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| From: ARM8 | ARM8-12.1.6 |
| To: ENG9 and ENAV23 | 24 October 2018 |

LIAISON NOTE

VDES R-Mode System Requirements

# Introduction

ARM received communication from ENG as input to ARM8 (ARM8 9.14) on VDES R-Mode system requirements and was requested to:

1. Note the discussions captured in this liaison note and that of ENG08-11.13.
2. Review the backup requirements provided in the annex of R-129 to ensure they remain valid.
3. Consider a suitable use case/scenario where R-Mode VDES can be used, and to identify whether it should be considered a redundant, backup or contingency system, as defined in R-129.
4. Provide thoughts back to both the ENAV and ENG Committees.

# Note the discussions captured in this liaison note and that of ENG08-11.13.

Noted

# Review the backup requirements provided in the annex of R-129 to ensure they remain valid

The backup requirements of R-129 are derived from IMO A.915(22) and as such would be difficult to revise in the timescale of this response. ARM considers that a further wider consideration of requirements for backup systems is needed (and also primary systems), but this is beyond the scope of ARM and indeed IALA and would require the considered debate within other bodies such as the IMO. In the timescales of this response however, ARM considers that the requirements remain valid.

# Consider a suitable use case/scenario where R-Mode VDES can be used, and to identify whether it should be considered a redundant, backup or contingency system, as defined in R-129

Further reference to IMO A.915(22) is made. In that document, specific use cases are tabulated in appendix 3 and to provide consistency, these should be used for IALA use cases. R-Mode (of any variety) should be considered as a “backup” to GNSS as defined in R-129 as the full functionality of GNSS is not required and R-Mode is therefore not considered as a fully “redundant” system.

# Provide thoughts back to both the ENAV and ENG Committees

It seems that requirements for use cases and user requirements are now being sought after system requirements have been derived. This really should happen the other way around; however, it is recognised that engineering has overtaken users in the provision of back-up systems for GNSS vulnerability.

From a user perspective, a navigator experiencing a primary positioning system failure, might consider an R-mode based system (or indeed any other back up system) of lesser accuracy is better than having no backup. The value to the mariner is dependent on accuracy, combined with flagged status/error messages when set values are triggered.

# Action requested

The ENG and ENAV Committees are requested to note the response.