Input paper: [[1]](#footnote-1) ENG9-10.8

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**□** ARM **X** ENG **□** PAP **□** Input

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Agenda item [[2]](#footnote-2) (from agenda) 10.8

Workplan Task Number / Technical Domain 2 3.2.6. / Radionavigation services

Working Group WG3 Radionavigation service

Author(s) / Submitter(s) Younghoon HAN, Sewoong OH, Sanghyun PARK (KRISO), Hyuk KIM, Jongguk CHAE (MOF)

Verification of S-246 and S-247 Product Specification on S-200 Test Bed

# Summary

## Purpose of the document

Korea Research Institute of Ships and Ocean Engineering (KRISO) conducted a test study on the results of the S-246 and 247 product specification development after the ENG 8th meeting. Korea has built S-200 test bed to support development of IALA product specification, and it is possible to evaluate the product specification test on it. Therefore, this document provides a brief introduction to the S-200 test bed and the results of applying and testing the S-246 and S-247 on the test bed.

## Related documents

* IALA Guideline 1106 – Producing an IALA S-200 series product specification
* IALA Guideline 1087 - the Management of the IALA Domain
* IALA Guideline - Testbed reporting

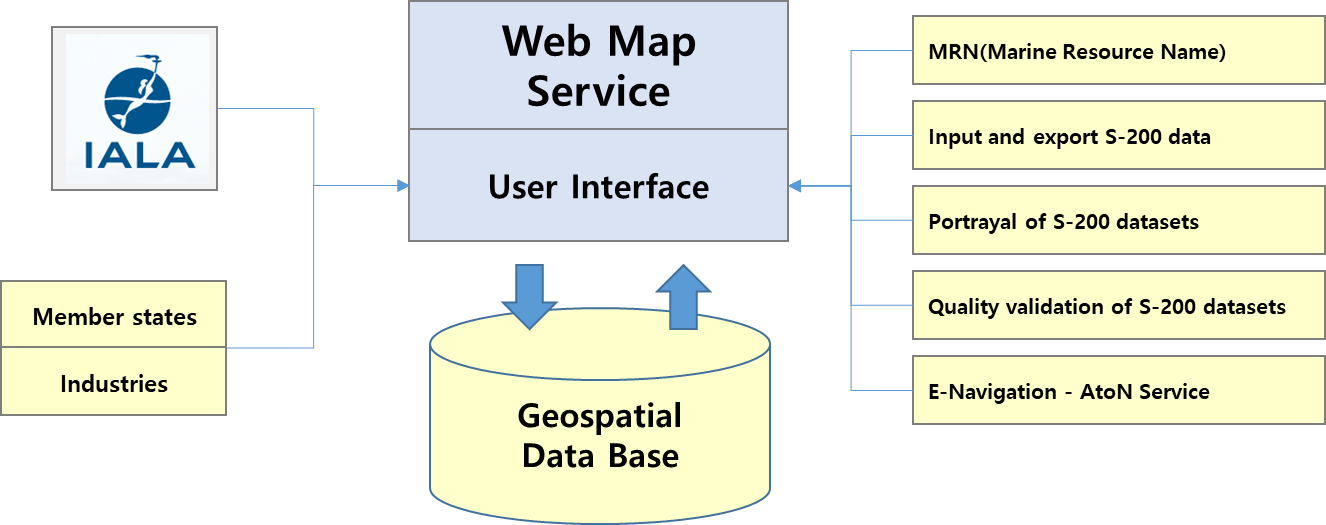
# Background

The Ministry of Oceans and Fisheries (MOF) of Republic of Korea and IALA, both parties had agreed to sign to the MOU on May 2018 to strengthen cooperation on technical development of maritime safety and standardization for the field of AtoN. As part of its effort, MOF established the plan for execution and is on the process of developing S-200 series product specification in cooperation with KRISO. The eLoran related product specifications are divided into S-245 eLoran ASF data, S-246 eLoran transmitting station almanac, and S-247 differential Loran reference station almanac. From the ENG 8th meeting, the draft of the product specification for S-246 and S-247 was submitted. It was planned to discuss the review result of submitted document by ENG 9th meeting.

# Discussion

## S-200 Test Bed

Korea has been developing S-200 test bed to support the development of S-200 product specification by IALA and to conduct the joint research on S-200, and reported the development result of S-200 test bed to the IALA ARM meeting [1 ]. Figure 1 shows an overview of the S-200 testbed. The S-200 testbed consists of a web-based map of user interface and a spatial DB. The S-200 Test bed being developed by Republic of Korea is a system that is able to test the Test Data Set (TDS) of which was produced according to the vector-based S-200 product standard. Therefore, the production of S-246 and S-247 TDS are required for verification upon S-200 test bed.



