

The background of the slide is a deep blue space scene. On the left, the curved horizon of the Earth is visible, showing continents and clouds. In the upper center, a bright sun or star is partially obscured by a dark, circular shadow, creating a lens flare effect. The rest of the background is filled with a field of small, distant stars.

NORTHROP GRUMMAN

DEFINING THE FUTURE

Radar Regulations SOLAS & IEC

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OVERVIEW



- Current IEC Regulations
- Current SOLAS Regulations
- Future IEC Regulations
- Future SOLAS Regulations

Radar Performance Standards (current)

- **Environmental Requirements – IEC 60945 4th edition**
- **Performance Requirements – IEC 60936-1 & IEC 936(1988)**
- **High Speed Craft Requirements – IEC 60936-2**
- **ARPA Performance Requirements – IEC 60872-1 & IEC872(1987)**
- **ATA Performance Requirements – IEC 60872-2**
- **EPA Performance Requirements – IEC 60872-3**
- **Use and Display of AIS - IEC/PAS 60936-5**
- **All Products carry the wheelmark**
- **ITU Regulations general**

Current Carriage Requirements: Standard Speed Vessels from 1st July 2002

| Radar Carriage Requirements (Minimum) | | | | | | |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|---|
| From 1 July 2002 (Standard Vessels) | | | | | | |
| Type of Vessel | 0 to 300 GT | 300 to 500 GT | 500 to 1,000 GT | 1,000 to 3,000 GT | 3,000 to 10,000 GT | Above 10,000 GT |
| Passenger | 1 x 180 EPA X Band | 1 x 180 EPA X Band | 1 x 180 ATA X Band | 1 x 250 ATA X band | 1 x 250 ATA X Band + 1 x 250 ATA S Band | 1 x 340 ATA (X or S Band) + 1 x 340 ARPA (S or X Band) |
| Cargo | | 1 x 180 EPA X Band | 1 x 180 ATA X Band | 1 x 250 ATA X band | 1 x 250 ATA X Band + 1 x 250 ATA S Band | 1 x 340 ATA (X or S Band) + 1 x 340 ARPA (S or X Band) |

Note 1: From 1 July 2002 where it is mandatory to fit two radars one must be X Band (9 GHz) and one must be S Band (3 GHz) unless the local administration states that two X band radars are permissible.

Note 2: From 1 July 2002 all new buildings must comply with the new carriage rules. Existing tonnage does not need to change the radar fit unless any part of the existing radar fit is to be changed or modified in which case the new fit must be extended to comply with the new regulations. At this time there is no final deadline set for all existing tonnage to comply.

Note 3: ARPA may be fitted in place of ATA or EPA

Note 4: ATA may be fitted in place of EPA

Current Carriage Requirements: High Speed Craft



| Radar Carriage Requirements (Minimum) | | | |
|--|---|---|---|
| Current and Future Situation (High Speed Craft) | | | |
| Type of Vessel | 0 to 500 GT | 500 to 10,000 GT or to carry > 450 pass. | Above 10,000 GT |
| Passenger | 1 x Colour 250 ATA or ARPA X Band | 2 x 250 Colour Displays At least one display must be ATA or ARPA 1 x X Band & 1 x S Band | 2 x 340 Colour Displays At least one display must be ATA or ARPA 1 x X Band & 1 x S Band |
| Cargo | 1 x Colour 250 ATA or ARPA X Band | 2 x 250 Colour Displays At least one display must be ATA or ARPA 1 x X Band & 1 x S Band | 2 x 340 Colour Displays At least one display must be ATA or ARPA 1 x X Band & 1 x S Band |

Note 1: Where two radars are specified one must always be X Band the other should be S Band unless the local administration permits a second X Band.

Note 2: The HSC code as it exists and as it is being amended does not make specific reference to vessels over 10,000 GT but our interpretation is based upon the IMO's desire to bring the relevant part of the HSC Code (Chapter 13) in line with Chapter V of the revised edition of SOLAS.

