ELEVENTH MEETING OF THE TUNA FISHERY DATA COLLECTION COMMITTEE

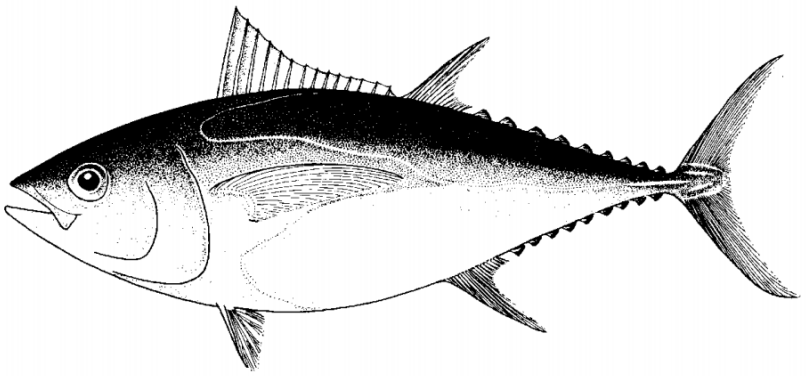
20-24 AUGUST 2018, BRISBANE AUSTRALIA

WORKING PAPER DCC11-WP01 - agenda item 4

Introducing new data fields and an associated collection system:

The 'EM-Not Possible' (NP) data fields

Prepared by the Oceanic Fisheries Programme (OFP) of the Pacific Community (SPC)



Pacific Community

Forum Fisheries Agency

Introduction

Since 2014, seven member countries have been trialling video based Electronic Monitoring Systems (EMS) on horizontal tuna longline vessels. SPC and FFA member countries involved in the EMS trials have expressed interest in the potential of EM data to be counted as Regional Observer Programme (ROP) longline coverage under the Western and Central Pacific Fisheries Commission (WCPFC). Although, discussions at the recent WCPFC ERandEmWG3 highlight many members are moving away from an equivalence discussion to a focus on supplementing ROP with EM data collected to standards equivalent to ROP but separately specified. The ROP has an accompanying set of minimum standard data fields[1] that were developed by the WCPFC's Scientific Committee. Two Regional EM Process Standards Workshops (REMPS) held at SPC in 2016 and 2017 assessed the capability of EM systems to collect ROP minimum data fields as well as the DCC Observer minimum data fields that SPC and FFA members utilise.

The REMPS-2[2] reviewed and enhanced the draft EM process standards for longline observer data. This included developing a system for categorising the potential of EMS to collect each data field. Table 1 (Annex 1) presents this categorical system. The REMPS-2 identified that, at the time, there were 112 fields that could not be collected using EMS. These fields were termed 'EM-NP' and referred to as the 'EM red fields'.

New SPC/FFA REGIONAL LONGLINE forms have been drafted (FORMS LL EM-1 and 2/3) for allowing national fisheries authority authorised personnel to collect at least half of the data fields categorised as 'EM-NP'. The focus here is to present a methodology for collecting the 'EM-NP' data fields and integrating them into existing database system. The forms presented here are draft and should be adapted post DCC 11 outcomes. The forms are an interim step until an electronic application based approach can be developed for collecting these data.

Table 2 (Annex 1) provides a summary of DCC minimum longline observer data fields, the number of those fields classified 'EM-NP' and the number of 'EM-NP' fields collectable using the EM LL-1 and 2/3 forms. Overall, out of the 382 data fields used by the DCC, 112 are 'EM-NP' and 62 of those can be collected using the EM LL-1 and 2/3 forms, approximately 55%. Table 3 (Annex 1) is a subset of the draft EM longline process standards showing only the 'EM-NP' fields in details with an added column showing if the fields can be collected using the EM LL-1 and 2/3 forms.

This paper suggests how these new forms could be used and maintained. Recommendations are provided for how the forms can be trialled and implemented. A preview of how the 'EM-NP' data fields could be collected using an electronic application is provided. The draft forms to be further developed are presented in Annex 2 (Figures 1 to 5).

1 https://www.wcpfc.int/system/files/Table-ROPminimum%20standard%20data%20fields%20-%202016%20update_1.pdf

2 The workshop's full report can be accessed here: http://oceanfish.spc.int/en/meetingsworkshops/e-reporting-a-e-monitoring/474-second-em-workshop-11-2017

SUGGESTED USES OF THE NEW FORMS LL EM-1 and LL EM-2/3

Why collect the 'EM-NP' fields?

Collecting the 'EM-NP" fields will allow national fisheries authorities to create a complete 'EM trip' data set. Currently, as the 'EM-NP' are either not collected or not collected in a standardised manner, the management of EM data is challenging and can be improved.

A study by Emery et. al.,[3] reviewed the WCPFC longline ROP minimum standard data fields, their current scientific application, the proportion of member countries supplying these data to the WCPFC Secretariat and the capability of EM to collect these fields. This peer reviewed paper (*currently in press*) provides evidence towards the need for developing tools for collecting the 'EM-NP' fields.

Purpose of the forms

The purpose of these forms is for authorised fisheries authority personnel to collect 'EM-NP' data fields from horizontal longline vessels equipped with an EM system during pre- and/or post-trip in-port inspections.

When and how to use the forms?

The 'EM-NP' data fields should be collected while the vessel is in port (or at anchor and safely accessible). The data fields can be collected either prior to the vessel departing for a fishing trip, after the fishing trip; or both before and after the fishing trip. Although it is recommended that the data fields be, at least, collected prior to the vessel departing. This reasoning is explained further below.

Who should be collecting this data?

It is recommended that the forms be completed by authorised personnel with experience in monitoring longline vessel equipment (referred to as the 'authorised officer' on the EM-LL-1 and2/3 forms). The 'authorised officer' could be for example, an observer, a port sampler or an EM Analyst. These staff possess the skills and experience required to collect these data fields.

