

**10<sup>th</sup> CSPCWG MEETING**  
**21-24 January 2014. Wellington, New Zealand**

**Paper for Consideration by CSPCWG**

**Racon Response Frequencies**

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| <b>Submitted by:</b>      | Australia  |
| <b>Executive Summary:</b> | S-4 – B-486.3 specifies that it is no longer required to show radar wave length information on paper charts. However, an attribute RADWAL (Radar Wave Length) is an allowable attribute for S-57 ENC's. Clarification is required in S-4 specifying the inclusion of radar wave length in ENC. |
| <b>Related Documents:</b> | S-4 Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO;<br>TSMAD26/DIPWG5-12.04A Proposals to Amend the UOC.  |
| <b>Related Projects:</b>  | S-4 Maintenance; S-57 Maintenance; S-101 Development   |

### Introduction / Background

The referenced TSMAD Paper raised an inconsistency between the charting specification for radar response frequencies for radar transponder beacons (Racons) at S-4 – B-486.3 and the S-57 ENC Product Specification. Discussion at TSMAD26/DIPWG5 determined that the inclusion of radar response frequencies in ENC was valid, and therefore a clarification is required in S-4.

### Analysis / Discussion

S-4 clause B-486.3 contains guidance for charting the identification and response frequencies of radar transponder beacons (Racons), including the following:

Racons emit a signal in the 3cm (X), the 10cm (S), or both marine radar bands. This information was formerly charted, but to avoid clutter, and the possibility of confusion between Racons transmitting in both bands and where the information is unavailable, the bands should not be charted. Such details are best given in associated publications, which may also provide other information such as sweep time, range and length of flash on a radar display.

S-57 Appendix A, Chapter 2 – Attributes, includes an entry for the attribute Radar Wave Length (RADWAL) – see Attachment 1. RADWAL is an allowable attribute for the S-57 Object Class Radar Transponder Beacon (**RTPBCN**), with encoding guidance for this Object Class included in S-57 Appendix B.1 – Annex A – Use of the Object Catalogue for ENC (UOC), at clause 12.10 – see Attachment 2.

While the UOC contains general guidance on how to encode **RTPBCN**, the guidance regarding “what” and “why” such objects are included on charts (including ENC) is derived from S-4, including guidance as to attribute population. Paper TSMAD26/DIPWG5-12.04A raised a concern that as S-4 states that to avoid clutter Racon signal bands “should not be charted”, ENC encoders would not populate the valid attribute RADWAL for **RTPBCN**. The resultant discussion at TSMAD26/DIPWG5 confirmed that it was useful for such information to be included in ENC, as the population of RADWAL does not cause additional clutter on ECDIS display (is only displayed via a mariner’s ECDIS Pick Report). TSMAD therefore recommends that an amendment is required at S-4 – B-486.4.

### Recommendations

1. That CSPCWG consider an amendment to S-4 – B-486.3 (2<sup>nd</sup> paragraph) similar to:

Racons emit a signal in the 3cm (X), the 10cm (S), or both marine radar bands. This information was formerly charted, but to avoid clutter, and the possibility of confusion between Racons transmitting in both bands and where the information is unavailable, the bands should not be **included on paper charts**. Such details are best given in associated publications, which may also provide other information such as sweep time, range and length of flash on a radar display. **However, Racon signal bands and other information describing the characteristic of the signal may be included in ENC.**

### **Justification and Impacts**

As stated in B-100, the specifications included in S-4 are intended for both manuscript and digital nautical charting products. The current guidance at B-486.3 has prompted ENC encoders to question the relevance of attributes such as RADWAL on **RTPBCN**. The amendment suggested for B-486.3 will remove this uncertainty and align S-4 with allowable ENC encoding as described in the UOC.

### **Action required of CSPCWG**

CSPCWG is invited to:

- a. Consider this Paper; and
- b. Determine appropriate changes to S-4 – B-486.3 based on the recommendation above.

### Attachments:

1. Radar Wave Length (RADWAL) attribute description.
2. Encoding guidance for S-57 Object Class Radar Transponder Beacon (**RTPBCN**).

Code: 102

Attribute: **Radar wave length:**

Acronym: **RADWAL**

Definition: The distance between two successive peaks (or other points of identical phase) on an electromagnetic wave in the radar band of the electromagnetic spectrum.

References: INT1 S3.1-4  
S-4 B-486.3-4

Indication: The wave length and the band code character is indicated. In the case where two bands should be encoded, these should be separated by a comma.

Unit: Metre (m)

Resolution: 0.01m

Format: V.VV-B  
V.VV-B,V.VV.B

“VV.VV” encodes the value of wavelength;  
“B” encodes the band;  
each separated by a hyphen (“-”).

Example: The radar transponder beacon wavelength ‘3cm (X) – Band’ is indicated as ‘0.03-X’

Remarks: The attribute ‘radar transponder beacon wavelength’ encodes the specific wavelength at which a radar transponder beacon transmits.

Radar transponder beacons generally work on the following wavelengths:  
3cm (X) – Band  
10cm (S) – Band  
Nevertheless, wavelengths outside the marine band are used.

## 12.10 Radar beacons (see S-4 – B-486)

If it is required to encode a radar beacon, it must be done using the object class **RTPBCN**.

Geo object: Radar transponder beacon (**RTPBCN**) (P)  
 Attributes: CATRTB DATEND DATSTA NOBJNM OBJNAM PEREND  
 PERSTA RADWAL SECTR1 SECTR2  
 SIGGRP - Morse identification letter(s).  
 SIGSEQ STATUS VALMXR INFORM NINFOM

### Remarks:

- The **RTPBCN** must only be used to encode the technical equipment itself, independent of the building or structure in which it is installed. If it is required to encode the building or structure (e.g. mast, tower, radar dome), it must be done using an appropriate object class (e.g. **BUISGL**, **LNDMRK**).
- If it is required to encode the bearing line and the recommended track for leading racons, it must be done as described in clause 10.1. Where the bearing line coincides with a leading line defined by lights or other visual features making up a range system, navigation lines and recommended tracks must not be duplicated. The objects making up the range system must be aggregated using the collection object **C\_AGGR** (see clause 10.1.2).
- The sweep period may be encoded using the attribute INFORM.