Changes to Radar Performance Standards

- **Current Radar Systems tested against –**
 - IEC 60936-1 Standard Craft
 - IEC 60936-2 High Speed Craft
 - IEC 60936-3 Chart Radar
 - IEC PAS 60936-5 AIS
 - IEC60872-1 ARPA
 - IEC60872-2 ATA
 - IEC60872-3 EPA
 - IEC60945 – General Requirements
- **As from July 2008 the above Standards are replaced by the following:**
 - IEC 62388 -a single Radar Performance Standard IEC62388. This changed was introduced in response to IMO Resolution MSC.192(79)
 - IEC62288 - a harmonised specification for colours and symbology for Radar & ECDIS
 - IEC60945 – Climatic performance remains unchanged

Major Changes to the Radar Standards

- Defines in more detailed long range detection requirements.
- Will include tests for small target detection in sea and rain clutter. (e.g. 4mm and 16mm of rain per hour and sea states 2 and 5).
- For HSC, bearing discrimination will be 2.5°. (Currently 4°)
- EPA, ATA & ARPA disappear
- On larger radar the minimum radar circle reduces from 340mm to 320mm. (250 & 180 remain unchanged)
- More demanding ARPA scenarios
- Mandatory introduction of the Consistent Common Reference Point (CCRP)
- The retention of trails (or history dots) after a range change.
- Greater emphasis on product documentation
- Colours and symbology harmonised with ECDIS
- New radar types CAT 3, CAT 2 & CAT 1 created.
- The ability to switch immediately between true and relative trails
- The retention of trails following a picture offset or reset.
- ARPA & AIS Association

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BME meets these



BME could have been modified to meet these



BME will not meet these.

VMFT will meet be type approved to all of the new requirements.

SOLAS Applicability



Table 1 – Performance requirements for categories of ship/craft for SOLAS V

| | Category of ship/craft | | |
|--|------------------------|---|-------------------------------|
| | CAT 3 | CAT 2 | CAT 1 |
| Size of ship/craft | <500 gt | 500 gt to <10 000 gt and HSC<10 000 gt | All ships/craft ≥10 000 gt |
| Minimum operational display area diameter | 180 mm | 250 mm | 320 mm |
| Minimum display area | 195 mm x 195 mm | 270 mm x 270 mm | 340 mm x 340 mm |
| Auto acquisition of targets | - | - | Yes |
| Minimum <u>acquired</u> radar target capacity | 20 | 30 | 40 |
| Minimum <u>activated</u> AIS target capacity | 20 | 30 | 40 |
| Minimum <u>sleeping</u> AIS target capacity | 100 | 150 | 200 |
| Trial manoeuvre | - | - | Yes |
| NOTE The processing capacity of AIS information should be in accordance with 10.5.2. | | | |

Timetable



- MSC Adoption **MSC.192(79)** Adopted
- FDIS Available Issued Nov 07
- Type Approval can commence December 07
(NGSM have commenced Type Approval and expect completion for VMFT in Q2 of 2008)
- Last date for existing radars July 2008
- New installations must be to new standard Jul 2008
- EPA, ATA, ARPA become obsolete Jul 2008

It is not clear at this time how and if the above date will be enforced by all Administrations.

GL = No exemptions....

BSH = ...MED takes precedence

IMO RESOLUTION MSC.192(79) (adopted on 6 December 2004)



“

- 1. ADOPTS the Revised Recommendation on performance Standards for radar equipment set out in the Annex to the present resolution;**
- 2. RECOMMENDS Governments to ensure that radar equipment installed on or after 1 July 2008 conform to performance standards not inferior to those set out in the Annex to the present resolution**

.....”

..... amending the Council Directive 96/98/EC on marine equipment

Article 2

Equipment listed as 'new item' under the heading 'item designation' of Annex A.1 which was manufactured before the date referred to in Article 3(1) in accordance with procedures for type-approval already in force before the date of adoption of this Directive within the territory of the Member State mentioned below, as well as equipment listed in Annex A.1, Sections 4 and 5, bearing the mark and manufactured before the date referred to in Article 3(1), may be placed on the market and on board a Community ship, the certificates of which were issued by or on behalf of a Member State in accordance with international conventions, during the two years following that referred to in Article 3(1).

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