Natural keys to identify an EM trip and multiple data sources

In the past and current trials of EMS there is a significant gap in regards to identification of an EM trip. At the moment, there is no data field to identify an EM trip. It is recommended that the vessel's trip natural data keys be used to identify an EM trip. For example, it is proposed to use VESSEL NAME + DEPARTURE DATE as the natural key to link the EM trip data to the respective logsheet trip, unloading, port sampling, VMS trip data.

The data collected on the EM LL-1 and 2/3 forms would then be entered in an EM trip created in Tufman2 before the trip ends. When the vessel returns to port, the EM records (video footage and sensor data) are analysed and EM data is generated using the EM service provider's analysis software. The EM data would then be uploaded to the EM trip in Tufman2. The validation and verification of the EM data would be performed throughout the analysis of the EM records as well as when the data is uploaded to Tufman2.

3 Emery et al. (in press). The use of electronic monitoring within tuna longline fisheries in the WCPO - implications for international data collection, analysis and reporting. *Reviews in Fisheries Biology and Fisheries*

MAINTAINING THE EM LL-1 and EM LL-2/3 FORMS

Research and development of EM systems is significant and continuous. Longline observer data fields which cannot be collected using EMS today could potentially be efficiently collected using improved EM systems in the future. The EM LL-1 and EM LL2/3 forms will need to be revised and maintained to reflect the progresses made in EM research and developments. The DCC is invited to consider a process where these forms can be adapted in response to rapid evolution in EMS developments.

PIRFO TRAINING

The Pacific Islands Regional Fisheries Observer (PIRFO) training, assessment and accreditation programme will need to be involved for the training on how to use these forms correctly. PIRFO should also be consulted on who is best suited (or what qualifications are needed) to use this form. This competence should take cognisance of the application based collection system intended to be developed in the near future.

COLLECTING DATA SPECIFICALLY ON EM SYSTEM

The DCC is invited to consider if data could be collected about the EM system on the vessel. For example, the authorised officer could collect data on the following (but not limited to):

- Number of cameras operating and conditions
- EM system is turned ON and functioning correctly (according to service provider's standards)
- Information about the hard drives (e.g. serial numbers, space, etc…), and
- Measurement tool calibration object has been placed on deck prior to vessel departing.

There is currently no standardised system for collecting this type of information. Consideration must be given as to how such data would be used by national fisheries agencies after it is collected. This information could be either integrated into Tufman2 (would need to create new fields) or integrated into the service provider's review system or into a separate database system managed by the country. On the EM LL-1 form, there is space at the bottom to collect this information.

DEVELOPPING ELECTRONIC LL-1 and EM LL-2/3 FORMS

SPC is currently developing an Android application for longline observers to collect at sea data. This application can be developed so that at the start of a new trip, the user selects either Observer Trip OR EM Trip. When using the application in 'EM Trip' mode, the authorised officer would collect the 'EM-NP' fields and upload the data to Tufman2. It is the expectation that such application would be fully available by mid-2019, although it is important to get a proof-of-concept for 'EM-NP' data fields collection as soon as possible, which requires a hard-copy form for the moment. In addition, paper forms can be used in case of hardware or software failure.

RECOMMENDATIONS

1. **The DCC is invited to review and comment on the proposal to establish a collection system for the 'EM-NP' data fields. Including formulating information/instructions around how the data from the required fields can be collected (in the pre-trip /post-trip inspection context). It is suggested that, as there are many fields, it would be best for DCC to go through the [WCPFC = 'Y'] fields first, and then if there is time, go back to review the [WCPFC = 'N'] fields. The reason is that resolving the ROP 'EM-NP' is most important at this stage.**

2. **The DCC is invited to approve the development of EM LL-1 and EM LL-2/3 forms based on the data fields identified in this paper, and request SPC to develop the forms required for field-testing as soon as possible.**

3. **The DCC is invited to support the development of an Android application which would allow collection of the 'EM-NP' fields electronically.**

ANNEX 1 – Tables

Table 1: Categories of EM potential for each data field as developed in 2017.

2017 Categories	
EM-R1	EM Ready 1 - operational now
EM-R2	EM Ready 2 - requires significant crew support
EM-R3	EM Ready 3 - requires additional dedicated camera / sensor
EM-R4	EM Ready 4 - but inefficient / costly
EM-P1	EM Possible - with minor work
EM-P2	EM Possible - with major work
EM-NP	EM Not possible
*	Data better collected by PS onboard observer
EM-Nat	EM Natural Key
EM-New	EM new field
Null	Null field

Table 2: Summary of DCC minimum longline observer data fields, number of 'EM-NP' fields and number of 'EM-NP' fields collectable using the EM LL-1 and 2/3 forms.

LL OBS Data Tables	Number of fields	Number of 'EM-NP' fields	Number of 'EM-NP' fields collectable using the EM - LL-1 and 2/3 forms	% of 'EM-NP' fields collectable using EM LL-1 and 2/3 forms
LL_OBS_TRIP	38	10	8	80
LL_VES_CREW	2	2	2	100
LL_VES_ELEC	6	4	4	100
LL_GEAR	55	34	34	100
LL_OBS_SET	60	5	1	20
LL_SETHAULLOG	17	0	0	0
LL_OBS_CATCH	22	3	0	0
OBS_TRIPMON	36	3	2	66
OBS_TRIPMON_COMM	2	0	0	0
VESSEL_AIR_SIGHT	10	10	0	0
OBS_POLLUTION	15	4	0	0
OBS_POLLUTION_DETAILS	6	0	0	0
OBS_SSI	42	16	0	0
OBS_SSI_DETAILS	5	0	0	0
OBS_JOURNAL	2	0	0	0
LL_TRIP_REPORT	64	21	11	52
TOTALS	**382**	**112**	**62**	**55**

Table 3 *(Pages 7 to 25):* Summary of longline observer 'EM-NP 'data fields in detail with the added indication if these fields are collectable using the EM LL-1 and 2/3 forms (tenth column from the left).

