorded at the SET level whether the vessel used strategic offal disposal (Y/N) | **BIRD COMPLIANCE at SET level. PROTOCOL is to review the OFFAL discharge during the video analyses conducted over randomly selected video periods of the SET based on the compliance coverage strategy (yet to be established). Potential with camera in setting area to capture field for verification (presence/absence). This would be evident if the vessel throws the offal on the same side or area as the hooks are being SET and so the EM analyst should be able to view this practice.** |
|  | **CATCH EVENT INFORMATION** | | |
|  | Catch event short clip | A ten second short video clip in MP4 format comprising 5 seconds and 5 seconds after the catch event. | **For example, each time an EM analyst produces data from analysing an event on the EM records, a short video clip (e.g. 5 seconds before and 5 seconds after the event) is produced and saved. Another approach could be that EM analysts decide if an event should have a short video clip produced. This would depend for example on the objective of the EM records analyses. Another though could be that the short clip is produced automatically for specific types of events (e.g. all interactions with SSIs, all pollution events).** |
| **Information on catch event** | Hook number, between successive floats of **the CATCH EVEN**T | Hook number between successive floats that the fish is caught on | **Recommendation for EM Analyst to determine this field for any encounters with Species of special interest (SSIs = shark, marine reptiles, seabirds and marine mammals) as the minimum requirement. (This process may also require the count of hooks between successive floats for these catch events only, in order to cross-check with value estimated during the review of the SET).**  **This field should NOT be mandatory in EM service providers review software.**  **With the availability of FLOAT timestamp data (before and after the catch event) and the timestamp for when SNAP of each catch event comes onboard, an algorithm to estimate this field should be used for the non-SSI species.** |
| Species code | FAO code of species caught | **EM Analyst declaration. Must use the FAO standard Species codes.** *The DCC will develop a Species code quality assurance standards in a format which can be made available to EM service providers to use in the development of their review software. For example if a species NOT commonly reported in the WCPO is recorded, a warning pop up can let the EM analyst know about this to reduce the chances of species miss- identification and/or miss-reporting.* |
| Species Identification is Valid | The species code used is valid for the specimen recorded (Y/N) | **Drawing from species identification knowledge and experience as well as from peer reviews, the EM Analyst (or the quality assurance person) determines if the species code is valid (Y) or not (N).** |
| Length of fish | Measure length of species using the recommended measurement | **EM Analyst using the calibrated digital measuring tool, noting the need for an assigned area on the deck where the fish should be measured.** |
| Length of fish is precise | The digital length measurement is precise (Y) or not (N) | **To determine if the length value produced is precise, the EM analyst would refer to this protocol (which would need to feature in the EM service provider’s review software user manual) :**  **A Precise Measurement is when:**  **1. The two step calibration of the digital length measuring tool was performed (calibration mat placed on deck before each new departure + digital calibration done before start of EM records analyses)**  **2. The quality of the footage is clear enough and free from obstruction that the snout and the tail of the fish are visible to a resolution where the measurement can be precisely taken.**  **3. The measured fish is located well within the calibration area on deck.**  **4. Taking into account the above steps, the EM analyst determines that the measurement is precise. Note that for Yellowfin and Bigeye tuna, the precision needs to be within 2 cm. For Albacore tuna, the precision needs to be within 1cm.**  **A Unprecise Measurement is when:**  **1. The two step calibration of the digital length measuring tool was NOT performed (either the calibration mat was not placed on deck before each new departure and/or the digital calibration was NOT done before start of EM records analyses)**  **2. The quality of the footage is NOT clear enough and presents an obstruction that the snout and the tail of the fish are NOT visible to a resolution where the measurement can be precisely taken.**  **3. Part or all of the measured fish is located OUTSIDE the calibration area on deck.**  **4. Taking into account the above steps, the EM analyst determines that the measurement is NOT precise. Note that for Yellowfin and Bigeye tuna, the precision needs to be within 2 cm. For Albacore tuna, the precision needs to be within 1cm.** |
