European Maritime Safety Agency

Meeting: 9th SSN / LRIT Group Meeting

Place and date: Videoconferencing, 25 May 2021

Agenda item: AIS status update

Document number: SSN/LRIT 9.4.4

Submitted by EMSA, Italy and Norway

Summary	This document presents the solutions for the AIS data (buffered or stored by the national AIS systems in case of the NPR or Regional Server malfunction) retransmission provided manually by Member States to the Regional AIS Servers.
Action to be taken	As per paragraph 3.
Related documents	a. HELCOM AIS EWG-31 report; b. North Sea/Atlantic 5th EWG report; c. MARES 17th EWG report.

1. Background

T-AIS data and data from other sources (e.g. S-AIS, CSN, VMS) play an important role in the forming the EMSA services for the various users' communities. Currently, three versions of the T- AIS data exchange software exist:

- the software developed by EMSA (called STAR RH) for the RS connection to the central SSN and for AIS data streaming to the data recipients;
- the NPR software developed by the ICG for the MARES participating countries, and
- the NPR software developed by the NCA for the North Atlantic, North Sea and HELCOM RS participating countries.

The AIS data exchange related issues are regularly discussed between EMSA and the regional AIS servers hosting authorities (NCA and ICG) resulting to the harmonisation of the NPR main functionalities which are reflected in the recent amendments of Service Level Agreements (2021). One of the agreed mandatory functionalities is the data automatic buffering by NPRs for at least 12 hours or equivalent (if the data volume criteria is applied).

EMSA, Italy and Norway also agreed to define a solution allowing the retransmission of data which is buffered or stored by the national AIS systems in case of the NPR or RS malfunction. The solution should allow to provide the stored/buffered data automatically or resent manually (e.g. in the NPR background) or submit via alternative means (e.g. e-mail or FTP transfer).

2. Current status

2.1 Solution in NSATL/ HELCOM

The Norwegian Coastal Administration (NCA) as the NSATL and HELCOM RSs hosting authority for the North Sea/Atlantic and HELCOM RS regions, identified two main circumstances when the data might be missing:

- when the CSAP User Proxy fails, or
- the AIS feed into the CSAP User Proxy from the MS national AIS network stops because of a network and/or system issue.

For both cases, there will be the following implications:

- The Regional Server will show a “data hole” and reduced availability for the particular Member State during the offline period (will be seen on the RS monitoring web page (https://northsea.kystverket.no/));
- The central SSN system will have the same “data hole” in the SEG application and also databases;
- The RS participating Member States will have the same “data hole” in their databases.

An example of the “data hole” is presented in Figure 1.

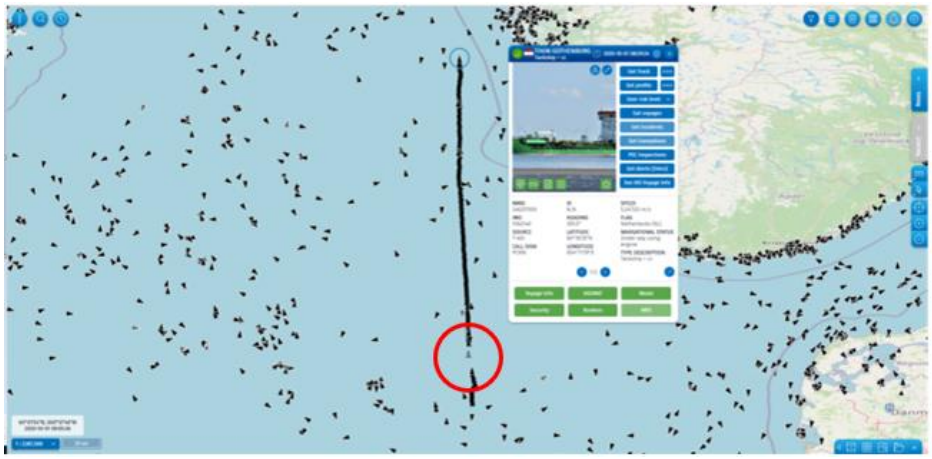

Fig.1: Example of the missing positions data in SEG

Norway proposed a solution whereby Member States can resend their data manually through the CSAP User Proxy to the Regional Server. The solution was presented to the HELCOM 31st AIS EWG, the 5th NSATL EWG and the 16th MARES EWG. The proposed solution will require both the RS and MSs to perform the following tasks:

