Paper for Consideration by TSMAD

S-58 Test Datasets

Submitted by:	United States (NOAA)
Executive Summary:	The United States has sponsored the development of S-58 test data. The intent of this project is to provide both Hydrographic Offices and Software Developers a set of baseline datasets for testing S-58 functionality.
Related Documents:	S-58
Related Projects:	S-58 re-write

Introduction / Background

One of the work items of TSMAD is the re-formatting of S-58 into a machine readable XML catalogue in order to bring more consistency in the interpretation of S-58 validation checks by Hydrographic Offices and Software manufacturers. In a parallel effort, the United States recognized the need for standardized test data to ensure that commercial software behaved properly and thus began sponsoring an effort to develop an S-58 baseline test dataset.

Analysis/Discussion

As the IHO has moved towards a more structured approach in the development and maintenance of its suite of standards, one of the key aspects is the development of test data and test beds. Even though S-58 was developed and approved prior to the implementation of TR 2/2007, the new effort to re-format S-58 into a machine readable XML file aligns with the need for proper test datasets. In normal development test data is split into two components:

> Positive Test Data – where the expected result is always positive
> Negative Test Data – where the expected result is always negative

Because it is fairly easy to find ENC data that will generate a positive result, NOAA focused its efforts on creating a set of S-58 test data that will achieve negative test results. In short, the expected result is that when the dataset run through software validation will fail.

Due to funding limitations, NOAA was only able to complete test datasets for 348 checks out of a possible 425 tests in S-58. This does not include support for test 2000, as this is a complex check and in reality should be split into separate tests.

The tests are split into approximately 25 discrete datasets that do not overlap each other geographically.

Conclusions

Even though NOAA was not able to fund the entire S-58 negative test dataset, we feel that what has been completed should be turned over to TSMAD for the benefit of other Hydrographic Offices and software manufactures. We are currently in the process of checking the test data and requesting that issues be fixed. The UKHO is in the process of completing the remaining checks.

Recommendations

NOAA recommends that TSMAD note the development of the S-58 negative test dataset and endorse its use for testing the next revision of S-58.   As funding permits, NOAA will update the test data to edition 5.0.0 of S-58.

Consider to include these test datasets (once completed) as part of the official S-58 standard.

Justification and Impacts

As this work has been sponsored by NOAA there are no direct impacts on TSMAD resources.

One of the major reasons that NOAA sponsored this endeavour is that we wanted to remove the ambiguity of expected results whenever we tested new versions of validation software. In our initial testing we have noted that that depending on the validation software the expected result is different.

Action Required of TSMAD
The TSMAD is invited to:

    a.   endorse the S-58 negative test dataset

    b.   agree to using it for future testing of S-58

    c.   Consider including the test data as part of S-58.