FIELD	Data Collection Instructions	Entry Source	Field format notes	Validation rules	XML TAG	WCPFC FIELD	Priority for EM R&D	Category	COLLECTABLE WITH EM LL1 or EM LL2/3	Notes
		SETUP PRE EM-A POST AG CF								
OBS_TRIP										
vesowner	NAME of the vessel owner	PRE	NVar Char (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	N/A	EM-NP *	Y	
vescaptain	NAME of the captain of the vessel	PRE	NVar Char (50)		<vescaptain>	Y	N/A	EM-NP *	Y	
VESCAPT_NATION	NATIONALITY of the captain of the vessel Two letter COUNTRY CODE for the country who organise the trip	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	N/A	EM-NP *	Y	
VESCAPT_ID_DOC	Captain's Document ID	PRE	NVar Char (20)		<VESCAPT_ID_DOC>	Y	N/A	EM-NP *	Y	

vesmaster	NAME of the fishing master	PRE	NVar Char (50)	Is there a annual list? (I doubt it)	<vesmaster>		N/A	EM-NP*	Y	
VESMAST_NATION	NATIONALITY of the vessel MASTER Two letter COUNTRY CODE for the country who organise the trip	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	N/A	EM-NP *	Y	
VESMAST_ID_DOC	FISHING MASTERS's Document ID	PRE	NVar Char (20)		<VESCAPT_ID_DOC>	Y	N/A	EM-NP *	Y	
crew_number	Total number of CREW onboard during the trip	PRE	Int		<crew_number>	Y	N/A	EM-NP *	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	N/A	EM-NP *	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	N/A	EM-NP*	N	This could relate to the EM Analyst What credentials would indicate that officer observer is no longer a "cadet"
VES_CREW										
country_code	Nationality of the CREW	PRE POST	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	N/A	EM-NP	Y	Will require interview with skipper. If done at setup, Field values may change prior to any given trip.
crewcount	Total number of crew on board during the trip for this COUNTRY OF NATIONALITY	PRE POST	SmallInt		<crewcount>	Y	N/A	EM-NP	Y	Will require interview with skipper. If done at setup, Field values may change prior to any given trip.

VES_ELEC										
device_id	Marine Device CODE.	PRESETUP	Int	Refer to APPENDIX 20 - the DEVICES should only be available according to the respective gear code (e.g. "L" for longline is in the GEAR LIST CODES column)	<device_id>	Y	N/A	EM-NP	Y	Will require pre-inspection interview with skipper and tour of wheelhouse.
ONBOARD_code	Is this DEVICE SIGHTED ONBOARD ?	PRE SETUP	Char (1)	'Y' or 'N'	<ONBOARD_code>	Y	N/A	EM-NP	Y	As above
make_desc	Description of Make	PRE SETUP	NVar Char (30)	Dropdown List?	<make_desc>	N	N/A	EM-NP	Y	
model_desc	Description of Model	PRE SETUP	NVar Char (30)	Dropdown List - Child of Make?	<model_desc>	N	N/A	EM-NP	Y	
LL_GEAR										
mline_comp	Composition of mainline	SETUP PRE	NText		<mline_comp>	Y	N/A	EM-NP	Y	
bline_comp	Composition of branchlines	SETUP PRE	NText		<bline_comp>	Y	N/A	EM-NP	Y	
mline_mat	Mainline material	SETUP PRE	NVar Char (15)		<mline_mat>	Y	N/A	EM-NP	Y	
mline_mat_desc	Mainline material description	SETUP PRE	NVar Char (50)		<mline_mat_desc>	Y	N/A	EM-NP	Y	

mline_diam	Mainline diameter (mm)	SETUP PRE	Decimal (4,1)		<mline_diam>	Y	N/A	EM-NP	Y	
bline_mat1	Composition of branchlines (Material #1)	SETUPPRE	NVar Char (40)		<bline_mat1>	Y	N/A	EM-NP	Y	
bline_mat1_desc	Branchlines (Material #1) description	SETUP PRE	NVar Char (50)		<bline_mat1_desc>	Y	N/A	EM-NP	Y	
bline_mat2	Composition of branchlines (Material #2)	SETUP PRE	NVar Char (40)		<bline_mat2>	Y	N/A	EM-NP	Y	
bline_mat2_desc	Branchlines (Material #2) description	SETUP PRE	NVar Char (50)		<bline_mat2_desc>	Y	N/A	EM-NP	Y	
bline_mat3	Composition of branchlines (Material #3)	SETUP PRE	NVar Char (40)		<bline_mat3>	Y	N/A	EM-NP	Y	
bline_mat3_desc	Branchlines (Material #3) description	SETUP PRE	NVar Char (50)		<bline_mat3_desc>	Y	N/A	EM-NP	Y	
seawater_ans	Refrigeration method - Sea water ?	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<seawater_ans>	Y	N/A	EM-NP	Y	

blastfreezer_ans	Refrigeration method - blast freezer ?	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<blastfreezer_ans>	Y	N/A	EM-NP	Y	
ice_ans	Refrigeration method - Ice ?	SETUPPRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<ice_ans>	Y	N/A	EM-NP	Y	
chilledseawater_ans	Refrigeration method - Chilled Sea water ?	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<chilledseawater_ans>	Y	N/A	EM-NP	Y	
otherstorage_ans	Refrigeration method - other ?	SETUP PRE	Char (1)	Must be 'Y', 'N' or 'X' (observer did not respond to this question)	<otherstorage_ans>	Y	N/A	EM-NP	Y	
otherstorage_desc	Refrigeration method – other description	SETUP PRE	NVar Char (50)		<otherstorage_desc>	Y	N/A	EM-NP	Y	
hksjapan_size	Japanese hook size	SETUP PRE	NVar Char (50)		<hksjapan_size>	Y	N/A	EM-NP	Y	
hksjapan_perc	% of Japanese hook	SETUP PRE	Tiny Int		<hksjapan_perc>	N	N/A	EM-NP	Y	

