

**Proposals for S-124**  
**With respect to adjust the classification pattern and definition of attributes**  
**about warningHazardType**

Submitted by China MSA

**SUMMARY**

Executive Summary: It is recommended that WWNWS and S-124PT adjust the classification pattern and definition of attributes about warningHazardType in the S-124 Product Specification.

Action to be taken: paragraph 3

Related Documents : S124 Product Specification Draft-v2.0.0,  
S124PT1\_2020\_2.2\_EN\_S-124\_V0.3.1,  
S-53\_2016\_EN\_Joint\_IMO\_IHO\_WMO\_Manual\_on\_Maritime\_Sa  
fety\_Information

Related Projects: All WWNWS WGs and PT's.

## **1. Introduction / Background**

There are 112 enumerations of the warningHazardType attribute provided in the S124 Product Specification Draft-v2.0.0, including acoustic recorder, aids to navigation, AIS surveillance systems, anti pollution exercises, etc. As shown in Annex A.

In Section 4.2 of the Joint IHO/IMO/WMO Manual on Maritime Safety Information (MSI), IHO Publication S-53, NAVAREA warnings with 18 items in total are listed by the text expression . As shown in Annex B.

It's stated that "S-124 is based on the guidelines set forth for Navigational Warnings in the Joint IHO/IMO/WMO Manual on Maritime Safety Information (MSI), IHO Publication S-53." in Section 1.1 of the S124 Product Specification Draft-v2.0.0. Moreover, the "warningHazardType" section in S124PT1\_2020\_2.2\_EN\_S-124 V0.3.1 (Model Report) mentions that "The categories are based on the list in clause 4.2 of S-53 (2016). Most (but not all) are the same as items in that list (some are divided among different listed values in this codelist while the aids to navigation listed value covers both new aids and casualties to aids)."

Overall, 112 enumerations of the S124\_warningHazardType are supplemented and extended based on the list of NAVAREA warnings with 18 items in S-53 for reference or guideline.

## 2. Analysis / Discussion

S-124 is a data product specification that transforms Navigational Warnings from text information to data structured expression. However, currently, S124 \_warningHazardType is classified into 112 enumerations, which is inconsistent with the text list of NAVAREA warnings with 18 items in S-53, that is, correspondence of conventions has not yet been formed. In order to solve the problem of integrated production of S-53 text Navigational Warnings information and S-124 digital Navigational Warnings information, it is necessary to establish a mapping relationship between the 112 enumerations of S124 \_warningHazardType and the 18 NAVAREA warnings types of S-53.

In addition, the 112 enumerations of S124 \_warningHazardType are so diverse and complex that it takes a long time and low efficiency for the producer to search and retrieve from the 112 enumerations of S124 \_warningHazardType during the production of Navigational Warnings data. If we set up a mapping of the 112 enumerations of S124 \_warningHazardType with 18 NAVAREA warnings types of S-53, that is, the 112 enumerations of S124 \_warningHazardType are classified into 18 groups, corresponding to the 18 NAVAREA warnings types of S-53, to form a two-level classification, it can greatly improve the efficiency of Navigational Warnings data production and query retrieval. See Annex C for the grouping method.

## 3. Recommendations

It's recommend to add a simple attribute as "S124\_warningHazardCategory" and a simple attribute as "S53\_warningHazardType" ,listing 18 enumerations of S53 \_warningHazardType. At the same time, change the simple attribute "S124\_warningHazardType" into a complex attribute, aggregated by two simple attributes, one is "S53\_warningHazardType", and the other is the simple attribute "S124\_warningHazardCategory" for secondary classification . Then,bind the original 112 enumerations to " S124\_warningHazardCategory" . .

The proposed data model is shown in Figure 1.

