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11 – TECHNICAL ACTIVITIES

11.3 – ENG Committee

Draft liaison note to CIRM regarding Racons in busy harbours

Note by the Secretariat

INTRODUCTION

The Committee completed a liaison note to CIRM that continues the dialog started from an earlier note by IALA on 'The effects of radars on Racons in busy harbours' and the response from CIRM.

This additional response by IALA clarifies and expands on IALA original request and includes comments from the ARM Committee.

THE COUNCIL IS REQUESTED TO

Approve forwarding the liaison note, as it appears as an Annex to this document, to CIRM.



Liaison Note to CIRM

On the Effect of Radars on Racons in Busy Harbours

1. Introduction

IALA thanks CIRM for their Liaison Note LN-IALA-29032018 of 29 March 2018 on the effect of radars on racons in busy harbours. IALA appreciates CIRM's time and welcomes their comments.

2. Discussion

IALA recognises the difficulties inherent in magnetron radar design and proposes future discussion be limited to solid state radars.

However, the concern remains that solid state techniques could create a worse case whereby all new radars are at precisely the same frequency, potentially rendering racons useless in many instances, not just busy harbours.

CIRM posed three questions:

- 1 *Could racon manufacturers design future products or upgrades to existing products to operate with solid-state X-Band radars, and if so, would doing so involve more than just increasing receiver sensitivity? (As part of this exercise we have found that at least one manufacturer is marketing a racon that is reportedly able to operate fully with X-Band solid-state radars)?*

Yes, racon manufacturers can do a number of things to assist compatibility. The particular racon manufacturer mentioned is using a different technique for side lobe suppression than the traditional, which shows promise in busy harbours.

The statement "operate fully with X-Band solid state radars" needs some definition. The racon can only demodulate and respond to one method of modulation option (linear swept frequency) and will fail when used with radars that apply other modulation options. This problem was identified many years ago at IALA (IALA Recommendation e-NAV-146 On Strategy for Maintaining Racon Service Capability). Racon manufacturers can certainly be compatible with one modulation option, but it is impractical or impossible for manufacturers to design their racons to be compatible with all possible modulation options.

- 2 *Could the benefit to navigational safety associated with racons – particularly in the highly congested areas where we see problems today – be provided more economically, and with less regulatory burden, through other means (e.g. shipborne AIS and AtoN services)?*

It is IALA policy that the use of AIS and other AtoN services may supplement the use of racons but cannot act as direct replacements and that the use of radar in combination with racons forms a critical component of robust navigation in coastal and harbour areas, particularly in poor visibility (IALA Recommendation e-NAV-146 On Strategy for Maintaining Racon Service Capability).

Decisions regarding the deployment of any AtoN should include consideration of the type and density of traffic and would be on the basis of an appropriate risk assessment.

- 3 *Could the GLA be approached to undertake a further trial of racon performance using non-SOLAS solid state X-Band radars?*

This would be an interesting experiment and IALA will consider it.



3. Moving Forward

Recapitalisation timeframes for racon owners/operators are on the same order of time as recapitalisation for radar owners/operators. It is understood that significant relief for racon/solid state radar issues will take some time to resolve in the field.

Current ITU (ITU-R M.824) and IALA racon (R-101) Recommendations require racons to respond to any signal within the two 200 MHz wide radar bands. However, it is observed that radar centre frequencies occur within a narrower range. Some improvement in racon receiver sensitivity can be easily accomplished within narrower receiving bands, if the narrower ranges can be identified and would be consistent over time.

Please note that this work has been moved from the e-Navigation committee to the AtoN Engineering and Sustainability Committee (ENG). IALA welcomes further liaison.

4. Action requested

CIRM is requested to:

- 1 Continue to consider ways in which radars can use a large number of discrete frequencies. Please note that channels as closely spaced as 250 kHz would give significant relief.
- 2 Enumerate and describe the modulation methods that are likely to be applied by X-Band solid state radars.
- 3 Consider how much of the width of the X-Band allocation would actually be used as a practical matter.