hksjapan_ors	Japanese hook original size	SETUP PRE	NVar Char (5)		<hksjapan_ors>	Y	N/A	EM-NP	Y	
hkscircle_size	Circle hook size	SETUP PRE	NVar Char (50)		<hkscircle_size>	Y	N/A	EM-NP	Y	
hkscircle_perc	% of Circle hook	SETUP PRE	Tiny Int		<hkscircle_perc>	N	N/A	EM-NP	Y	
hkscircle_ors	Circle hook original size	SETUPPRE	NVar Char (5)		<hkscircle_ors>	Y	N/A	EM-NP	Y	
hksj_size	J hook size	SETUP PRE	NVar Char (50)		<hksj_size>	Y	N/A	EM-NP	Y	
hksj_perc	% of J hook size	SETUP PRE	Tiny Int		<hksj_perc>	N	N/A	EM-NP	Y	
hksj_ors	J hook original size	SETUP PRE	NVar Char (5)		<hksj_ors>	Y	N/A	EM-NP	Y	
hksoth_type	Other hook types description	SETUP PRE	NVar Char (50)		<hksoth_type>	Y	N/A	EM-NP	Y	
hksoth_size	Other hook type size	SETUP PRE	NVar Char (50)		<hksoth_size>	Y	N/A	EM-NP	Y	
hksoth_perc	% of Other hook types	SETUP PRE	Tiny Int		<hksoth_perc>	N	N/A	EM-NP	Y	
hksoth_ors	Others types of hook original size	SETUP PRE	NVar Char (5)		<hksoth_ors>	Y	N/A	EM-NP	Y	
bline_mat1_diam	Branchlines (Material #1) diameter	SETUP PRE	Decimal (4,1)		<bline_mat1_diam>	Y	N/A	EM-NP	Y	
bline_mat2_diam	Branchlines (Material #2) diameter	SETUP PRE	Decimal (4,1)		<bline_mat2_diam>	Y	N/A	EM-NP	Y	

distance_lineweighthook	Distance between branchline weight and the eye of the hook. At the trip level 'bline_comp' Composition of branchline. LL GEAR-10					Y	N/A	EM-NP	Y	WCPFC requested that the distance from where the bottom of the weight to the eye of the hook. Units are meters. DCC units are in centimeters.
lineweight	Weight in grams of any weight added to the branchline. See 'bline_comp'.					Y	N/A	EM-NP	Y	DCC 2014. WCPFC9. Branchline weights. Total weight of , if y to weighted branchlines. In grams.
LL_OBS_SET										

branch_length	Length of branchline (m) (If all are of a consistent length, otherwise use next set of fields).SEE FLOATLINEPotential use of colour-coded branchlines	PRE	Decimal (4,1)		<branch_length>	Y	N/A	EM-NP	Y	Sub-sampling may not be appropriate for accuracy. Full monitoring may be required
branch_0_20	Number of branchlines between successive floats that are < 20 m.	-	SmallInt		<branch_0_20>	Y	N/A	EM-NP	N	

branch_20_34	Number of branchlines between successive floats that are 20-35 m.	-	SmallInt		<branch_20_34>	Y	N/A	EM-NP	N	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 attempt 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.
branch_35_50	Number of branchlines between successive floats that are 35-50 m.	-	SmallInt		<branch_35_50>	Y	N/A	EM-NP	N	

branch_50_99	Number of branchlines between successive floats that are > 50 m.	-	SmallInt		<branch_50_99>	Y	N/A	EM-NP	N	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_CATCH										
gstage_CODE	GONAD STAGE CODE		Char (1)	REFER TO APPENDIX 23	<gstage_CODE>	N	N/A	EM-NP	N	

calibrate_this_set_yn	Flag to indicate if measuring instrument was calibrated before every set.						N/A	EM-NP	N	DCC 2016. Indicates if observer callibrated their measuring instrument before each haul. Solid measuring instruments may be affected by rough sea conditons. Is there an EM equivalent?
calibration in mm	The calibration reading (+/-) in mm.						N/A	EM-NP	N	DCC 2016. A record of the callibration error in millimeters. Is there an EM equivalent?
OBS_TRIPMON										
NR-D	Not display or present a valid (and current) licence document onboard	PRE POST		–		N	N/A	EM-NP	Y	

SS-A	Fail to monitor international safety frequencies			–		Y	N/A	EM-NP	N	
SS-B	Carry out-of-date safety equipment			–		N	N/A	EM-NP	Y	
VES_AIR_SIGHT										
sight_date_TIME	Date/Time of sighting		REFER TO APPENDIX A1	Must adhere to the ISO 8601 format in Appendix A1	<sighting_date>	Y	N/A	EM-NP	N	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	N/A	EM-NP	N	As above.
lon	Longitude of SIGHTING		REFER TO APPENDIX A2	Must adhere to the ISO 6709 format in Appendix A2	<lon>	Y	N/A	EM-NP	N	As above.
VESSEL IDENIFIER	PROVIDE the WCPFC VID for the VESSEL sighted (if this is possible)	–	REFER TO APPENDIX A4	–	–	N	N/A	EM-NP	N	As above.
vatyp_id	Vessel / Aircraft type		Int	REFER TO APPENDIX 17	<vatyp_id>	Y	N/A	EM-NP *	N	As above.

bearing_dir	Bearing (0-360 degrees)		SmallInt		<bearing_dir>	Y	N/A	EM-NP*	N	As above.
distance	Record estimated distance from observers vessels to sighted vessel		Decimal (7,3)		<distance>	Y	N/A	EM-NP*	N	As above.
dist_unit	Units of Distance		INT	1 = Metres; 2 = kilometres; 3 = Nautical miles	<dist_unit>	Y	N/A	EM-NP*	N	As above.
action_code	Action of Vessel/Aircraft sighted		Char (2)	REFER TO APPENDIX 18 for Vessel/Aircraft sightings only - only allow actions where FORM USED = 'GEN-1'	<action_code>	Y	N/A	EM-NP*	N	As above.
comments	Comments		NText		<comments>	Y	N/A	EM-NP*	N	As above.
OBS_POLLUTION										

