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# Modernizing Maritime Safety: Canada's Use of SECOM and MCP

## Overview - 2025

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# In this presentation

1. Use of SECOM and MCP
2. Canada's St. Lawrence S-100 Sea Trials
3. Tool to display S-100 products
4. Findings
5. Advantages

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# SECOM & MCP

## SECOM

- Secure Maritime Data Exchange
- Service-based Architecture
- Real-time Data Delivery
- Standardization and Accessibility

## MCP

- Digital Infrastructure Role
- Identity and Service Management
- Canadian Coast Guard Integration
- Support for Maritime Safety

## Implementation

- SECOM Service Development
- Data Conversion Challenge
- Integration and Testing
- Service Registration and Authentication

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# Canada S-100 sea trials– objectives

The trial is testing new services, increasing user awareness and adoption, and obtaining feedback

**Website: canadaS100.ca**

Endorsed by the International Hydrographic Organization (IHO), Canada's multi-agency whole-of-government approach teams have been conducting sea trials providing real-time S-100 data and services along the 350-km stretch of the St. Lawrence Waterway. The sea trials started in June and will be conducted until November 30th, 2025.

To:

## Use this unique opportunity for:

- Getting to know how S-100 products function
- Testing equipment and software
- Obtaining the data from live subscriptions

## Explore new possibilities in:

- Assess how new S-100 products assist navigation & operations
- Witness overall improvement to navigation safety
- See benefits of combining layers

## Integrate with existing systems:

- Identify potential issues or areas for enhancement
- Evaluate system performance
- Ease of use

## Obtain community feedback:

- Test compatibility on various equipment & software
- Identify cases of decreased performance
- Identify difficulties in interface and usability
- Identify gaps and conflicts, missing information, sources of confusion

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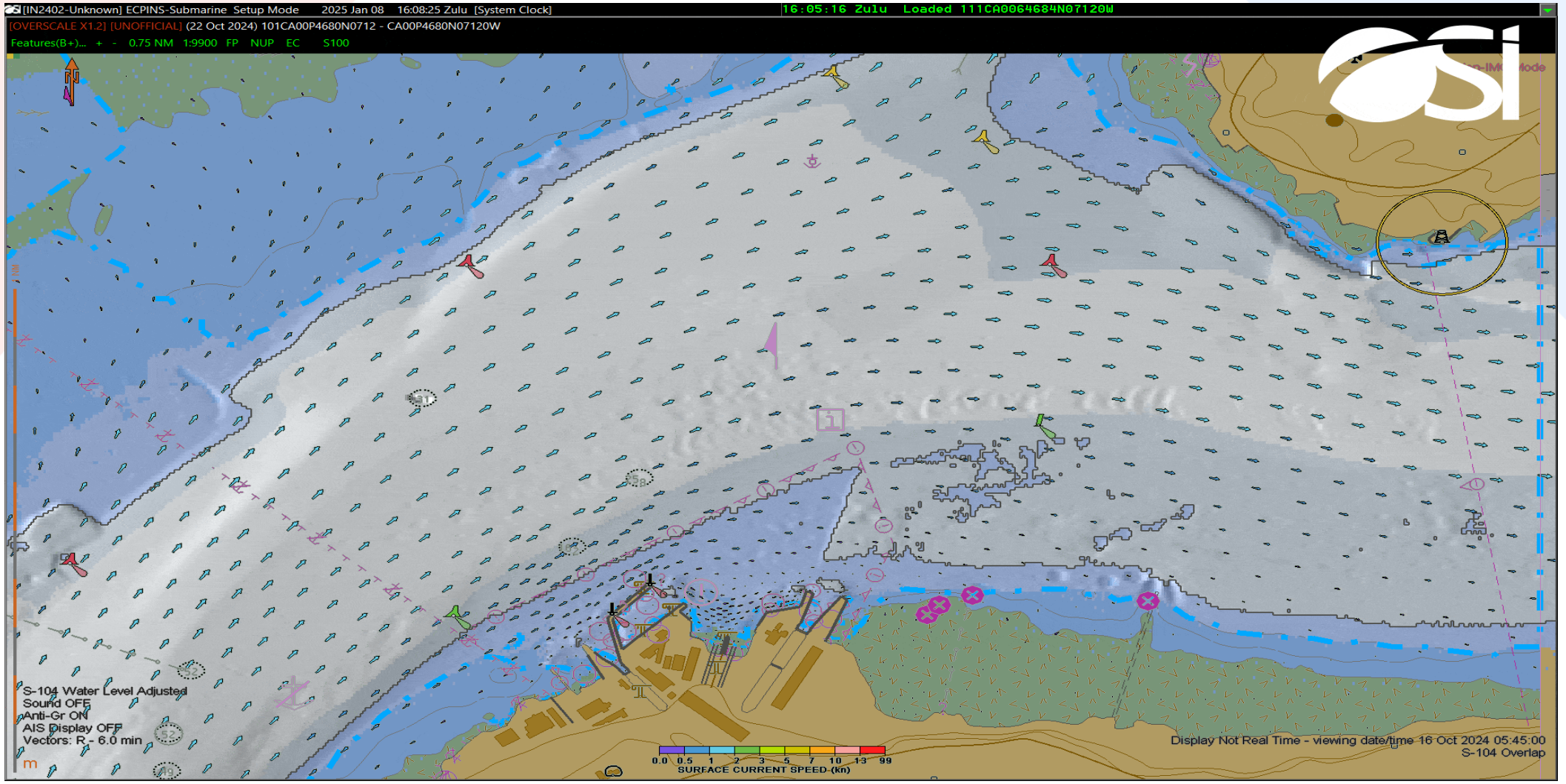
# OSI Portrayal of Sea Trial Data



