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Technical Domain / Task Number 2 WG3 TG-3.3

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**Proposal on Modification of R-101**

**1.** **SUMMARY**

This document proposes the modification suggestions for updating the *IALA RECOMMENDATION R-101: Marine Radar Beacons (Racons)*.

**1.1 Purpose of the document**

This document suggests to consider to modify the *Recommendation R-101* appropriately by upgrating the standard of the Racons to adapt to solid-state radars.

**1.2 Related documents**

R-101 MARINE RADAR BEACONS (RACONS)

1. **BACKGROUND**

**2.1 ENG 16**

The ENG Committee at its 16th session discussed the updating of existing IALA Racon documents (R-101, G1010, R0146) and noted that the work is planned for 2023-2027.

**2.2 ENG 17**

During ENG 17，IALA Secretariat proposed for reformatting Recommendation R-101, since the original version included a very long annex, which does not conform to the new format of the Recommendation. Therefore, it was planned to delete the latter part of the R-101 and convert the content into the new Guideline: *Draft IALA Guideline 11xx Technical Characteristics and Guidance on the use of Racons (to accompany Recommendation R-101) Marine Radar Beacons (Racon)* . The text is as follows （please refer to ENAV20-13.8 Proposal for reformatting Recommendation R-101）

Text of annex part 1 retained but the annex removed. This needs to be condensed into a set of recommended principles. E-140 provides a good example of how principles can be presented in a Recommendation.

Text of annex parts 2, 3, 4 converted to a Guideline. ENAV20-13.8.2 is a rough draft.

Annex part 5 should be removed and uploaded to the Dictionary with a reference to the Dictionary in the text of the Guideline as drafted.

**2.3 Proposal to ENG 17 by China**

China also submitted the document to ENG 17: *Proposal on R0101 Marine radar beacons modification*  (ENG17-3.1.1.14).

**2.4 ENG 19**

The ENG Committee at its 19th session adopted the revision of the Recommendation R0146, with the general requirements on Racon was added. IALA recommended to consider the design of a racon that would be compatible with the conventional magnetron radars and solid-state radars.

**2.5 ITU**

Some specifications in R0101 does not conform to *Recommendation ITU-R M.824-4 (02/2013): Technical Parameters of Radar Beacons* published by ITU.

# Discussion

**3.1 Primary radar pulse length**

R-101 stipulates that the primary radar pulse length as - 0.05 µs, while ITU-R M.824-4 states that the primary radar pulse length gating ≥ 0.05μs and ≤ 2 μs.

In fact, a pulse length ranging from 0.05-2µs is the signal pulse length of the conventional magnetron radars. However, the signal of the solid-state radar is longer, and the pulse length of the pulse compression solid-state radar is nearly 100 µs, while the pulse length of the continuous wave solid-state radar can exceed 1ms.

Therefore, it is recommended to revise the radar pulse length to ≥ 0.05 µs.

**3.2 Compatibility**R0146 proposes the requirement for the universal radar beacon, which means that a racon needs to be able to respond to conventional magnetron radars and solid-state radars. So it is suggested to add a compatibility requirement for the racon, that is, a racon needs to be compatible with conventional magnetron radars and solid-state radars.

* 1. **Others**

As the annex of the original R-101 has been converted to the new Guideline, some content related to the annext needs to be deleted accordingly. Please refer to the annex of this document for specific modifications.

# 4. REFERENCEs

1. *R-101-Ed.2-Marine-Radar-Beacons-Racons*
2. *ENAV20-13.8 Proposal for reformatting Recommendation R-101*
3. *ENAV20-13.8.2 Draft IALA Guideline 11xx (to accompany Recommendation R-101)  
   Marine Radar Beacons (racon)*
4. *ENG19-9.2.2.4.1 R0146 Strategy for Maintaining racon Service Capability   
   (e-NAV-146)*
5. *Recommendation ITU-R M.824-4 (02/2013) Technical parameters of radar beacons*
6. *ENG17-3.1.1.14 Proposal on R0101 Marine radar beacons modification*

# 5.ACTION REQUESTED OF THE COMMITTEE

The ENG Committee is invited to consider the information provided and take action, as appropriate.

1. Leave open if uncertain [↑](#footnote-ref-1)