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| From: ENG | ENG18-13.2.3 |
| To: MASS Task Force | 18 April 2024 |

LIAISON NOTE

On the Use of Enhanced Radar Positioning Systems for MASS Navigation

# INTRODUCTION

A system known as Enhanced Radar Positioning System (ERPS) uses specially modified racons (eRacons) with specially modified radars (eRadars) to allow radars to automatically calculate absolute position. In this system, eRacons provide their unique identification and absolute position encoded on their response signals to eRadars, which use these signals to calculate their own vessels’ positions. The system is independent from Global Navigation Satellite System (GNSS) and could be used to provide local backup positioning service (as defined by IALA Guideline G1180 *Resilient Position, Navigation and Timing (PNT)* Section 5.2).

ERPS as a backup positioning service to GNSS is interesting and perhaps useful for autonomous navigation.

IALA Guideline G1147 *The Use of Enhanced Radar Positioning Systems* describes EPRS in detail.

# ERPS AS A RADAR TARGET IDENTIFICATION SYSTEM

As an example, a MASS navigation system can be conceived that uses fused video and radar images in comparison to ENC data for safe navigation. The conceived system relies on relative observations rather than absolute positioning and may preferred during certain manoeuvres. However, ambiguity in the video or radar images could lead to position confusion and poor performance. An easily overlooked feature of ERPS is that eRacons provide unambiguous landmark identification (independent from GNSS). Having this data could reduce the risk of using the example navigation system.

# ACTION REQUESTED

The MASS Task Force is requested to take note of the capabilities of ERPS and to include EPRS in MASS planning as appropriate.