1. Overview of S-200 Test bed

## The production of S-246, S-247 Test Data Set (TDS)

Republic of Korea reviewed the following test methods to verify that if the S-246 and S-247 PS drafts which were reported to ENG8 were developed appropriately

* Securement of the source data of S-246, S-247
* Production of S-246, S-247 TDS
* Symbol review for the map representation of S-246 , S-247 TDS
* Application and verification of S-200 test bed

In order to produce S-246 TDS, we surveyed and collected the information on current Pohang and Gwangju Loran transmitting stations in Korea. Table 1 shows the produced data for S-246 TDS for the case of Pohang transmitting station as an example.

1. S-246 data for TDS



Next, the TDS for S-247 verification was produced and this was based on the information of differential reference station in Pyeongtaek of South Korea where is currently under test operation. Table 2 shows the produced data for S-247 TDS as an example.

1. S-247 data for TDS



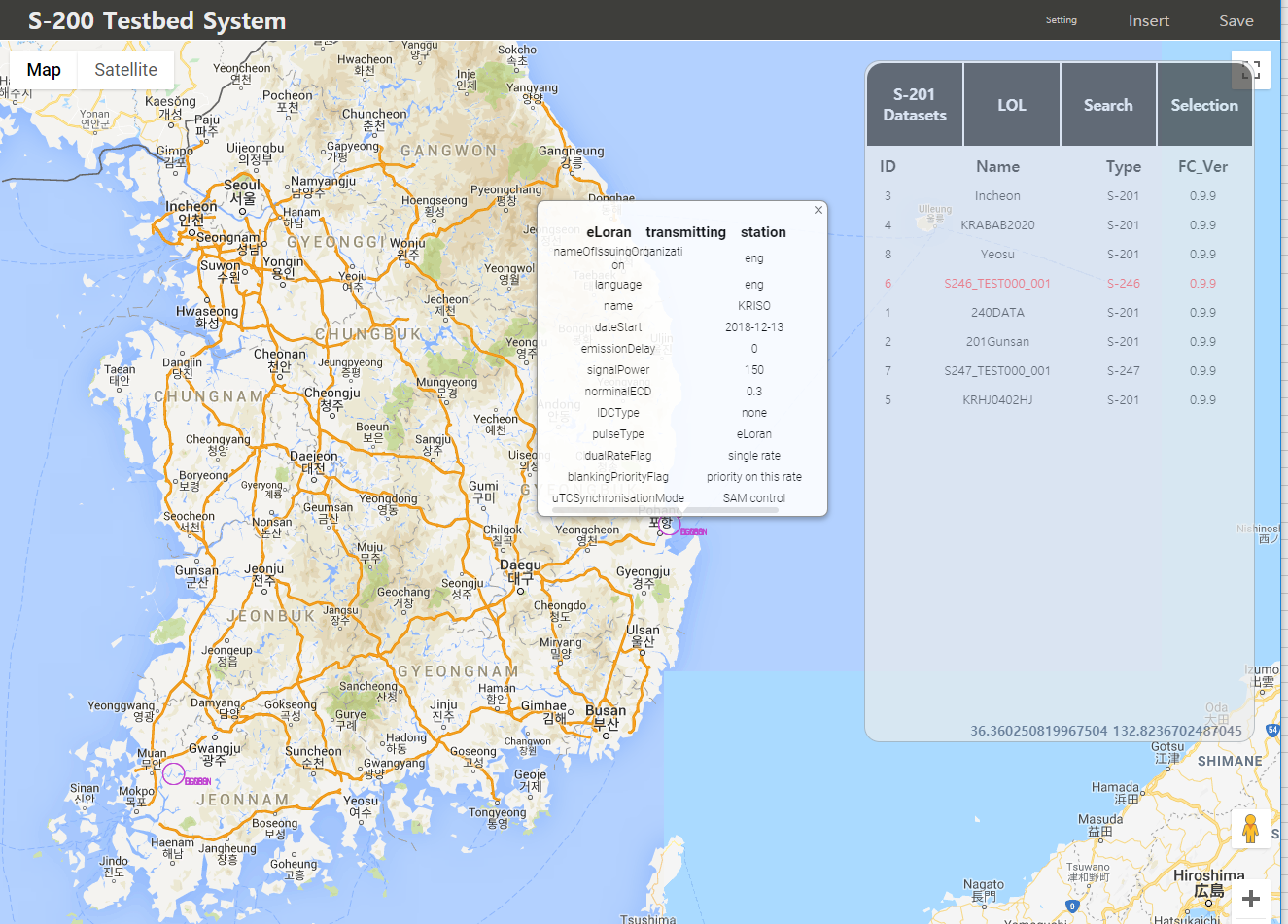
S-246 and S-247 data models considered, KRISO designed the GML Schema and produced S-246 and S-247 TDS using an editor program such as XML Spy.