vatyp_id	Vessel / Aircraft type	Em-A	Int	REFER TO APPENDIX 17	<vatyp_id>	N	N/A	EM-NP	N	**It is very unlikely that EM will be able to be used effectively to monitor pollution by other vessels. Opportunistic.**
stickers_ans	Response to "Stickers" question. "Were there any stickers/ posters displayed to remind the vessel about MARPOL Regulations?"	POST	Char (1)	'Y' or 'N'	<stickers_ans>	N	N/A	EM-NP	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	Char (1)	'Y' or 'N'	<aware_ans>	N	N/A	EM-NP	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	Char (1)	'Y' or 'N'	<advised_ans>	N	N/A	EM-NP	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?"**
OBS_SSI										
shk_fin_wt_kgs	**Estimated SHARK FIN WEIGHT (kgs)**		**Decimal (5,0)**		**<SHK_FIN_WT_KGS>**	**Y**	**N/A**	**EM-NP**	**N**	**Alternate sampling means (e.g. sampling elsewhere) to ensure the requirements are met.**
shk_fin_body_kgs	**Estimated SHARK CARCASS WEIGHT (kgs)**		**Decimal (5,0)**		**<SHK_FIN_BODY_KGS>**	**Y**	**N/A**	**EM-NP**	**N**	

tag_ret_no	Tag Number recovered from animal Record if tag fish encountered. Endeavour to complete tag recovery information	POST -> EM-A	NVar Char (7)		<TAG_RET_NO>	Y	N/A	EM-NP	N	
tag_ret_type	Type of Tag recovered from animal EM Analyst record the tag type	POST	NVar Char (5)		<TAG_RET_TYPE>	N	N/A	EM-NP	N	
tag_ret_org	Origin of Tag recovered from animal (Organisation)	POST	NVar Char (10)		<TAG_RET_ORG>	N	N/A	EM-NP	N	
intact_other	Other types of interactionRecorded by the EM Analyst .	EM-A	NVar Char (20)		<INTACT_OTHER>	N	N/A	EM-NP	N	Maybe not applicable if EM-A detection is limited to only setting and haulingUnlikely this would be used with EM

sgact_id	Vessel activity when SIGHTING occurs		Int	REFER TO APPENDIX 13	<SGACT_ID>	N	N/A	EM-NP	N	Generally EM-A not suitable for "sighting" information
sgact_other	Indicates "other" Vessel Activity		NVarChar (20)		<SGACT_OTHER>	N	N/A	EM-NP	N	
sight_n	Number of individuals sighted		SmallInt		<SIGHT_N>	Y	N/A	EM-NP	N	
sight_adult_n	Number of adults sighted		SmallInt		<SIGHT_ADULT_N>	N	N/A	EM-NP	N	
sight_juv_n	Number of juveniles sighted		SmallInt		<SIGHT_JUV_N>	N	N/A	EM-NP	N	
sight_len	Estimated overall length (Average if more than one individual)		NText		<SIGHT_LEN>	N	N/A	EM-NP	N	
sight_dist	Distance of sighted animals from vessel		Decimal (7,3)		<SIGHT_DIST>	N	N/A	EM-NP	N	
sight_dist_unit	Units used for SIGHT_DIST		INT	1 = Metres; 2 = kilometres; 3 = Nautical miles	<SIGHT_DIST_UNIT>	N	N/A	EM-NP	N	
sight_dist_nm	Distance in nautical miles		Decimal (10,4)		<SIGHT_DIST_NM>	N	N/A	EM-NP	N	

sight_behav	Description of behaviour of Sighted animals		NText		<SIGHT_BEHAV>	N	N/A	EM-NP	N	

Annex 2 - DRAFT FORMS EM LL-1 and EM LL-2/3

SPC/FFA REGIONAL LONGLINE
EM PORT-SIDE GENERAL INFORMATION FORM

FORM LL EM-1 (pg1)

VERSION AUGUST 2018

TRIP DETAILS

VESSEL NAME		**PRE** or **POST** (circle one)	EM PLACEMENT PROG. + AUTHORISED OFFICER	Date of inspection (YYYY-MM-DD)
PORT of DEPARTURE	DATE of DEPARTURE (YYYY-MM-DD)	PORT of RETURN	DATE of RETURN (YYYY-MM-DD)	
OBSERVER PLACEMENT PROG. (if any)		OBSERVER NAME	OBS.TRIP ID NUMBER	

VESSEL

VESSEL OWNER	VESSEL FLAG	VESSEL REGISTRATION NO.	**IRCS** or **UVI** (circle which one)
FISHING PERMIT or LICENCE Nos.	LENGTH OVERALL Metres / Feet	GT / GRT / mT	FISH HOLD CAPACITY

CAPTAIN AND CREW DETAILS

VESSEL CAPTAIN	ID DOCUMENT	(TYPE) / COUNTRY OF ISSUE	DOCUMENT NUMBER
FISHING MASTER	ID DOCUMENT	(TYPE) COUNTRY OF ISSUE	DOCUMENT NUMBER

CREW NATIONALITY	COUNTRY	HOW MANY?	COUNTRY	HOW MANY?	COUNTRY	HOW MANY?	COUNTRY	HOW MANY?