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# Spotlight on CCG S-124 Navigational Warnings Testing

**DISTRIBUTION METHOD** Web-based via SECOM (IEC standard)

**SPECIFICATION** S-124 2.0.0 – produced and distributed by CCG

**PURPOSE** Machine-readable NAVWARNs for ECDIS integration

**INCLUDES** Active and recently cancelled NAVWARNs

**STATUS** Open for public testing, subject to change

**COVERAGE** All Canadian waterways

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# Spotlight on CCG S-124 Navigational Warnings Testing

## Distribution Method

Sample S-124 exchange sets for download

## Purpose

Test integration without using SECOM

## Includes

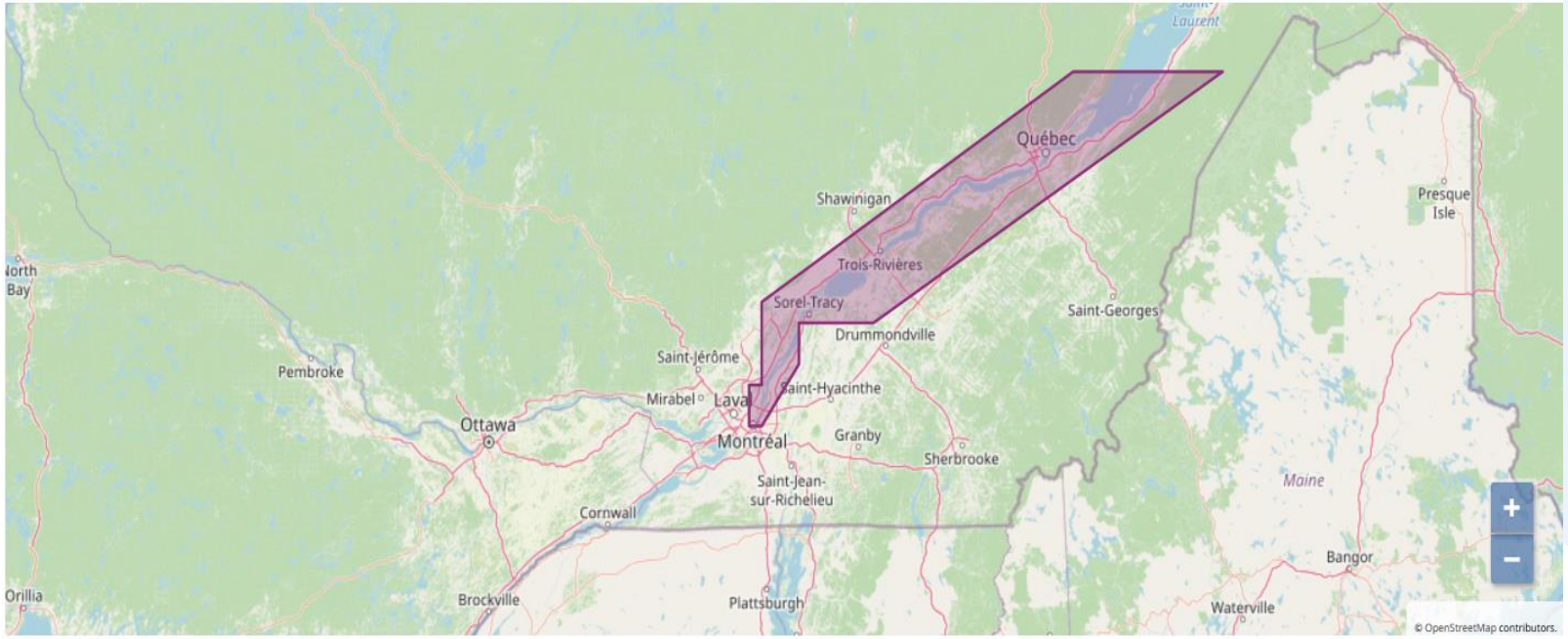
Active and recently cancelled NAVWARNs

## Status

Available on [CCG webpage]

## Coverage

Trial zone




The following .zip files contain S-100 exchange sets for the S-124 NAVWARNs within the trial zone. These NAVWARNs conform to version 2.0.0 of the S-124 standard.