| Length measurement code | Code the type of measurement used | **EM Analyst declaration depending on how the fish was measured. Must use regional standard codes for LENGTH CODES** |
| Sex | Sex the species, if possible with certainty for SHARK and RAY species only. | **EM Analyst declaration. Not possible for most species. Can collect sharks and rays sex, for example, if shown ventrally. Some other species may be possible (e.g. mahi mahi, opah and sea turtles). Must use regional standard codes for SEX** |
| Condition when caught | Use condition codes to indicate status when caught. | **EM Analyst declaration. Must use the regional standard codes for CONDITION.** |
| Fate | What happens to the fish after its caught use codes | **EM Analyst declaration. Must use the Regional standard codes for FATE.** |
| Interaction | For SSIs only, details of the gear interaction with the SSI. For example, hooking position for marine turtles and shark | **EM Analyst declaration. Must use the Regional standard codes for INTERACTION.** *The DCC will be developing a drop down list of the interaction codes for EM service providers to add this field in their review software.* |
| Condition when released | Use condition codes to indicates status when released to the sea | **EM Analyst declaration. Must use the regional standard codes for CONDITION.** |
| Catch event date and time | UTC Date and time (to nearest second) of the catch event (as recorded by EM equipment). | Fields automatically generated by EM system of use for science and compliance. This represents the point when the EM analyst registers the catch coming onboard or if not landed at all, when it is struck off, released or discarded. |
| Catch SNAP date and time | UTC Date and time (to nearest second) of when the branchline SNAP for each catch event comes onboard | Fields automatically generated by EM system and stored with the other relevant catch event data. |
| Latitude and longitude of Catch event | GPS reading at catch event (as recorded by EM equipment) | Fields automatically generated by EM system. Minimum resolution of position is 1/1000 of a minute. |
|  | **POTENTIAL COMPLIANCE EVENTS** | | |
| **Potential Compliance event** | Date and time of potential compliance issue | UTC Date and time (to nearest second) for each potential compliance issue recorded by the EM Analyst (the position as generated by EM equipment). **Note that Potential Compliance events can be recorded outside the fishing operation period.** | Fields automatically generated by EM system and stored with the related potential compliance event information. |
| Latitude and longitude of compliance issue | GPS reading for the potential compliance issue recorded by the EM Analyst (as generated by EM equipment) | Fields automatically generated by EM system and stored with the related potential compliance event information. Minimum resolution of position is 1/1000 of a minute. |
| Compliance category code | Category (code) for the potential compliance issue as viewed and recorded by the EM Analyst, including **MARPOL (waste disposal, strategic disposal)**, **TARGETTING species not licensed to do so** (e.g. shark , squid, DWS), **SOCIAL BEHAVIOUR**, alleged **CRIMINAL BEHAVIOUR**, **Licencing Conditions**, **SSI (birds, marine turtles, sharks)**, **GEAR Compliance (wire trace, shark line, etc.)**, **EM EQUIPMENT** **TRANSHIPMENT event**, other national regulations not covered.  **(See TABLE 2)** | EM Analyst declaration when a compliance event is identified on the video. There will be a list of broad COMPLIANCE CATEGORIES to choose from **with these standards are yet to be determined** (e.g. the MCS Working Group may determine the list of broad COMPLIANCE Categories).  The EM System will need to have a component that allows the EM Analyst to efficiently enter a potential compliance event when viewed in the video (and based on the standard viewing or any additional EM analysis rate based on compliance only).  The EM System will allow the EM Analyst to do the following:   * At the relevant point in the video, the EM Analyst will SELECT the Potential Compliance event TOOL option. * Selecting this option will display the range of Compliance CATEGORIES and then the EM Analyst will select one of these. * The range of potential compliance events under the selected CATEGORY will be displayed and the EM Analyst will select the relevant compliance event. * The EM Analyst will add any necessary comments related to this particular potential compliance event and on selecting the SAVE/SUBMIT option, the information, with the timestamp and position relevant to that point in the video, will be stored by the EM system with the compliance information. |
