

ANNEX A TO CHAPTER 6 – VESSEL DATA RECORDING

Establishing base-line standards for data recording and the subsequent playback of data to aid both internal and external incident and accident investigation is seen as an essential step to developing safe and sustainable MASS operations. Manufacturers and operators of MASS vessels and control systems can assist in this by adopting common standards in relation to vessel data management and its incorporation into the development of safety processes and procedures.

Data to be recorded

It is suggested that the following minimum level of parameters are recorded (where appropriate and applicable):

Parameters	Details	On Vessel	At RCC
Date and time	From an external source	Y	Y
Ship's position	GPS or other satellite derived position	Y	Y*
Speed	Over Water and Over Ground	Y	Y*
Heading	Must match Ship's heading source	Y	Y*
RCC status	Which Remote Control Centre is in control of the vessel and recording of any handover	Y	Y
Vessel/RCC audio	For RCC responsible for the vessel.	Y (Noises onboard and in the surrounding area)	Y (Discussions related to operation of the MASS)
Vessel Visual recording	Situational awareness images as displayed to vessel operators	Y	Y
RCC Visual recording	General View of RCC and Operator control station	N	Y
Communication audio	One channel each for external, internal and VHF recording	Y	Y
Radar data	Main display of all radar installations incl. settings	Y	Y (Available to the RCC)
ECDIS data	Main display Incl. Configuration Settings, Safety Depth, Safety Contour, Look ahead and Alarm Setting, passage	Y	Y (Where available)
Echo sounder	Depth information	Y	Y*
All Vessel Alarms	All alarms, warnings, cautions and advisory message information	Y	Y
Rudder order and response	Signals sent, signal received, signal ordered, equipment / signal response and response order sent and received back to remote command	Y	Y
Propulsion and thruster order and response	Signals sent, signal received, signal ordered, equipment / signal response and response order sent and received back to remote command	Y	Y
Hull opening (doors) status		Y	Y*
Payload equipment deployment/ recovery	Command initiation and response	Y	Y*
Acceleration	If fitted	Y	Y*
Hull stresses	If fitted	Y	Y*
Wind speed and direction	Regular sample	Y	Y*
Rolling Motion	Inclinometer	Y	Y*
AIS	All AIS data to be recorded	Y	Y (Available to the RCC)
<i>*As Reported by the Vessel</i>			

Data to be recorded – General Principles

MASS vessels by their very nature produce large volumes of data of many differing types and in most cases will pass this data back to a Remote Control Centre (RCC), this annex suggests the type of data that should be recorded and how it can be made available in the event of accident investigation being required. Vessel data in respect to MASS vessels is complicated by the remote nature of the designated operator, which means that command data that is necessary for accident investigation maybe generated offboard and therefore operators should look to record operator command data and vessel response data as well as recording vessel data parameters.

Data Security and Access

The vessel owner will, in all circumstances and at all times, own the data produced. However, it is expected that owners/operators will make all vessel onboard and offboard data available to accident investigators³ as required.

Duration of storage: The minimum duration for stored data should be 30 days standard, captured internally and 48 hours for both fixed and float free Final Recording Medium (FRM.) Offboard storage should be maintained for a similar period and it is suggested that operators and owners look to maintain a full history of operational data to aid the development of incident reporting and accident investigation procedures as they pertain to MASS vessels.

Securing and provision of data: In the event of an accident or incident, operators should have defined procedures for securing onboard and offboard data and providing it to the relevant authority as required and within 48hrs to the Flag State of operation and registration (if different) that the vessel was operating, for any marine casualty as defined under the IMO Casualty Investigation Code MSC.255(84).

Post Incident data downloading: In all circumstances the responsibility to arrange down-loading and read-out of the data from the recovered memory in whatever form should, in the first instance, be undertaken by the investigator who should keep the ship owner fully informed. Additionally, and specifically in the case of a catastrophic accident, where the memory may have sustained damage, the assistance of specialist expertise may be required to ensure the best chance of success.

Data Format

If the data format used on-board a vessel is proprietary to the manufacturer or vessel type then a conversion tool to convert to Commercial Off The Shelf (COTS) formats should be made available to the relevant investigating authority. Replay software should be supplied license free to the relevant authority.

System testing

Daily Performance testing of recording equipment is recommended, as is performance testing following any maintenance or repair to equipment that supplies data to be recorded.

³ *The term investigator refers to the Marine Casualty Investigator of the flag State or, where it has been agreed, under the terms of the Code for Investigation of Marine Casualties and Incidents, that another State will lead the investigation, the Marine Casualty Investigator of that State*