- Full dataset - Contains all active NAVWARNs in the Trial zone (Last update: 2025-10-06 15:49:45 UTC)
- Weekly Update - Contains NAVWARN updates published during the week of 2025-09-29 to 2025-10-06.


# Canada's S-100 Testing Tool

An internal application to test and improve CCG's S-100 Products

## CANADA'S COMMITMENT TO THE IHO

For the CCG mandate related layers

### Route Monitoring services:

Navigational Warnings S-124
Under Keel Clearance Management S-129

→ 2026

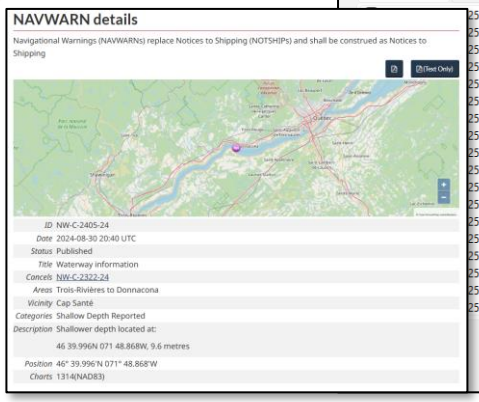
### Route Planning services:

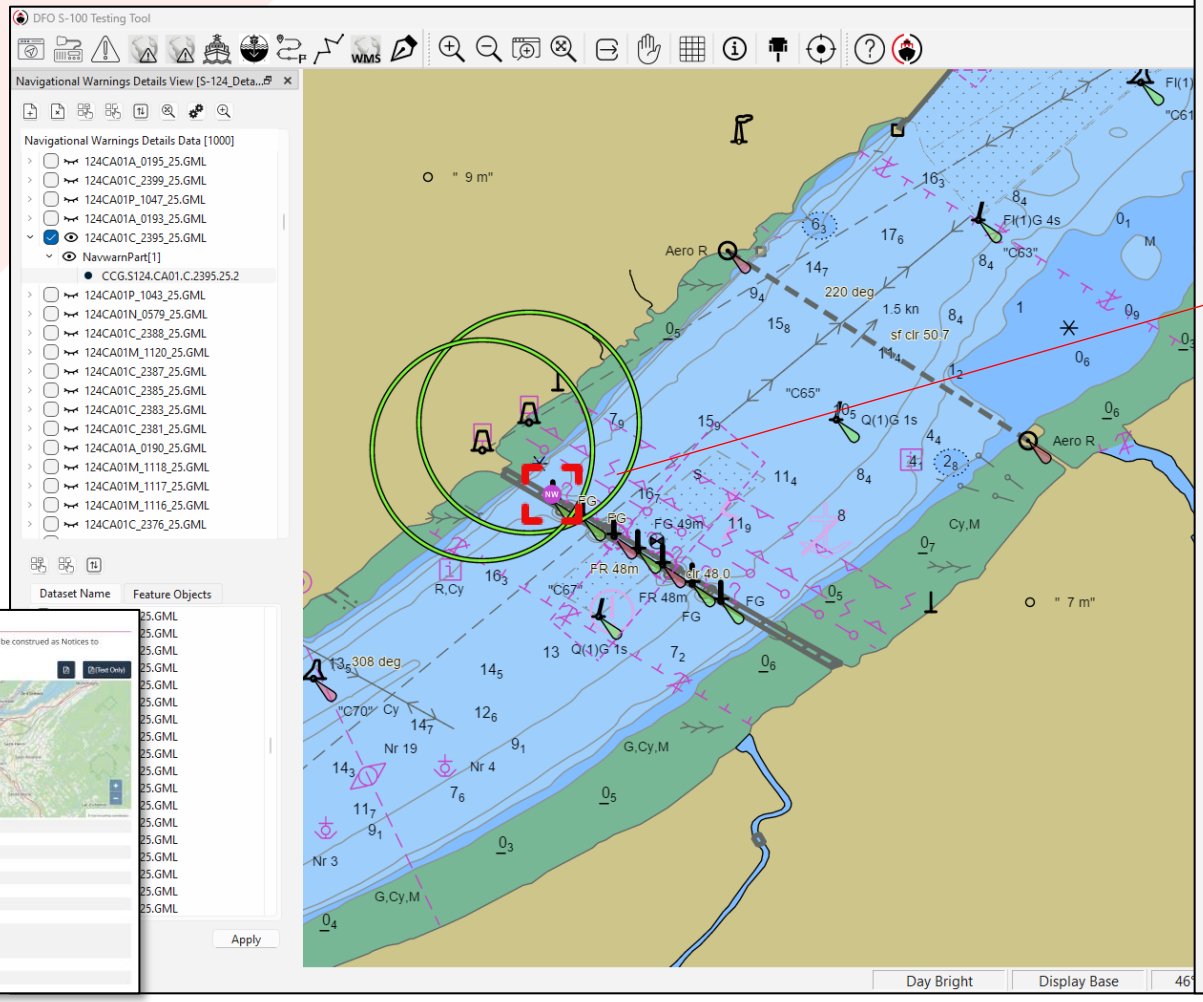
Marine Radio Services S-123
Marine Aids to Navigation S-125
Marine Traffic Management S-127