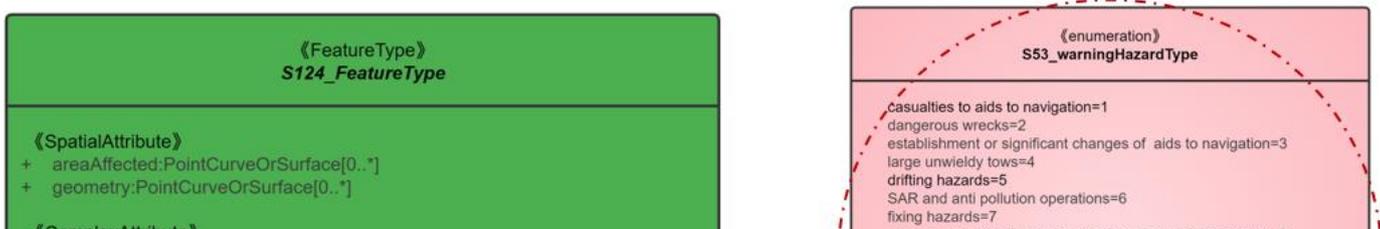


Figure 1

**4. Action required of WWNWS and S-124PT**

The WWNWS and S-124PT is requested to:

- 4.1** Note the information provided;
- 4.2** Take any other actions, as appropriate.

# Annex A

#S100_CodeList# S124_warningHazardType
«enum»
+ acoustic recorder
+ aids to navigation
+ AIS surveillance systems
+ anti pollution exercises
+ anti pollution operations
+ aquaculture site
+ breakwater construction
+ buoy adrift
+ buoys
+ cable laying operations
+ cluster of fishing vessels
+ container adrift
+ dangerous wreck
+ dead whale adrift
+ deadhead adrift
+ derelict vessel adrift
+ DGPS
+ diving operations
+ dredging operations
+ drifting hazard (other)
+ drill rig on location
+ drill rig under tow
+ drilling site operations
+ exclusion zones
+ explosive detonation
+ explosive device
+ fallout hazard
+ fireworks
+ firing exercises
+ fish-net adrift
+ floating debris
+ floating dock
+ hazardous area
+ HF Services
+ hydrographic survey
+ ice boom
+ ice control zone in-force/deactivated
+ iceberg outside advertised limits
+ in-force bulletin
+ lights & fog signals
+ log boom adrift
+ marine mammals
+ maritime security - MARSEC level changes
+ MF Services
+ military exercises
+ military operations
+ mines
+ MSI Services
+ mussel farm
+ national health organizations - changes
+ nautical information issues
+ NAVTEX
+ newly discovered dangers
+ offshore structures
+ opening/closing of harbour
+ opening/closing of swing bridge
+ opening/closing of waterway
+ operating anomalies identified within ECDIS including ENC issues
+ pipe laying operations
+ pipe or cable laying operations
+ piracy
+ race
+ RACON
+ radar surveillance systems
+ radio navigation services
+ regatta
+ regulations
+ research or scientific operations
+ restricted area
+ routing Measures
+ SafetyNET
+ sandspit
+ SAR and anti pollution operations
+ SAR operations
+ scientific buoy & apparatus
+ scientific moorings
+ scientific survey
+ sea trials
+ seaplane operations
+ search and rescue exercises
+ seasonal buoy lifting
+ seasonal buoy placing
+ seasonal buoy program
+ security-related requirements
+ seismic surveys
+ shallow depth reported
+ shoal
+ submerged fish-net
+ submerged object
+ subsurface moorings
+ subsurface pipelines
+ survey results
+ swimmers
+ tide gauges
+ traffic congestion
+ tsunami warning
+ tsunamis and other natural phenomena
+ uncharted rock
+ uncharted submarine cables
+ underwater operations
+ unidentified radar target, possible iceberg
+ unwieldy tow
+ vertical clearance reduced
+ vessel adrift
+ vessel disabled
+ VHF Services
+ VTS limit change
+ water levels changed/not as advertised
+ waterway recommended/not recommended for shipping
+ wharf construction
+ works in progress
+ World Health Organization (WHO) health advisory information
tags
codelistType = open enumeration
encoding = other: [something]

## Annex B

### 4.2 NAVAREA warnings

#### 4.2.1

NAVAREA warnings are concerned with the information detailed below which ocean-going mariners require for their safe navigation. This includes, in particular, new navigational hazards and failures of important aids to navigation as well as information which may require changes to planned navigational routes.

