



# 13<sup>th</sup> Meeting of the Hydrographic Services and Standards Committee

## Report of IEC activities affecting HSSC

### Agenda Item 7.4

HSSC-13, VTC, 4<sup>th</sup> – 6<sup>th</sup> May 2021



## IHO TOPICS

International  
Hydrographic  
Organization

1. Introduction of S-101 or S-100 into **IEC 61174 ECDIS** standard
2. Data cyber security requirements for navigation equipment (**IEC 63154**)
3. **S-421: Route Plan** based on S-100 (**IEC 63173-1**)
4. Secure exchange and communication of S-100 based products (**SECOM**) (**IEC 63173-2**)



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# INTRODUCTION OF S-101 OR S-100 INTO IEC 61174 ECDIS STANDARD – (1)

International  
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1. IHO informed IEC TC80/Plenary Oct 2019 about the plan to introduce S-101 into IEC 61174 ECDIS standard (**Dual fuel S-57 & S-101**)
2. Role of the IEC TC80 in the IMO rule ecosystem is to provide technical testing standard for compliance with IMO Performance Standards related to navigation and radio communication
  - **IMO** sets rules based on functionality available to operator
  - The related **IEC** standard describes the minimum technical facilities to implement the specified functionality
  - For same parts, IEC describes the technical solution
    - For example, IMO required that the backup arrangement automatically continue route monitoring in case that primary ECDIS is no more available. IEC specified format of the Route Plan and technical method to transfer it between ECDIS and its backup arrangement
  - For some other parts, IEC just references to rules set by intergovernmental organizations
    - For example, testing of IHO S-57 ENC charts relies 100% on the content of the IHO S-64 Test data sets and instructions for ECDIS
3. IEC has noted that IHO S-100WG on 6th January 2021 had a virtual kick-off meeting to develop **S-164**. This will serve S-101 and in general S-100 concept in the same as **S-64** did for S-57



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## INTRODUCTION OF S-101 OR S-100 INTO IEC 61174 ECDIS STANDARD – (2)

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4. Typical time schedule for IEC maintenance work
  - **2 years** of committee work to draft the Committee Draft for Vote (CDV) **plus 1 year** of voting & comment process to complete the draft as International Standard
  - All technical details referenced by the draft for an IEC standard should be completed before the IEC workgroup completes the CDV
    - **S-100 related IHO standards** including both **product specification** and **testing part (S-164)** should be **published as final versions before the assumed completion of the CDV**
  
5. The secretariat of IEC TC80 has had a plan to ask opinion of the National Committees of IEC TC80 about **suitable time schedule to open IEC 61174 for maintenance** (using **Questionnaire (Q)**)
  - But then the **Covid-19 pandemic re-scheduled work of IMO** as well as many international organizations
  - **Next IEC TC80/Plenary** is scheduled for **autumn 2021** – an opportunity to discuss this topic
    - On the day of publishing a **New work item Proposal (NP)** or **Questionnaire (Q)** for vote by the National Committees of the IEC TC80, the proposed topic should be mature enough for the National Committees to understand that now it is the time to create the new edition of the IEC 61174 ECDIS
    - IEC has also **Preliminary Work Item (PWI)** as a possibility to start before official NP proposal and to work without time schedule restrictions. IEC TC80 has an existing maintenance team (**MT7**) which could be activated for the PWI. When the related IMO and IHO rules are mature enough an NP could be issued for vote and the drafting by MT7 for the PWI can be used as a CD attached to the NP



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# DATA CYBER SECURITY REQUIREMENTS FOR NAVIGATION EQUIPMENT (IEC 63154)

International  
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1. The IEC 63154 standard requests authentication of all external data files at import into a navigation equipment
  - The work on this standard begun in 2017
  - The IEC 63154 was **published on 9<sup>th</sup> Mar 2021**
2. IEC raised this issue of cyber security for the first time at HSSC-10, May 2018
  - The background information and analysis are still the same as the years before. Also, the conclusion of IEC – the authentication of data from IHO sources should be overarching i.e. including all auxiliary files
3. IEC has noted progress by IHO
  - **The planned ed 5.0.0 of S-100 will complete the Part 15 for this issue**
  - **For S-57 ENC charts IEC has noted that work is still going on by IHO ENCWG.** The issue has been discussed at ENCWG meetings 2018, 2019, 2020 and 2021. Meetings have set tasks
    - to draft solution for the issue (i.e. new edition of S-63); and
    - to seek approval of industry for the drafted solution
  - IEC understands that international organizations need time to develop and agree standards. Therefore, **currently IEC is pleased to follow up the progress by IHO ENCWG**