ELECTRONICS

GPS	Y / N	DEPTH SOUNDER	Y / N	
TRACK PLOTTER	Y / N	SST GAUGE	Y / N	

			MAKE	MODEL	COMMENTS
ADVANCES in TECHNOLOGY		Y / N			
SONAR		Y / N			
RADIO BEACON DIRECTION FINDER		Y / N			
GPS BUOYS		Y / N			How many ?
DOPPLER CURRENT METER		Y / N			
XBT (BATHYTHERMOGRAPH)		Y / N			
VMS SYSTEMS	VMS-1	Y / N			
	VMS-2	Y / N			

COMMUNICATION SERVICES	PHONES	SATELLITE:	Y / N	Phone #	MOBILE/ CELL PHONE	Y / N	Phone #
INFORMATION SERVICES	WEATHER	WEATHER FAX	Y / N	SATELLITE WEATHER MONITOR Y / N	EMAIL:	Y / N	Email address:
	WEBSITES	Phytoplankton Y / N WWW:		SST Y / N WWW:		Sea Height Y / N WWW:	

ELECTRONIC MONITORING SYSTEM (EXAMPLE ONLY)

NUMBER OF CAMERAS *(Circle number)*	1	2	3	4	GENERAL COMMENTS ABOUT EM SYSTEM
STATUS OF CAMERAS *(check if in good function)*					

OVERALL STATUS OF EM SYSTEM *(check if in good function)*		Detail reason(s) why not in good overall function
HARD DRIVE SERIAL NUMBER		
HDD1:		
HDD 2:		

Figure 1: Page 1 (of 2) of the EM LL-1 form. Page 1 has four main sections: Trip Details, Vessel, Captain and Crew Details and Electronics. The last section 'Electronic Monitoring System' is an example only.

Observer programme : - **PORT SIDE GENERAL INFORMATION FORM** **Notes on FORM LL-1 - pg.1**

A complete fishing trip is defined as 'from one full or partial unloading to the next full or partial unloading'.

If an observer trip is not over a normal complete fishing trip the reasons why must be in the trip report - also see "*Partial trips*" notes, below.

N.B.: Wherever there is a **Y** / **N** (yes or no) option for an item, either the **"Y"** or the **"N" must be circled**

TRIP DETAILS

Vessel Name : Print the full name. Include any numbers that are in the name. Example F.V. Maru 127.

PRE or POST Circle to indicate if the vessel was checked before the fishing trip (PRE), or after the trip (POST)

EM PLACEMENT PROG. Record the name of the observer programe recording the port side form.

Use the observer programme codes i.e. FJOB, SBOB.

For AUTHORISED OFFICER record their 3-letter staff field code as issued by SPC. This is the same as the observer 3-letter ID code.

Date of inspection (YYYY-MM-DD) Record the date when the autorised officer conducted the PRE or POST trip inspection of the vessel.

PORT OF DEPARTURE. Record the name of the port from which the vessel departed.

PORT OF RETURN Record the name of the port which the vessel returned to

Date of Departure Record the date the vessel departed port using the ISO standard -year-month-day.

Date of Return Record the date the vessel returned to port using the ISO standard -year-month-day.

Observer Placement Prog (if any) . If an observer was placed onboard for the same trip record the name of the programme that is responsible for placing the observer - in some instances this may not be the local obs. prog. Example USMLT, FJOB, FMOB.

Observer name : Print the observer name in full. The name should be the same as written on the observer's passport.

Observer Trip ID Number : Print number issued by the authority sending you on this trip.

(e.g. John H. Masa, on his third trip in 1996 might be issued Trip ID Number: "JHM 96-03").

N.B.: an observer trip starts only once the actual vessel to be observed is boarded and ends when disembarking that vessel.

Partial trips - If boat is met at sea the 'trip start date and time' is the date and time that the transfer between vessels occurs.

The 'trip start location' is "At sea" followed by a position recorded in degrees and minutes only (dd^{O}mm').

If the observer transfers from a host vessel to another vessel to end their trip the 'end of trip date and time' is time of transfer.

The 'end of trip location' is "At sea" followed by a position recorded in degrees and minutes only (ddOmm').

Multiple trips - treat work on 2 (or more) different vessels while at sea as 2 (or more) trips, each with its own forms.

VESSEL

Vessel Owner : Verify the vessel owner name from wheelhouse documents.

Vessel Flag : Verify from the vessel registration papers. Name of country in which vessel is registered (e.g. "Belize"), even if comes from another country, such as Korea.

Vessel Registration : Number issued by country in which the vessel is registered (e.g. "ME1-808").

IRCS or Unique Vessel Identifier — WCPFC requires all vessels over 100 Gross Tonnage to have a UVI after 1st Jan 2016. The number may appear on certificates before 2016. Generally the UVI is the International Marine Organistion number or the the Lloyd's Register (LR) number. Record the IRCS or the UVI number and circle to indicate which one it is.

Fishing Permit or Licence Number(s) : If vessel fished under one or more bilateral access agreements, then print the fishing permit number issued by each of the coastal states in whose waters the vessel fished during the trip.

If vessel fished under a multilateral treaty, then print the permit number issued to vessel under the multilateral treaty

If the vessel is registered in the coastal state, then print the fishing licence number issued by the coastal state.

The prefered document is a Captain or Master's license but another, such as their passport, will do if that is not possible.

Length overall (LOA) : The place to find vessel's length overall (LOA) and gross tonnage is on registration papers.

Gross tonnage (GT) / Gross Registered Tonnage (GRT) : Normally record Gross Tonnage (GT) . For older vessels if no GT, then record gross registered tonnage (GRT) . Check for changes to length and/or gross tonnage.

Fish Hold Capacity : (record in metric tonnes (mT)) can usually be found in deck plans and engineer's logs.

Record the total space for all holds that can carry fish regardless of whether they are used to carry fish on this trip

CAPTAIN AND CREW DETAILS

Vessel Captain : Print the full name. Normally this should be the same as the passport.

Fishing Master : Print the full name.Normally this should be the same as the passport.

Along with the Captain's and Fishing Master's full names record identification document types and the document numbers for each of them

Crew Nationality - Country - How many ? : Record the nationalities of the crew and how many of each nationality there is.

Do not include the Captain and Fishing Master in these counts.

ELECTRONICS **(circle "Y" or "N" (yes or no) to show if each item is present or not present on board)**

* *Advances in technolgy* : Empty lines are to record new types of equipment or major upgrades to the current electronics or any types of advances in fishing electronics technology . Don't record old pieces of equipment not listed like radio etc. Write about new equipment in journal and trip report.

VMS - 1 and *VMS - 2* : Record system type (e.g.: InMarSat-C, Iridium, Argos) for each "vessel monitoring system" used. Also use the usage codes to record when the VMS system was being used.

Communication services : If vessel uses satellite and/or mobile phones and/or fax and/or email record thecontact details.