→ 2029

Provides the possibility for testing S-123, S-124, S-127, S-129 and S-421.

# S-124 – Testing Tool View Example




Feature Objects List

| Attribute | Value |
|---|---|
| NavwarnPart | |
| id | CCG.S124.CA01.C.2395.25.2 |
| fixedDateRange | |
| dateStart | |
| date | 2025-08-04 |
| warningInformation | |
| information | |
| language | eng |
| text | White lights N2 upstream and N3 downstream unlit. |
| featureReference | |
| atoNNumber | Pont Laviolette white light N3 |
| interoperabilityIdentifier | urn:mrn:CCG.S124.CA01.published.aid.75178 |
| featureReference | |
| atoNNumber | Pont Laviolette white light N2 |
| interoperabilityIdentifier | urn:mrn:CCG.S124.CA01.published.aid.75179 |
| header | |
| href | #CCG.S124.CA01.C.2395.25.0 |
| geometry | |
| pointProperty | |
| Point | |
| id | CCG.S124.CA01.C.2395.25.location.1 |
| srsName | https://www.opengis.net/def/crs/EPSG/0/4326 |
| srsDimension | 2 |
| pos | 46.309472 -72.564811 |
| geometry | |
| pointProperty | |
| Point | |
| id | CCG.S124.CA01.C.2395.25.location.2 |
| srsName | https://www.opengis.net/def/crs/EPSG/0/4326 |
| srsDimension | 2 |
| pos | 46.309734 -72.565528 |

# SECOM in Action: Supporting S-124 Deployment

The Canadian Coast Guard's experience demonstrates that SECOM can be implemented affordably using open-source tools, and offers standardized, near real-time data delivery that meets the needs of mariners and aligns with the goals of modern MSI dissemination.

### Reasons for choosing to test SECOM

A service-based approach is the most effective method for conveying S-124 navigational warnings to ECDIS systems.

SECOM offers a robust framework for secure comms: secure, timely, and flexible data delivery

### Outcome of the trials to date

A SECOM-based service using open-source libraries and community support from the Digital Incubator.

Result of the tests demonstrated SECOM can be deployed efficiently and affordably

# Operational deployment – key insights

## S-124 NAVWARNs DATA

CCG has used the SECOM library implemented in Java by GLA-RAD (https://www.gla-rad.org/) to develop its S-124 service exposing REST HTTP endpoints returning S-124 NAVWARNs data.

## SECOM LIBRARY

The SECOM library defines the format of the responses returned by the S-124 service through interface classes that must be implemented by the producer, ensuring standardized response formats across producers and should lower OEM implementation costs.

## Moderate complexity

the most challenging aspect was converting the output NAVWARNs to the S-124 format from our production system NAVWARN Issuing System (NIS), a requirement regardless of SECOM usage. Using the SECOM Java library, CCG developed and tested its service—including integration with the NAVWARNs produced by NIS—within 3 to 6 months. Some features, such as subscription, are yet to be developed pending testing outcomes.

## Standardized request path

The library also defines standardized request paths (e.g., /api/secom/v1/object/summary for GET Summary requests) and request parameters (e.g., validFrom, validTo, geometry), promoting consistency among implementations.

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# Demonstrated advantages

### Inclusive & Flexible Access

- SECOM does not exclude aggregators – users can access data directly or through intermediaries, supporting data democratization and low-barrier access to safety information

### Alignment with IHO Vision

### Clear Responsibility Boundaries

- Canada proposes that Member States be responsible only up to the SECOM delivery point, mirroring current broadcast practices
- SECOM enhances transparency while preserving OEM control over the “last mile”, as with NAVTEX and EGC.

### Support for Maritime Connectivity Platform (MCP)

- Canada is a Host Member and Board participant

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# In Closing

- Canada is considering SECOM as one of the preferred service-based method for delivering S-124 navigational warnings.
- Canada recognises that SECOM supports both direct access and aggregator-based models, ensuring inclusivity.
- Canada encourages everyone to trial SECOM implementations using open-source tools and community support.


SALUTI PRIMUM AUXILIO SEMPER


Canada