#### 4.2.2

Coastal warnings are broadcast by the International NAVTEX service, or by the International SafetyNET service when implemented in lieu of NAVTEX. They are not normally re-broadcast as NAVAREA warnings unless deemed of such significance that the mariner should be aware of them before entering a NAVTEX service area. The National Coordinator will evaluate the significance of the information for consideration as a NAVAREA warning while the NAVAREA Coordinator will make the final determination.

#### 4.2.3

The following subjects are considered suitable for broadcast as NAVAREA warnings. This list is not exhaustive and should be regarded only as a guideline. Furthermore, it presupposes that sufficiently precise information about the item has not previously been disseminated in a Notice to Mariners. Whenever possible, warnings concerning scheduled events, in particular those covered in 4.2.3.13, should be originated not less than five days in advance, and reference may be made to relevant national publications:

.1

casualties to lights, fog signals, buoys and other aids to navigation affecting main shipping lanes;

.2

the presence of dangerous wrecks in or near main shipping lanes and, if relevant, their marking; MSC.1/Circ.1310/Rev.1

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.3

establishment of major new aids to navigation or significant changes to existing ones, when such establishment or change might be misleading to shipping;

.4

the presence of large unwieldy tows in congested waters;

.5

drifting hazards (including derelict ships, ice, mines, containers, other large items over 6 metres in length, etc.);

.6

areas where search and rescue (SAR) and anti-pollution operations are being carried out (for avoidance of such areas);

.7

the presence of newly discovered rocks, shoals, reefs and wrecks likely to constitute a danger to shipping, and, if relevant, their marking;

.8

unexpected alteration or suspension of established routes;

.9

cable or pipe-laying activities, seismic surveys, the towing of large submerged objects for research or exploration purposes, the employment of manned or unmanned submersibles, or other underwater operations constituting potential dangers in or near shipping lanes;

.10

the establishment of research or scientific instruments in or near shipping lanes;

.11

the establishment of offshore structures in or near shipping lanes;

.12

significant malfunctioning of radio-navigation services and shore-based maritime safety information radio or satellite services;

.13

information concerning events which might affect the safety of shipping, sometimes over wide areas, e.g. naval exercises, missile firings, space missions, nuclear tests, ordnance dumping zones, etc;

.14

operating anomalies identified within ECDIS including ENC issues;

.15

acts of piracy and armed robbery against ships;

.16

tsunamis and other natural phenomena, such as abnormal changes to sea level;

.17

World Health Organization (WHO) health advisory information; and

.18

security-related requirements.<sup>11</sup>

## Annex C

This annex will be used as a questionnaire for experts to give suggestions on improvement.

Table 1 creates abbreviations for the text list of NAVAREA warnings with 18 items in S-53.

Table 2 shows the mapping between the 112 enumerations of S124\_warningHazardType and the 18 NAVAREA warnings types of S-53.

However, at present, the list of 18 items of S-53 are not exhaustive (this is also mentioned in clause 4.2.3 of the S-53 publication, see Annex B). Therefore, the 18 types of S-53 and the mapping relationship in Table 2 still need to be further improved and expanded.

Table 1 and Table 2 are for reference only, in order to trigger more discussion.

Table 1

18 NAVAREA Warnings Text Items in S-53	Serial Number in S-53	Abbreviations of S-53
.1 casualties to lights, fog signals, buoys and other aids to navigation affecting main shipping lanes;	1	casualties to aids to navigation
.2 the presence of dangerous wrecks in or near main shipping lanes and, if relevant, their marking;	2	dangerous wrecks
.3 establishment of major new aids to navigation or significant changes to existing ones, when such establishment or change might be misleading to shipping;	3	establishment or significant changes of aids to navigation
.4 the presence of large unwieldy tows in congested waters;	4	large unwieldy tows
.5 drifting hazards (including derelict ships, ice, mines, containers, other large	5	drifting hazards