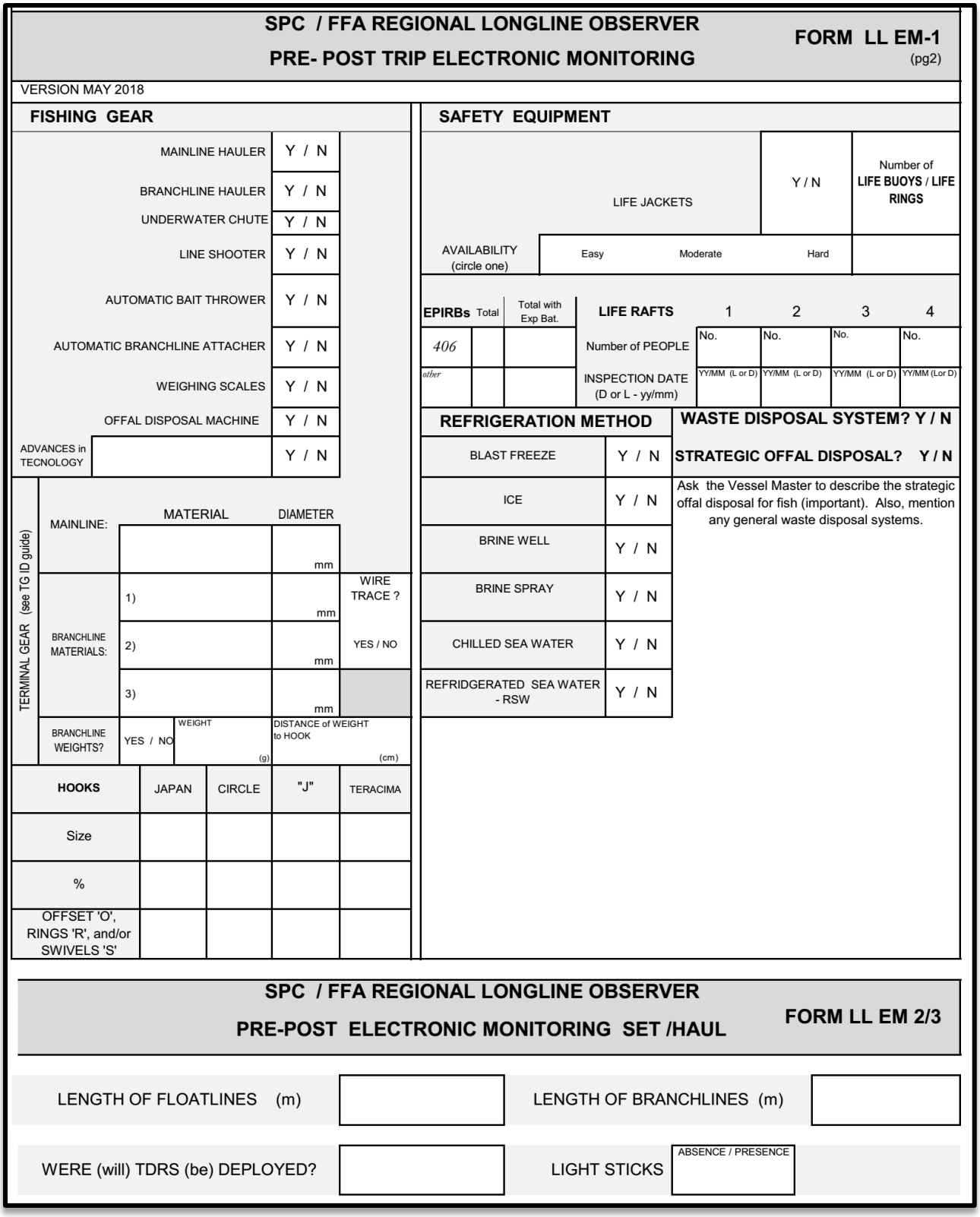
Fishery Information Services : Vessels may receive real-time information on some oceanographic features.

Circle **Y** or **N** to show if they get information on sea-surface temperature (SST), phytoplanton densities or sea height. If they are receiving another type of information record that in "Comments" and write about it in your trip report.

If "Y", record the www: (website address) below the "Y / N" and write more about the website in your written report.

See the back of LL-1(page2) for more notes on gear, safety equip., refridgeration, waste disposal system and observations…

Figure 2: Notes providing guidance on how to complete the first page of the form EM LL-1



SPC / FFA REGIONAL LONGLINE OBSERVER
PRE- POST TRIP ELECTRONIC MONITORING
FORM LL EM-1 (pg2)

VERSION MAY 2018

FISHING GEAR

MAINLINE HAULER	Y / N
BRANCHLINE HAULER	Y / N
UNDERWATER CHUTE	Y / N
LINE SHOOTER	Y / N
AUTOMATIC BAIT THROWER	Y / N
AUTOMATIC BRANCHLINE ATTACHER	Y / N
WEIGHING SCALES	Y / N
OFFAL DISPOSAL MACHINE	Y / N
ADVANCES in TECNOLOGY	Y / N

TERMINAL GEAR (see TG ID guide)

	MATERIAL	DIAMETER	
MAINLINE:		mm	
BRANCHLINE MATERIALS: 1)		mm	WIRE TRACE ?
2)		mm	YES / NO
3)		mm	
BRANCHLINE WEIGHTS?	YES / NO	WEIGHT (g)	DISTANCE of WEIGHT to HOOK (cm)

HOOKS	JAPAN	CIRCLE	"J"	TERACIMA
Size				
%				
OFFSET 'O', RINGS 'R', and/or SWIVELS 'S'				

SAFETY EQUIPMENT

	Y / N	Number of LIFE BUOYS / LIFE RINGS
LIFE JACKETS		
AVAILABILITY (circle one) Easy Moderate Hard		

EPIRBs	Total	Total with Exp Bat.
406		
other		

LIFE RAFTS	1	2	3	4
Number of PEOPLE	No.	No.	No.	No.
INSPECTION DATE (D or L - yy/mm)	YY/MM (L or D)	YY/MM (L or D)	YY/MM (L or D)	YY/MM (Lor D)

REFRIGERATION METHOD

BLAST FREEZE	Y / N
ICE	Y / N
BRINE WELL	Y / N
BRINE SPRAY	Y / N
CHILLED SEA WATER	Y / N
REFRIDGERATED SEA WATER - RSW	Y / N

WASTE DISPOSAL SYSTEM? Y / N

STRATEGIC OFFAL DISPOSAL? Y / N

Ask the Vessel Master to describe the strategic offal disposal for fish (important). Also, mention any general waste disposal systems.

