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Technical Domain / Task Number2 Working Group 5

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Progress on the development of S-240 DGNSS Station Almanac

# Summary

## Purpose of the document

Regarding the arrangement of DGNSS stations information, two alternative approaches were suggested in the IALA 15the-Nav meeting, which are spreadsheet and XML files method. The research results on the S-240 as a XML format were introduced in the 16th e-Nav meeting. This report summarises the result of the spreadsheet method and progress on the S-240 development for the purpose of DGNSS station management since the 16th e-Nav meeting.

## Related documents

* ENAV15-14.2.5Statement of work for a Task Group on IALA DGNSS and eLoran databases
* ENAV15-14.2.6 Procedures for managing DGNSS Information
* ENAV16-13.16 Progress on the development of S-240 for DGNSS Station Almanac

# Background

IALA as an international organization in charge of DGNSS relevant standards provide DGNSS station almanac on their website. Although IALA provides DGNSS station almanac as a document, the distribution method can be inefficient and cause human errors. The improvement of maintenance and service method was raised by IALA members.

In this regards, an agenda named “Procedures for managing DGNSS information” was discussed in the 15th e-Nav meeting and two alternative approaches were suggested stage by stage

- Store and manipulate the information as a spreadsheet – this would make it easier to search and check for conflicts in frequencies and ID numbers.

- And then, encode the information as XML files, so that it can be updated online. An extension to this approach would be to provide an IALA S-100 Product Specification for DGNSS information. This would be very similar to the AtoN Information Product Specification currently being finalised.

# Discussion

## Approach 1: DGNSS station management using Spreadsheet

The arrangementmethod through spreadsheet has been considered that there are not technical difficulties and easy to apply quickly. Therefore, the structure of spreadsheet is designed according the data model of DGNSS station almanac to be in line with the S-240 since the 16th e-Nav meeting.

<Table 1>Spreadsheet form for the purpose of DGNSS Station management

|  |  |  |
| --- | --- | --- |
| Category | Item | Definition |
| Index | | Serial number for the management of DGNSS station |
| DGNSS  Station  Region | Geographical  Area | Name of Area which DGNSS Station is located  (ex. Inidan Ocean, Ocenia, ……) |
| Country | Country operating DGNSS station |
| Date of Issue | Initial service date of DGNSS station information |
| Date of last  Update | Last update date of DGNSS station information |
| DGNSS  Station  Almanac | Station name | Name of DGNSS transmitting station |
| Reference  Station  IDs | Identification number of DGNSS reference station |
| Transmitting  Station IDs | Identification number of DGNSS transmitting station |
| Geo. Position | Geographical position of DGNSS Station |
| Nominal Range | Service coverage of DGNSS Station |
| Field Strength | Signal strength of DGNSS Station |
| Radio Beacon  Health | DGNSS Service status |
| Transmitted  Message  Types | Message types transmitted from DGNSS Station |
| Signal  Frequency | DGNSS Service Frequency |
| Bit Rate | Bit rate of DGNSS service data |
| Remarks | | Additional information |

While he structure of spreadsheet is almost similar withthe information document of DGNSS station provided in the IALA website, the Radio Beacon Health conforms to the categorization on the Radio beacon health included in the RTCM recommended standards for Differential GNSS service developed by RTCM Special Committee No. 104

* Listed value 1: Radiobeacon Operation Normal
* Listed value 2: No Integrity Monitor Operating
* Listed value 3: No information available
* Listed value 4: Don’t Use this Radio beacon

IALA has updated the DGNSS stations information by which national members have provided and secured the latest spreadsheet.

## Update on the development of S-240

The need for S-240 development based on the IHO S-100 standard was raised to efficiently manage DGNSS stations information and to link with information on AtoN, GNSS system and communication infrastructure, which have been planned by IALA. Consequently, the research on S-240 development was started and the initial results from the research reported to the 16th ENAV meeting.

The data model of S-240 product specification achieves a common and correct understanding of the content and structure of data within AtoN field and may provide a computer readable schema for applying automated mechanisms for data management.

S-240 development team has designed the S-240 data model based on the DGNSS station document on the IALA website and RTCM Recommended standards for differential GNSS service.

KRISO has cooperated with Jeppesen which is one of key actors in developing S-100 and S-101 of IHO. KRISO/Jeppesen data model for S-240 is drafted as shown in the Fig. 1



<Fig. 1 >KRISO/Jeppesen Data model for S-240

S-240 development team reported the research results to WG5 in the 16th e-Nav meeting as below;

* Draft document of S-240 product specification
* S-240 Feature / Portrayal Catalogue
* S-240 GML Schema
* S-240 GML Sample Datasets
* Style sheet to change S-240 GML dataset to HTML document
* S-240 demo S/W using ENCs

The WG5 at the 16the-Nav meeting decided to organize a task group for a review of S-240. Since the meeting, S-240 Product Specification has been updated and needs to be reviewed by the task group.

## Future plan of S-240 Development

IALA and KRISO established the updated DGNSS station management information as spreadsheet form. The spreadsheet will be used to manage the worldwide DGNSS Station information and also utilized as input data to develop S-240 GML data. S-240 development team has plans as below:

* Review of S-240 by Task group
* Compilation of S-240 GML data using the spreadsheet on DGNSS Station
* Conversion of DGNSS Station Document from the S-240 GML
* Service of S-240 GML in the IALA Website

# Action requested of the Committee

The Committee is requested to:

1. Note activities for DGNSS Station management reported in this paper
2. Provide advice or comments on the S-240 development

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)