Change Request (CR) for S-401

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| 0 | **Title:** New feature "Buoy Line"  **CR number:** 455 **Version:** 1 *(starting with 1)*  *The next available CR number can be found in the currently valid Change Request List under the following URL:* [*https://docs.google.com/spreadsheets/d/1darzMTlkqN4nDWOetW\_6vCuqbGukEvN\_9XYohwB\_QLE/edit?usp=sharing*](https://docs.google.com/spreadsheets/d/1darzMTlkqN4nDWOetW_6vCuqbGukEvN_9XYohwB_QLE/edit?usp=sharing%20)  Referring to edition 2.0.0 *(please enter the last published edition)* | |
| 1 | **Request for:**  **an amendment that does not affect the Feature and Portrayal Catalogues**  **an amendment that affects the Feature Catalogue edition**       *(last published edition)*  **an amendment that affects the Portrayal Catalogue edition**       *(last published edition)* | |
| 2 | Explanation, why this amendment/change is needed:  On certain waterways, buoys positioned on one line are used to block the waterway and indicate that entry is prohibited. These buoys can be used as one feature to indicate a restriction. A new feature ‘buoy line’ shall be introduced and will be displayed with a line style that depends on the restriction. | |
| 3 | Proposed amendments to the Product Specification for Inland ENCs (main document):  --- | |
| 4 | Proposed amendments to the S-100 registry (for new elements see annex A1-A9))  Proposed amendments to the Concept Register: Buoy Line (for new concepts see annex)  Proposed amendments to the Data Dictionary Register, S-401 domain: Buoy Line (for new elements see annex)  Proposed amendments to the Portrayal Register, S-401 domain: add linestyle NONAV01 for the attribute 'Restriction' with a value 7 (Entry prohibited) (for new symbols see annex) | |
| 5 | Proposed amendments to the Feature Catalogue:  see annex | |
| 6 | Proposed amendments to the Data Classification and Encoding Guide (for new elements see annex B1):  see annex | |
| 7 | Proposed amendments to the Portrayal Catalogue:   * Add new line style for the restriction ‘7 – Entry prohibited’ * Develop LUA script ‘buoyLine’ that selects the correct line style to display * Add reference to the script and linestyle in the Portrayal Catalogue XML | |
| 8 | Proposed amendments to the Recommended Validation checks for IENCs: | |
| 9 | Proposed amendments to the Conversion Guidance: | |
| 10 | Proposed amendments to the Interoperability Standard:  TBD | |
| 11 | Proposed applicability: *mark all applicable boxes*  US  Europe (without Russia)  Russia  South America  Asia        *(description of another area of applicability, e.g. a country)* | |
| 12 | Name of sender: Gert Morlion  Name of authority or company: on behalf of Rijkswaterstaat  e-mail address: gert.morlion@vlaamsewaterweg.be  Date *(YYYYMMDD):* 09-05-2025 | Deadline for comments       (6 weeks)  To be filled in by a member of the Core Group:  Proposal adopted/  Proposal rejected  Will become part of edition       of the EG. |

The file name should start with “CR\_IEHG\_”, followed by the number and version (nr-XXX\_vX) of the change request, followed by a reference to a page of the DCEG or the content (e.g. X\_X\_X or Special\_Purpose\_Buoy), and include the year (YYYY).   
Example: CR\_IEHG\_nr-001\_v1\_1\_1\_1\_2025.docx

*These pages are an optional part of the Change Request*

**A1, New Concept in the S-100 Registry**

|  |  |
| --- | --- |
| Concept Details | |
| Name | Buoy Line |
| Alias | Buoy Line |
| Definition | A buoy line is a set of buoys positioned on a curve indicating a certain restriction. |
| Reference |  |
| Reference Source |  |
| Similarity to Source |  |
| Remarks | A buoy line is one feature and build-up by multiple buoys |

**A2, New Feature Type in the S-100 Registry, S-401 Domain**

|  |  |
| --- | --- |
| Concept Details | |
| Name  (based on the concept) | buoyLine |
| Use Type | geographic (curve) |
| Recommended Attributes | Direction of Impact  Feature Name  Information  Restriction (permitted values: 7)  Scale Minimum  Source Indication |
| Distinctions Features | Cardinal Buoy, Lateral Buoy, Special Purpose Buoy |