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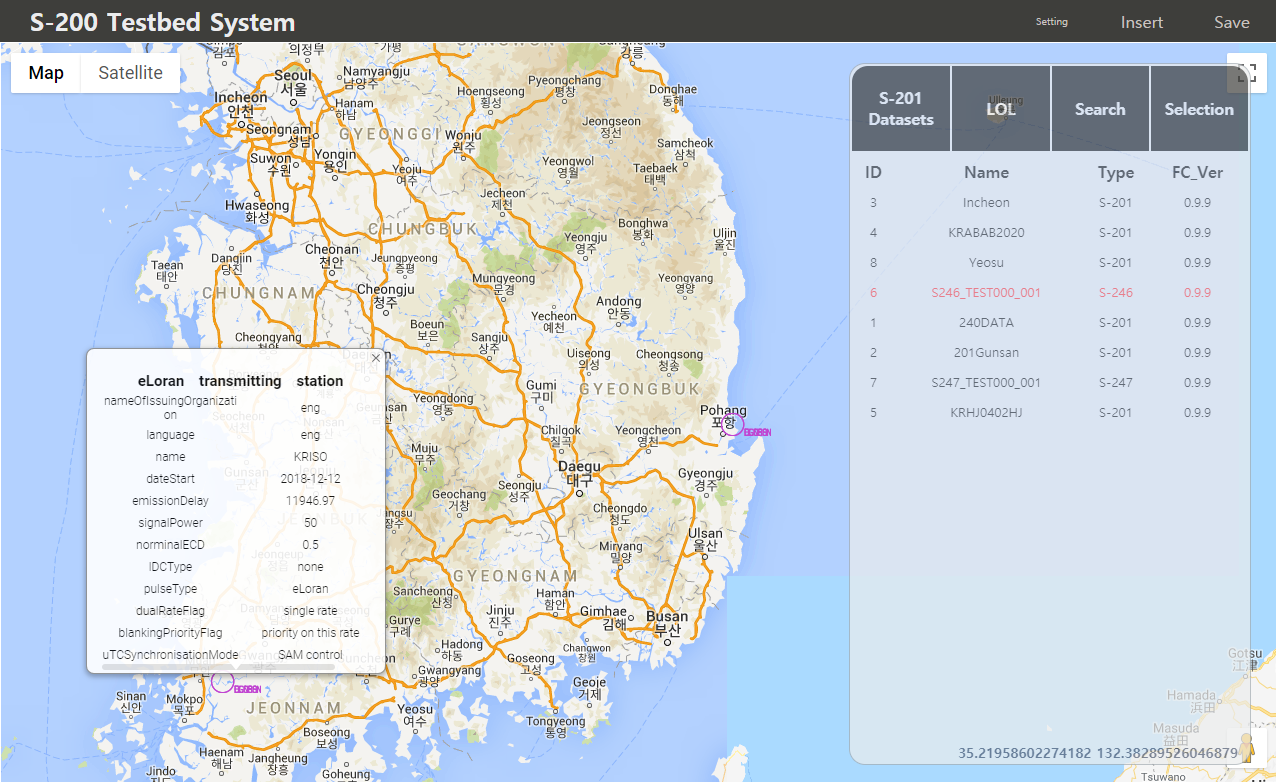
1. S-246 (left), 247(right) TDS

## Test results for S-246, 247 on S-200 Test bed

S-246 and S-247 were tested using the S-200 test bed tool which was developed by the Republic of Korea. Based on practice information from the Loran system currently in operation in Korea, TDS was created according to the data model for S-246 and 247 and applied to S-200 test bed. S-246, 247 TDS is stored in Test bed database, and symbols for S-246 and 247 can be displayed through web-based map screen. You can also check the detailed properties through the symbol lookup. Figure 3 shows the Pohang transmitting station on the web-based map interface as a result of the test for the station, and when the icon is chosen and clicked the standardized information in detail can be checked. The information on Gwangju transmitting station is also identifiable in same manners, and Figure 4 shows the result of Gwangju.