items over 6 metres in length, etc.);		
.6 areas where search and rescue (SAR) and anti-pollution operations are being carried out (for avoidance of such areas);	6	SAR and anti pollution operations
.7 the presence of newly discovered rocks, shoals, reefs and wrecks likely to constitute a danger to shipping, and, if relevant, their marking;	7	fixing hazards
.8 unexpected alteration or suspension of established routes;	8	unexpected alteration or suspension of established routes
.9 cable or pipe-laying activities, seismic surveys, the towing of large submerged objects for research or exploration purposes, the employment of manned or unmanned submersibles, or other underwater operations constituting potential dangers in or near shipping lanes;	9	underwater operations
.10 the establishment of research or scientific instruments in or near shipping lanes;	10	research or scientific activities
.11 the establishment of offshore structures in or near shipping lanes;	11	offshore structures
.12 significant malfunctioning of radio-navigation services and shore-based maritime safety information radio or satellite services;	12	significant malfunctioning of services
.13 information concerning events which might affect the safety of shipping, sometimes over wide areas, e.g. naval exercises, missile firings, space missions, nuclear tests, ordnance dumping zones, etc;	13	offshore activities, military activities and exercises
.14 operating anomalies identified within ECDIS including ENC issues;	14	operating anomalies identified within ECDIS including ENC issues
.15 acts of piracy and armed robbery against ships;	15	piracy
.16 tsunamis and other natural phenomena, such as abnormal changes to sea level;	16	tsunamis and other natural phenomena
.17 World Health Organization (WHO) health advisory information; and	17	health advisory information

.18 security-related requirements. <sup>11</sup>	18	security-related requirements
.....	.....	.....

Table 2

Serial Number in S-53	Abbreviations of S-53	S124_warningHazardType
1	casualties to aids to navigation	aids to navigation
		buoys
		lights & fog signals
		RACON
2	dangerous wrecks	dangerous wreck
		hazardous area
3	establishment or significant changes of aids to navigation	buoy adrift
		seasonal buoy lifting
		seasonal buoy placing
4	large unwieldy tows	seasonal buoy program
		unwieldy tow
		mines
5	drifting hazards	container adrift
		dead whale adrift
		deadhead adrift
		derelict vessel adrift
		drifting hazard (other)
		fish-net adrift
		floating debris
		log boom adrift
		vessel adrift
		vessel disabled
		cluster of fishing vessels
		unidentified radar target, possible iceberg
6	SAR and anti pollution operations	SAR and anti pollution operations
		SAR operations
		search and rescue exercises
		anti pollution exercises

		anti pollutoin operations
7	fixing hazards	newly discovered dangers
		explosive detonation
		explosive device
		fallout hazard
		shallow depth reported
		shoal
		submerged fish-net
		submerged object
		uncharted rock
		uncharted submarine cables
		8
mussel farm		
exclusion zones		
restricted area		
routeing Measures		
VTS limit change		
waterway recommended/not recommended for shipping		
9	underwater operations	cable laying operations
		pipe laying operations
		dredging operations
		drill rig on location
		drill rig under tow
		drilling site operations
		underwater operations
		works in progress
		hydrographic survey
		seismic surveys
		subsurface moorings
		subsurface pipelines
		diving operations
pipe or cable laying operations		
10	research or scientific activities	research or scientific operations
		scientific buoy & apparatus
		scientific moorings
		scientific survey
		acoustic recorder
11	offshore structures	breakwater construction
		offshore structures
		floating dock
		wharf construction
12	significant malfunctioning of	AIS surveillance systems

	services	DGPS
		radar surveillance systems
		MF Services
		HF Services
		VHF Services
		NAVTEX
		SafetyNET
		radio navigation services
13	offshore activities, military activities and exercises	firing exercises
		military exercises
		military operations
		sea trials
		seaplane operations
		race
		regatta
		swimmers
14	operating anomalies identified within ECDIS including ENC issues	operating anomalies identified within ECDIS including ENC issues
15	piracy	piracy
16	tsunamis and other natural phenomena	ice boom
		ice control zone in-force/deactivated
		iceberg outside advertised limits
		marine mammals
		sandspit
		tsunami warning
		tsunamis and other natural phenomena
17	health advisory information	national health organizations – changes
		World Health Organization (WHO) health advisory information
18	security-related requirements	maritime security - MARSEC level changes
		regulations
		security-related requirements
..... (remain to be improved)	..... (remain to be improved)	in-force bulletin
		MSI Services
		nautical information issues
		traffic congestion
		vertical clearance reduced
		water levels changed/not as

		advertised
		survey results
		tide gauges
		opening/closing of harbor
		opening/closing of swing bridge
		opening/closing of waterway