

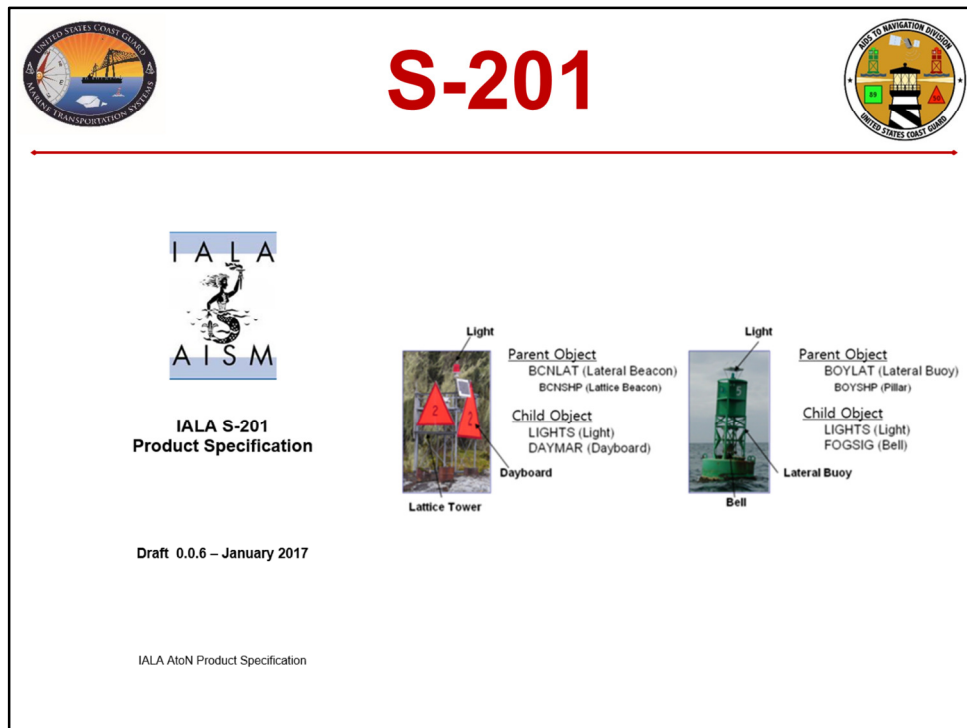
United States Coast Guard
Office of Navigation Systems



"Enhancing Mariners' Situational Awareness"

**USE OF S-201 TO TRANSFER ATON DATA BETWEEN ATON
AUTHORITIES AND HYDROGRAPHIC OFFICES**

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The arrival of electronic charting and digitized maritime safety information requires the development of data exchange methods and protocols to be used by Hydrographic Offices and Aids to Navigation Authorities. The International Hydrographic Office (IHO) has adopted the S-100 standard for geo-spatial information. This standard describes the scope, data content and structure, specifies procedures for data maintenance and quality and details the encoding of the data. The IHO S-100 document is underpinned by a Registry and component Registers based on ISO 19135 – Procedures for registration of items of geographic information. The IHO owns and manages the Registry. IALA Council has approved the participation of IALA in the IHO GI Registry as a Submitting Organization, and as a domain owner (i.e. the IALA domains within the Registry).

The ENAV committee has developed several guidelines describing domain management responsibilities and to assist members with development of S-100 Product Specifications. These guidelines are intended to support AtoN Managers as well as provided detailed direction to Information Technology experts.

The Aids to Navigation (AtoN) Information Product Specification (S-201) provides

a common structure for the exchange of information about AtoNs. This includes buoys, beacons, racons, lights sound signals and AIS. The product contains the positions, properties, operational status and general comments related to an AtoN. The Product Specification can be used to exchange AtoN information in a consistent form between AtoN Authorities, Hydrographic Offices and other organizations (to include commercial and professional agencies).

spread across their portfolio of several hundred charts. The result was the mariner had no idea of the AtoN disposition until they “rounded the bend in the river”.



S-201



Sample: S-57 Western Rivers Buoy Weekly Report



BOYSHP	COLOUR	LAST_MODIFIED	LATITUDE	LONGITUDE	MILE_MARKER	SYMBOL_NAME	RIVER_NAME
1	3	4/30/2018 22:54	38.6563167	-90.17830232	181.8	Red Nun	Upper Mississippi
2	4	4/30/2018 22:54	38.662914	-90.182271	182.3	Green Can	Upper Mississippi
1	3	4/30/2018 22:54	38.67178954	-90.18261292	182.9	Red Nun	Upper Mississippi
1	3	4/30/2018 21:43	38.76639556	-90.1344534	191.4	Red Nun	Upper Mississippi
2	4	4/30/2018 21:27	38.793062	-90.121357	194.1	Green Can	Upper Mississippi
2	4	4/30/2018 21:23	38.817416	-90.123606	0.4	Green Can	Missouri
2	4	4/30/2018 21:23	38.810579	-90.115617	195.3	Green Can	Upper Mississippi
2	4	4/30/2018 21:13	38.830306	-90.151643	2.7	Green Can	Missouri
2	4	4/30/2018 21:13	38.828927	-90.157733	3	Green Can	Missouri

USCG AtoN Database – S-201 (S-57) Gazetteer

- Red Nun = COLOUR (3) & BOYSHP (1)
- Green Can = COLOUR (4) & BOYSHP (2)

Working together, USACE Cartographers and USCG AtoN personnel developed a comma delineated file report which uses S-57 attributes as column headers. These columns are then populated from tables within the USCG's AtoN database. Through use of lookup tables, the USCG populates this report with the appropriate S-57 attributes and transfers the report to USACE weekly.