| Compliance event type code | Specific Compliance Event under this category **(See Table 2)** |  |
| Compliance note | Notes from the EM Analyst on each potential compliance issue | EM Declaration. The EM analyst (sometimes in conjunction with compliance personnel) will provide detailed notes on the compliance issue. |

**Table 2. Potential Compliance CATEGORIES and EVENTS reference codes table (for internal EM system database)**

| **CATEGORY CODE** | **CATEGORY** | **COMPLIANCE EVENT CODE** | **GEN-3 code** | **COMPLIANCE EVENT** | **Description** |  |
| --- | --- | --- | --- | --- | --- | --- |
| P | POLLUTION | P1 | PN-a | Waste disposal at sea | Disposal of any metals, plastics, chemicals, or fishing gear | Generated by the EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy |
| P2 | PN-b | Oil discharged | Discharge of any oil |  |
|  | | | | | | |
| T | TARGETTING | T1 | NR-b | Target species | Target species other than those they are licensed to target | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy  *Maybe be confirmed from the species (composition) recorded under the Catch Event information section* |
|  | | | | | | |
| B | SOCIAL BEHAVIOUR | B1 |  | Observer safety | Did the operator or any crew member assault, obstruct, intimidate, or interfere with observers in the performance of their duties | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy |
| B2 | RS-a | Crew safety | Mistreat other crew |
|  | | | | | | |
| C | ALLEGED CRIMINAL BEHAVIOUR | C1 |  | Extreme violence |  | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy |
| C2 |  | Transfer/transport of people |  |
| C3 |  | Contraband | Importing/exporting goods illegally including drug trafficking |
|  | | | | | | |
| L | LICENSING | L1 | NR-a | Prohibited areas | Fish in areas where the vessel is not permitted to fish | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy  *Maybe auto generated if possible by EM, based on the info in the SETTING AND HAULING section? (info there included date & time start & end of SET, position data for start & end of set etc)* |
| L2 | NR-f | Bunker | Was involved in bunkering activities | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy |
| L3 | NR-g | Stowing of gear | Fail to stow fishing gear when entering areas where vessel is not authorised to fish |
|  | | | | | | |
| S | SSIs | S1 | SI-a | SSI landed | Land on deck Species of Special Interest (SSIs) | *For SSIs that are recorded (eg. OCS, FAL):*  Auto generated by the EM system base on the Species Code + Fate field under CATCH EVENT INFORMATION  *[NOT SURE WHETHER THIS IS NEEDED, MAYBE NOT, BUT….For SSI that may not be recorded but were landed on deck eg. turtles:*  *EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy* |
| S2 | SI-b | SSI interaction | Interact (not land) with SSIs | EM Analyst declaration during video analyses conducted over randomly selected video periods based on compliance coverage strategy |
| S3 |  | Shark finning | Prohibit shark finning |
|  | | | | | | |
| G | GEAR | G1 |  | Large scale driftnet | Did the vessel use large scale driftnet? | EM Declaration. The EM analyst (sometimes in conjunction with compliance personnel) will provide detailed notes on the compliance issue. |
| G2 |  | Wire trace/Branch lines | Did the vessel use wire trace or have shark lines? | EM Declaration. The EM analyst (sometimes in conjunction with compliance personnel) will provide detailed notes on the compliance issue. |
| G3 |  | Line cutters & de-hookers | Did the vessel carry and use line cutters & de-hookers to handle and release turtles? | Check if there was a SSI interaction that involve turtle:  EM Declaration. The EM analyst (sometimes in conjunction with compliance personnel) will provide detailed notes on the compliance issue. |
|  | | | | | | |
| E | EM EQUIPMENT | E1 |  | EM Equipment tampering | Tampering with EM equipment eg. blocking/obstructing/cutting the camera | EM Declaration.Noted on occasions when the EM analyst identifies tampering with EM equipment.  Could also be autogenerated through EM equipment sensors. |
|  | | | | | | |
| T | TRANSHIPMENT | T1 | NR-e | Possible transhipment | Did two vessels come together alongside each other? | Can be auto generated base on vessels proximity? |

1. RFID - Radio-frequency identification [↑](#footnote-ref-1)