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## **S-421: ROUTE PLAN BASED ON S-100 (IEC 63173-1) – (1)**

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1. IEC TC80 has established WG17 to address CMD5 (Common Maritime Data Structure)
  - The workgroup was created in October 2015. Convenor is Dr. Kwangil Lee (KMOU, Korea). Within IEC TC80 all CMD5 works related with shipborne system will be handled in this workgroup. IEC TC80 applied and was granted S-100 domain ownership in December 2016.
2. The **base of S-421** is already published Route Exchange format called **RTZ** (IEC 61174 Ed4/year 2015 ECDIS, Annex S) extended by ideas from Testbeds, especially “STM validation” and “SMART navigation”. **Remaining timeline** for IEC 63173-1 is:
  - The Final Draft International Standard **FDIS – currently on voting until 14<sup>th</sup> May 2021**
  - The **publication of IEC 63173-1 is assumed by end of May 2021**
3. The object model of the S-421 Route Plan Exchange reflects the needs of the user
  - **11 use cases described in details**, see the report of IEC for details



## IHO S-421: ROUTE PLAN BASED ON S-100 (IEC 63173-1) – (2)

International  
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4. IEC has noted that Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and EC have submitted an **INF paper (MSC 103/INF.12)** to **IMO MSC 103, May 2021**

- These countries plan to submit a new work item proposal to **IMO MSC 104, Oct 2021**, to **amend the IMO ECDIS Performance Standard MSC.232(82)** to **include implementation of the IEC 63173-1** as a standardized format to exchange route plans for supporting following Maritime services listed in IMO e-  
Navigation:

- VTS Information Service (INS)
- VTS Navigational Assistance Service (NAS)
- Traffic Organization Service (TOS)
- Port Support Service (PSS)
- Maritime Safety Information Service (MSI)
- Pilotage Service
- Tug Service
- Vessel Shore Reporting
- Ice Navigation Service
- Meteorological Information Service
- Search and Rescue Service (SAR).



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## SECURE EXCHANGE AND COMMUNICATION OF S-100 BASED PRODUCTS (SECOM) (IEC 63173-2) – (1)

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1. The background of the SECOM is the e-Navigation testbed “STM validation project” which tested e-Navigation related file transfers using SOA (Service Oriented Architecture) principles with about 400 real ships and multiple VTS/Ports.
2. The IEC 63173-2 standard is intended to be a **gap-filler to provide standardized communication infrastructure between shore and ships for bi-directional transfer of files related to the e-Navigation**. It is assumed that majority of such files may be based on IHO S-100 although the SECOM infrastructure is in principle capable to transfer any anonymous file. Excluded from SECOM is services which need data streaming and which cannot be converted as a series of separate data files.
3. Latest version available is a **Committee Draft (CD), IEC TC80/987/CD (Jan 2021)**. The Committee Draft for Vote (**CDV**) is planned for **3<sup>rd</sup> half of 2021**.
4. The planned **publication as international standard is 2<sup>nd</sup> half of 2022**.



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## SECURE EXCHANGE AND COMMUNICATION OF S-100 BASED PRODUCTS (SECOM) (IEC 63173-2) – (2)

5. IEC has noted that Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and EC have submitted an **INF paper (MSC 103/INF.12)** to **IMO MSC 103, May 2021**
- These countries plan to submit a new work item proposal to **IMO MSC 104, Oct 2021**, to **amend the IMO ECDIS Performance Standard MSC.232(82)** to **include implementation of the IEC 63173-2** to facilitate secure shore-ship, ship-shore transfer of digital information related to maritime services as specified by the IMO e-navigation



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## **ACTION REQUESTED OF HSSC**

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The HSSC is invited to:

- Note the information provided