**A3, New Information Type in the S-100 Registry, S-401 Domain**

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| Concept Details | |
| Name  (based on the concept) |  |
| Recommended Attributes |  |
| Distinctions Features |  |
| Distinctions Information |  |

**A4, New Attribute Type in the S-100 Registry, S-401 Domain**

|  |  |
| --- | --- |
| Concept Details | |
| Name  (based on the concept) |  |
| Data Type |  |
| For Data Types Enumeration and S100\_CodeList: | |
| Related Listed Values |  |
| For Data Type Text | |
| Length |  |
| Pattern |  |
| Structure Specification |  |
| For Data Types Real and Integer | |
| Minimum Range |  |
| Maximum Range |  |
| Range Closure |  |
| Precision |  |
| Quantity Specification |  |
| Unit of Measure (for Text, Real, Integer) | |
| Format |  |
| Definition |  |
| Symbol |  |

**A5, New Complex Type in the S-100 Registry, S-401 Domain**

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| Concept Details | |
| Name  (based on the concept) |  |
| Data Type |  |
| Sub Attributes  (including multiplicity and ordered True/False) |  |

**A6, New Enumeration Value in the S-100 Registry, S-401 Domain**

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| --- | --- |
| Concept Details | |
| Name  (based on the concept) |  |
| Associated Attribute and code number |  |

**A7, New Feature Association in the S-100 Registry, S-401 Domain**

**A8, New Information Association in the S-100 Registry, S-401 Domain**

**A9, New Symbol in the S-100 Registry, S-401 Domain**

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| Concept Details | |
| Name |  |
| Alias |  |
| Definition |  |
| Remarks |  |
| Reference Source |  |
| Item schema |  |
| Preview Image |  |
| Engineering Image |  |
| SVG View |  |
| XML |  |
| LUA script affected |  |
| Bound box (width; height) | ; |
| Pivot point (x; y) | (Red circle shows the pivot point but is not part of the portray (e.g. 0; 0) |
| Used colors  (names used in S401 style sheet) |  |

SVG symbol must be in line with the Tiny Profile 1.2 as described in the document ‘SVG Profile scheme for symbols’.

**A10, New Linestyle in the S-100 Registry, S-401 Domain**

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| Concept Details | |
| Name | NONAV01 |
| Alias |  |
| Definition | Line indicating prohibited area for navigation |
| Remarks |  |
| Reference Source |  |
| Item schema |  |
| Preview Image |  |
| XML | <?xml version="1.0" encoding="ISO-8859-1"?>  <?S100lineage source="S52Preslib4.0" format="S100Ed2" version="0.1" creationDate="2023-11-02"?>  <?S100Meta name="NONAV01" exposition="line indicating prohibited area for navigation"?>  <lineStyle>  <intervalLength>26.0</intervalLength>  <pen width="0.32">  <color>CHGRD</color>  </pen>  <dash>  <start>0.5</start>  <length>3</length>  </dash>  <dash>  <start>9.5</start>  <length>3</length>  </dash>  <dash>  <start>13.5</start>  <length>3</length>  </dash>  <dash>  <start>22.5</start>  <length>3</length>  </dash>  <symbol reference="BOYSPP11">  <position>6.5</position>  </symbol>  <symbol reference="BOYSPP11">  <position>19.5</position>  </symbol>  </lineStyle> |
| LUA script affected | BuoyLine |
| Bound box (length; pen width) | 26.0; 0.32 |
| Used colors  (names used in S401 style sheet) | CHGRD |
| Used symbols  (names used in S401 style sheet) | BOYSPP11 |

**A11, New rule in the S-100 Registry, S-401 Domain**

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| Concept Details | |
| Name | BuoyLine |
| Definition | The BuoyLine script checks the primitive and restriction attribute. If the primitive is correct (curve) and the value of the restriction = 7 the yellow buoy line will be selected and visualized. |
| Remarks |  |
| Reference Source |  |
| Item schema |  |
| LUA | -- Buoy line main entry point.  function BuoyLine(feature, featurePortrayal, contextParameters)      local viewingGroup      -- featurePortrayal:AddInstructions('AlertReference:NavHazard')      if feature.PrimitiveType == PrimitiveType.Curve then            viewingGroup = 12210          if contextParameters.RadarOverlay then              featurePortrayal:AddInstructions('ViewingGroup:12210;DrawingPriority:24; DisplayPlane:OverRADAR')          else              featurePortrayal:AddInstructions('ViewingGroup:12210;DrawingPriority:24; DisplayPlane:UnderRADAR')          end          if (feature.restriction == 7) then              featurePortrayal:AddInstructions('LineInstruction:NONAV01')          end      else          error('Invalid primitive type or mariner settings passed to portrayal')      end      return viewingGroup  end |