USACE Cartographers simply import this file into their chart development tool which creates a new edition buoy chart (Chart: 3USBUEOYS.000) for the week. Electronic Charting Systems (ECS) are widely used aboard vessels operating in the U.S. river system and most have been programmed to automatically download the new edition buoy chart when publicly released each Tuesday.

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AtoN Database
S-201 Attribute

USCG Integrated ATONIS Discretes				
Domain				
STRUCTURE TYPE	Code	Abbreviation	Meaning	Mapping to S-57 Values
	MPS		Multiple steel piles	4 - lattice beacon
	MPS5	MPS5	Multi-Pile Steel - 5 Piles	4 - lattice beacon
	MPW	MPW	Multi-Pile Wood	4 - lattice beacon
	NAVAID POLE	NAVAID POLE	NAVAID POLE Structure	3 - beacon tower

In the U.S. work on development of the AtoN Database – ENC Attribute gazetteer continues and we are currently working on complex lights. We have uncovered instances where a direct connection cannot be made between the AtoN database and an ENC attribute. Most notably this occurred with the Light Characteristic field in the AtoN database. We currently use a text box to capture the entire light characteristic (ex. FL G 4s). The ENC attribute for a light characteristic is individually captured as Rhythm, Colour, and Period. We will create new fields within our database to accommodate the ENC attribution and in other instances where we cannot complete the gazetteer.

It is envisioned that ultimately the transfer of ATON data to Hydrographic Offices, Mariners, Academia, and other maritime entities will be automated and delivered in S-201. Additionally, The USCG intends to provide AtoN data to other S-100 Product Specifications currently under development and consideration (i.e. List of Lights and Notice to Mariners Product Specifications).

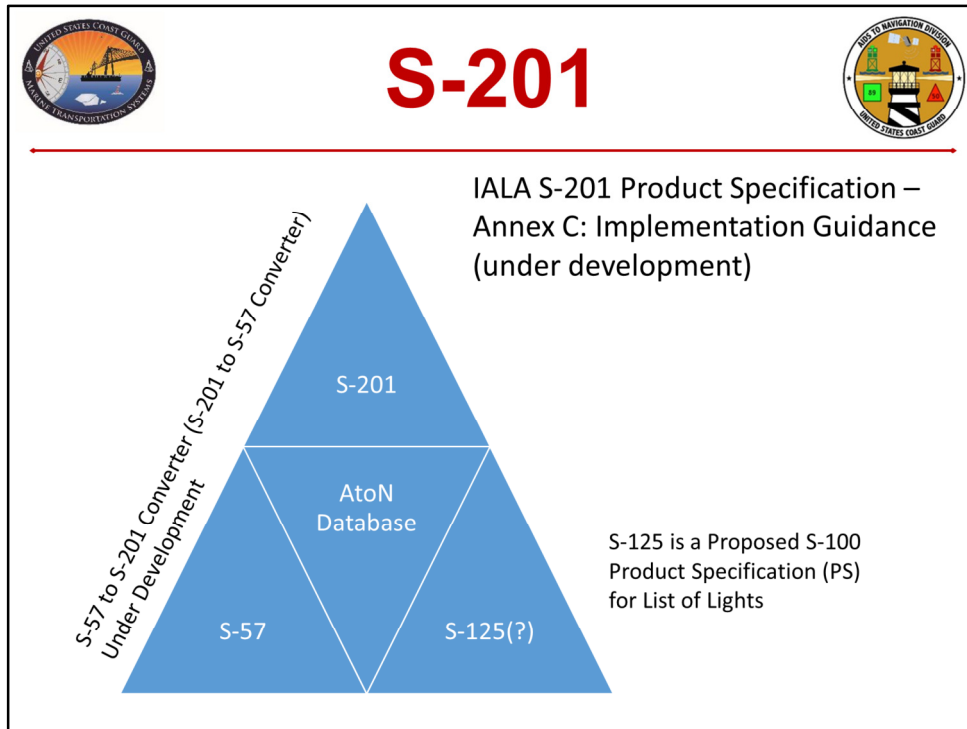


S-201



Challenges and Policy Decisions:

- ? Will S-201 AtoN data sets include ENC portrayal guidance to the HO
- ? Will the AtoN Authority assume all Quality Analysis responsibilities of the AtoN Data within an ENC (including portrayal)
- ? How much AtoN data do we want to make publicly available
- ? What will be the communication protocols (i.e. what type of web services)
- ? Will we provide AtoN data in other geospatial formats (i.e. GML, XML, KML)



The current draft of the S-201 PS has an Annex entitled Implementation Guidance, but it exists in title only. The USCG desires to participate in the drafting of this guidance and seeks partnerships with other AtoN Authorities and Hydrographic Offices to develop this guideline.



S-201



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Merci

Thank You