Paper for Consideration by S-101 Project Team

Improved Modelling of Restricted Areas

Submitted by:	Australia, United States (NOAA)
Executive Summary:	This paper proposes to remodel the S-101 Restricted Area feature into separate features based on different classifications of restrictions.
Related Documents:	TSMAD25-4.8.4 – Restricted Areas in S-57 ENCs TSMAD25-4.6.2
Related Projects:	S-101

Proposal Type

Type of Change Requested	Mark All that Apply
S-101 DCEG Change	X
New Feature	X
New Complex Attribute	
New Simple Attribute	
New Information Type	
New Association/Aggregation/Composition	

Note: The templates are located in the annex to this proposal form

Justification and Impacts

At TSMAD 25, Australia presented a paper regarding complaints from ECDIS users regarding an overwhelming amount of alarms that were triggered by the numerous restricted areas encoded in ENCs. As a result, S-52 has been modified to lessen the amount of Alerts that the user will see.

IMO Special condition	S-57 Object	Attribute	Geometry
Traffic separation zone	TSEZNE		AREA
Inshore traffic zone	ISTZNE		AREA
Restricted area	RESARE	RESTRN !=14 and CATREA != 28	AREA
Caution area	CTNARE		AREA, POINT
Offshore production area	OSPARE		AREA
Areas to be avoided	RESARE	RESTRN = 14	AREA
Military practice area	MIPARE		AREA, POINT
Seaplane landing area	SPLARE		AREA, POINT
Submarine transit lane	SUBTLN		AREA
Anchorage area	ACHARE		AREA, POINT
Marine farm/aquaculture	MARCUL		AREA, LINE, POINT
PSSA (Particularly Sensitive Sea Area)	RESARE	CATREA = 28	AREA

However, this table has severely limited the alarms to the use of RESTRN = 14 (area to be avoided). While this alleviates the issue in an S-57 ECDIS, further thought needs to be given as to what the mariner needs to be alerted to regarding the types of restrictions. For example, the RESTRN entry prohibited and entry restricted are not on this list. Many ENC producers would contend that these restrictions should also trigger an alert.

In addition to the Australian paper a separate paper was presented by the United States (NOAA), UKHO and Furuno that looked at adding attributes in S-101 to Restricted Area to eliminate the RESARE03 CSP. The

resulting discussion created the subsequent action that the "DCEG needs to examine the types of RESTRN groupings and consider creating additional RESARE "type" features.

Using the Australian paper as a guide it is proposed to split restricted area into two separate features as a starting point. They are:

1. Restricted Area Navigational – This feature would be to model those restrictions where the ship may have to take a particular action; or the restrictions directly impact on the navigation of the vessel. For example, ATBA's, Entry Prohibited and Restricted, Speed Restricted, etc.
2. Restricted Area Regulatory – This feature would be to model those restrictions that are regulatory in nature, and do not impact on the navigation of the vessel.

This will also allow for other product specifications to use and extend the regulatory restricted area to encompass items such as particular fishing restrictions and environmental restrictions.

Action Required of S101 Project Team
The S101PT is invited to:

a. discuss the proposed modelling of Restricted Area

b. propose any changes to improve the modelling

c. agree to a final model for testing post DCEG baseline.

ANNEX A : Proposal Templates

IHO Definition: **Restricted Area Navigational:** A specified area on land or water designated by an appropriate authority within which access or navigation is restricted in accordance with certain specified navigational conditions. (Adapted from IHO Dictionary – S-32).
S-101 Geo Feature: Restricted Area Navigational (*RESARE*)
Primitives: Surface

Real World	Paper Chart Symbol	ECDIS Symbol

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
Category of restricted area	(CATREA)	1 : offshore safety zone 4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 8 : degaussing range 9 : military area 10 : historic wreck area 12 : navigational aid safety zone 14 : minefield 18 : swimming area 19 : waiting area 20 : research area 21 : dredging area 22 : fish sanctuary 23 : ecological reserve 24 : no wake area 25 : swinging area 26 : recreation area 27 : environmentally sensitive sea area 28 : particularly sensitive sea area 29 : disengagement area 30: port security area	EN	0,*
Restriction	(RESTRN)	1 : anchoring prohibited 2 : anchoring restricted 7 : entry prohibited 8 : entry restricted 13 : no wake 14 : area to be avoided 25 : stopping prohibited 27 : speed restricted	EN	1,*

NOTE: The rest of the attributes should be the same as the existing S-101 Restricted Area **Remainder of table to be completed on acceptance of proposal.**

IHO Definition: **Restricted Area Regulatory:** A specified area on land or water designated by an appropriate authority within which activities of vessels is restricted in accordance with certain specified regulatory conditions. (Adapted from IHO Dictionary – S-32).
S-101 Geo Feature: Restricted Area Regulatory (*RESARE*)

Primitives: Surface				
Real World	*Paper Chart Symbol*		*ECDIS Symbol*	
S-101 Attribute	**S-57 Acronym**	**Allowable Encoding Value**	**Type**	**Multiplicity**
Category of restricted area	(CATREA)	1 : offshore safety zone 4 : nature reserve 5 : bird sanctuary 6 : game reserve 7 : seal sanctuary 8 : degaussing range 9 : military area 10 : historic wreck area 12 : navigational aid safety zone 14 : minefield 18 : swimming area 19 : waiting area 20 : research area 21 : dredging area 22 : fish sanctuary 23 : ecological reserve 24 : no wake area 25 : swinging area 26 : recreation area 27 : environmentally sensitive sea area 28 : particularly sensitive sea area 29 : disengagement area 30: port security area	EN	0,*
Restriction	(RESTRN)	3 : fishing prohibited 4 : fishing restricted 5 : trawling prohibited 6 : trawling restricted 9 : dredging prohibited 10 : dredging restricted 11 : diving prohibited 12 : diving restricted 15 : construction prohibited 16 : discharging prohibited 17 : discharging restricted 18 : industrial or mineral exploration/development prohibited 19 : industrial or mineral exploration/development restricted 20 : drilling prohibited 21 : drilling restricted 22 : removal of historical artefacts prohibited 23 : cargo transhipment (lightening) prohibited 24 : dragging prohibited 26 : landing prohibited 28 : swimming prohibited	EN	0,*

NOTE: The rest of the attributes should be the same as the existing S-101 Restricted Area – with the exception of Vessel Speed.

Remainder of table to be completed on acceptance of proposal.