**B1, New Feature in the Feature Catalogue and in the Data Classification and Encoding Guide**

*(text in italics and brackets is just explanation and will not be shown in the DCEG)*

*(****X.X Clause heading)***

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| IHO Definition: A buoy line is a set of buoys positioned on a curve indicating a certain restriction. *(****FEATURE:*** *Definition. (Authority for definition))* | | | | | | | | | |
| **S-401 Geo Feature:** buoyLine | | | | | | | | | |
| **Primitives:** curve | | | | | | | | | |
| *Real World*  Afbeelding met buitenshuis, hemel, water, boom  Door AI gegenereerde inhoud is mogelijk onjuist.  Afbeelding met buitenshuis, meer, water, Waterbronnen  Door AI gegenereerde inhoud is mogelijk onjuist.  *(Example(s) of real-world instance(s) of the Feature.)* | | *Paper Chart Symbol*    *(Example(s) of paper chart equivalent symbology for the Feature.)* | | | | *IECDIS or ECS Symbol*    *(Example(s) of IECDIS or ECS symbology for the Feature.)* | | | |
| **S-401 Attribute** | | | **S-57 Acronym** | | **Allowable Encoding Value** | | | **Type** | **Multiplicity** |
| direction of impact | | | *(DIRIMP)* | |  | | |  |  |
| information | | | *(INFORM)* | | See clause 2,4 | | | C | 0,\* |
| file locator | | |  | |  | | | (S)TE | 0,1 |
| file reference | | | *(TXTDSC)*  *(NTXTDS)* | |  | | | (S)TE | 0,1 † |
| headline | | |  | |  | | | (S)TE | 0,1 |
| language | | |  | | ISO 639-2/T | | | (S)TE | 1,1 |
| text | | | *(INFORM)*  *(NINFOM)* | |  | | | (S)TE | 0,1 † |
| feature name | | |  | |  | | | C | 0,1 |
| language | | |  | | ISO 639-2/T | | | (S) TE | 1,1 |
| name | | | *(OBJNAM)*  *(NOBJNM)* | |  | | | (S) TE | 1,1 |
| name usage | | |  | | 1 - default name display  2 -: alternate name display | | | (S) EN | 0,1 † |
| restriction | | |  | | 7 – Entry prohibited | | |  |  |
| scale minimum | | | *(SCAMIN)* | |  | | |  |  |
| source indication | | | *(SORIND)* | |  | | | TE | 0,1 |
| **Feature Associations** | | | | | | | | | |
| **S-401 Role** | **Association Type** | | | **Associated to** | | | **Type** | | **Multiplicity** |
| The Position Provider | **Text Association** (see clause 25.13). | | | **Text Placement** | | | Composition | | 0,1 |
|  | **Additional Information** (see clause 25.1) | | | **Nautical Information** | | | Association | | 0,\* |
| The Component | **Aids to Navigation Association** (see clause 25.2) | | | **Fairway**  **System**, **Traffic Separation**  **Scheme**, **Two-Way Route** | | | Association | | 0,\* |
| † Complex attribute **feature name**, sub-attribute **name usage** is mandatory if the name is intended to be displayed when display of names is enabled by the boatmaster. See clause 2.5.8.  For each instance of **information**, at least one of the sub-attributes **file reference** or **text** must be populated.  *(****X.X.X Sub-clause heading(s))***  *(Introductory remarks. Includes information regarding the real world entity/situation requiring the encoding of the Feature in the IENC, and where required nautical cartographic principles relevant to the Feature to aid the compiler in determining encoding requirements.*  *Specific instructions to encode the feature.*  *Note that in all sub-clauses feature types and association names are shown in* ***Bold Capitalised Text****; attributes (complex, sub- and simple) are shown in* ***bold lower case text****; and attribute values (including enumerate codes) are shown in italic text.)*  Remarks:   * *(Additional encoding guidance relevant to the scenario (only if required).)*   Distinction: Cardinal buoy, Lateral buoy *(List of features in the Product Specification distinct from the Feature.)* | | | | | | | | | |

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| Inland Specific Encoding Instructions: |