Member States tasks:

a. When a Member State restores its system to a normal operation, it should extract AIS data from its system for the disconnection period;
b. The extracted data should be prepared in the standard NMEA format with an IEC TAG Block containing, at minimum, a timestamp in the ‘c’ parameter for every sentence (example is presented below):

\c:1554163385*56\!AIVDM,1,1,,B,33meWM?000Q@2dbWhkR007bN2C>3,0*7C

c. The extracted data should be placed in separate files (daily files). The files can be optionally zipped;
d. Each created file should be uniquely named;
e. Each file should be placed in the "*DataRestore*" folder under the CSAP User Proxy installation folder (example: *C:\Program Files (x86)\Kongsberg Norcontrol\CSAP\DataRestore).*

RS (CASP User Proxy) tasks:

a. Monitor the DataRestore folder for any new files and process each new file sequentially, based on the file date ascending order (a kind of FIFO principle);
b. Unzip the uploaded files (if needed) and read their content, sentence by sentence. Sentences not containing an IEC TAG Block with a 'c' parameter will be discarded;
c. Perform the Message ID and downsampling filtering, as per the parameters set by the Regional Server (currently messages 1-27 with 6 minutes downsampling);
d. Insert the country origin information, if is not provided (example is presented below):
\i:<O>FOR</O>,c:1578992430*5C\!AIVDM,1,1,,A,1UQ>sh0014Kj0TkdMeLUET>>0000,0*59)
e. Send the filtered information to the regional AIS server;
f. Delete the file after its transfer.

The above solution is based on the "buffering process" that NSATL and HELCOM RSs apply in the current version of the CSAP User Proxy. However, its implementation will require the NCA to develop a new version of the CSAP User Proxy that Member States shall upgrade / install. Also, using this solution, the completion of the Data Restore may take up to 2 hours for the monitoring web page (https://northsea.kystverket.no/) to reflect that the "data hole" has been filled. With this solution it is important to ensure the MSs capabilities to retrieve data from their DBs and prepare it in the required format.

2.2 Solution in MARE∑

The MARE∑ selected solution for the manual retransmission of the stored data by MSs is based on the data files transfer by MS and the data uploading by the ICG personnel. For implementing other solutions, more detailed information on the MSs data storing formats would be necessary, however only few MSs replied fully to the ICG questionnaire.

To resent the stored data manually to MARE∑, the solution will require certain tasks to be performed by the RS Administrator and the MSs NPR Administrators.

Member States tasks:

a. When the MS restores its system after disconnection, it should extract the AIS data of the disconnection period from its DB;
b. The extracted data shall be prepared in the standard NMEA format, with an IEC TAG Block containing, at minimum, a timestamp in the 'c' parameter for every sentence (example is presented below):
\c:1617167119,i:<O>ES</O>*17\!ABVDM,1,1,7,B,H3EfbW4T1=3000052mjnhP18222t,0*32
c. The prepared data shall be saved and placed in daily separate files. The files can be optionally zipped;

d. Each created file shall be uniquely named (e.g.: "**out20210330_11UTC.txt**" or, if zipped, then "**out20210330_11UTC.txt.zip**");
e. The created and uniquely named files (as in par. d.) should be transmitted to MARE∑ via FTP Server. The ICG will provide (upon the MS PoC request) the FTP access credentials (IP, username and password).
f. The participating MS should contact MARE∑ 24/7 to agree the starting of data transfer on the FTP Server and communicate when the process is completed.

The MARE∑ RS administrator shall:

a. Receive the MSs transmitted data (files);
b. Unzip and upload the received files;
c. Insert the Country origin information (if not provided by the MS). Example is provided below: **\c:1617167119,i:<O>HR</O>*1B\!ABVDM,1,1,4,B,H02A`N0l4d59<d4000000000000,2*51**
d. Send the filtered information to MARE∑;
e. Delete files from FTP Server;
f. Confirm the data reception and uploading to the MSs.

With this solution also it is important to ensure the MSs capabilities to retrieve data from their DBs and prepare it in the required format.

Dates for implementation of the above solutions on data retransmission by the national AIS systems are not defined yet and shall be agreed at the regional level.

3. Actions required

Member States are invited to take note on the above information and inform about their technical / operational capabilities to perform the above actions.