SPC / FFA REGIONAL LONGLINE OBSERVER
PRE-POST ELECTRONIC MONITORING SET /HAUL
FORM LL EM 2/3

LENGTH OF FLOATLINES (m)		LENGTH OF BRANCHLINES (m)	
WERE (will) TDRS (be) DEPLOYED?		LIGHT STICKS	ABSENCE / PRESENCE

Figure 3: Page 2 (of 2) of the EM LL-1 form. Page 2 has four main sections: Fishing gear, Safety equipment, Refrigeration method and Waste/Offal disposal. The form LL EM-2/3 is used to collect four data fields and therefore is conveniently positioned on the same page as the LL EM-1 form.

Rev May 2018

PRE-POST Electronic Monitoring *continued*

FISHING GEAR

*(circle "**Y**" or "**N**" (yes or no) to show if each item is present or not present on board)*

Weighing scales : If weighing scales used to weigh retained fish are on-board, circle "Y" (yes)

For help with the rest of this section use the SPC Terminal Gear Idendification Guide (TG ID guide)
Note that the TG ID guide can be used to measure hook size and line diameter

Terminal gear

Mainline : Write down the material the mainline was made out of i.e monofilament or tarred rope
Record the total length of the mainline in nautical miles - ask Captain for this information.
Get the diameter of the mainline. Use small callipers to measure the width of the mainline.

Branchline : Record all types of material used in branchline (including wire trace) - see LL Terminal Gear guide
Branchline weights : If any weights have been added to the branchline - normally to weigh the line down and allow it to sink faster, record the information. Record the average weight in grams and then 2) record the Distance of the Weight from the Hook in centimeters.
Wire trace : Indicate if wire trace (wire just before the hook) was used in the branchline.
Hooks : for each type of hook used record the size and the percentage of that hook that is usually used in each set. Show if hooks were **O**ffset (O), had **R**ings (R) or **S**wivels (S). Record three letters and/or dashes in each box.

- e.g.: if vessel sets 10-hook baskets with standard size 12.0 circle hooks with rings and swivels on hook numbers 1,2, 9, 10, but with offset "J" hooks (size 10.0) with no rings or swivels on every other line in a basket an observer will record as:

JAPAN size	%	CIRCLE size	%	"J" size	%	TERACIMA size	%
—	—	12.0	40	10.0	60	—	—
— — —		— R S		O — —		— — —	

SAFETY EQUIPMENT **(obtain as much information as possible without intruding)**

Were lifejackets available for the crew and Captain yes Y or no N.

Lifebuoys/life rings - count all to be found

EPIRBS - count all EPIRBS onboard **including** those with expired battery renewal dates. Don't count any inside life raft. Only count the EPIRBS that observers normally have access to.
- then just count only the EPIRBS with expired battery renewal dates.

Life rafts - *Number of People* - record the number of people that each life raft is certified to carry.
- *Inspection Date* - check carefully for inspection stickers/labels or fixed plates with inspection information Find out from these inspection certificates when the next inspection is due (or when last was carried out)
- if label has an inspection **D**ue date record the letter "D" then a dash ("-"), then the date in 'dd/mm/yy' format
- if a **L**ast inspection date is on the inspection label record the letter "L", then a dash, then the date (e.g.: for an inspection due on 30th June 2012 record "D-30/06/12"; If, after a careful check for life-raft inspection labels, dates cannot be found, record "ND" for 'not displayed'.

REFRIGERATION METHOD **(circle "Y" or "N" (yes or no) to show if each method is present or not present)**

N.B.: There may be more than one refrigeration method so record yes or no for each one.

Other storage : If another refrigeration or other storage method is observed descibe it in detail in the trip report.

WASTE DISPOSAL SYSTEM ? (circle "Y" or "N") to indicate if a waste disposal system is present)A waste disposal system is either a machine or a procedure to properly process garbage / oil / plastics (refer to GEN-6). Examples of equipment include incinerators, crushers, shredders, compacters, balers, meal plants, barrel to contain oil etc. Example of procedures might be keeping all plastice waste until the end of the trip. If present describe how

STRATEGIC OFFAL DISPOSAL? (circle "Y" or "N") . Circle Y if the vessel has procedures about discarding fish offal (guts, bait, bits of fish) during the setting/hauling cycle. this could be no disposal of fish offal during setting or hauling or disposal from certain locations on the vessel (i.e. the opposite side tof hauling or settng)

Figure 4: Notes providing guidance on how to complete the second page of the form EM LL-1.

PRE-POST ELECTRONIC MONITORING SET/HAUL + POLLUTION

Length of Branchline

Using the agreed sampling design, record the average length in meters of the branchlines

Length of Floatline

Using the agreed sampling design, record the average length in meters of the floatline.

Were TDRS deployed?

Ask the Captain if they will be (or have) deploying (deployed) temperature depth recorders during the set.

Light Sticks - total number per set

Ask the Captain the total number of light sticks he usually deploys during a set. If you are told the total number per basket, multiply this up by the total number of baskets in set.

Light Sticks - hook numbers

Ask the Captain the hooks numbers the lightsticks are normally deployed on to/ attached to. This is the hook number in the sequence of hook numbers within one basket of hooks (or within two floats).

Pollution

Simply answer the pollution question as shown on the form.

Figure 5: Notes providing guidance on how to complete the form EM LL-2/3.