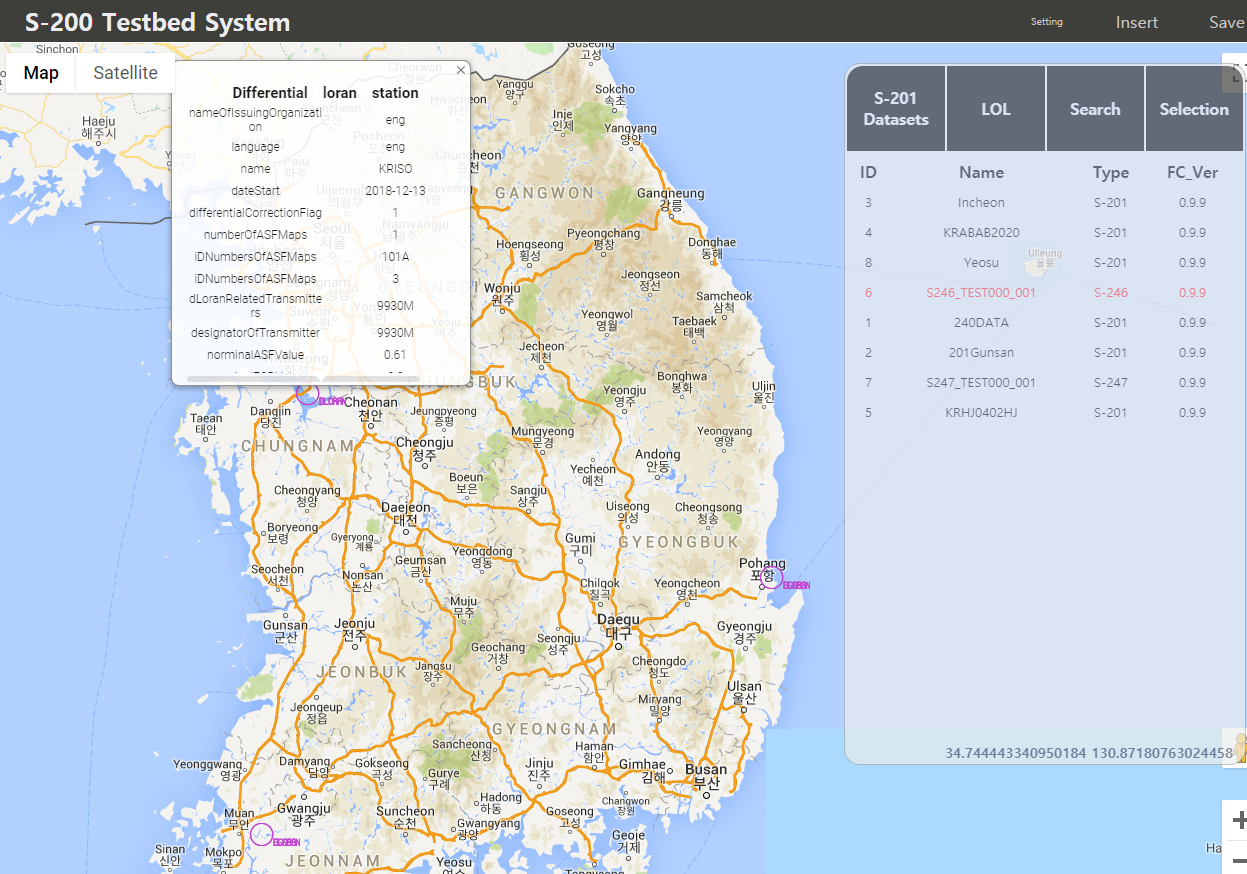


1. Test result for S-246 of Pohang (9930M) Loran transmitting station



1. Test result for S-246 of Gwangju (9930W) Loran transmitting station

The test results for S-247 are shown in Figure 5. Similar to S-246, the symbol for S-247 can be checked on the map screen, and S-247 information can be checked through the corresponding reference station.



1. Test result for S-247 of Pyeongtaek differential loran reference station

## Next plan for the eLoran product specification

Initially, the draft specification of the product specification for S-245 ASF data was to be submitted in the 9th ENG meeting, but verification of S-246, 247 was performed first at this time. The product specification draft for S-245 is currently under development and will be reported in the 10th ENG meeting.

# References

1. ARM8-10.9 S-200 test bed project

# Action requested by the Committee

The Committee is requested to:

1. Note this document

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Input papers should be assigned to a work task as listed in the Committee work plan which is available in input papers. Leave open if uncertain but consider how the paper is to be processed if not relevant to a work task [↑](#footnote-ref-2)