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NATO STANDARDIZATION AGENCY
AGENCE OTAN DE NORMALISATION

NSA

MILITARY COMMITTEE MARITIME STANDARDIZATION BOARD (MCMSB)

7 September 2011 NSA(NAVAL)0869(2011)HOS/1472

MCMSB

STANAG 1472 HOS (EDITION 1) - NVD COMPATIBLE FLIGHT DECK STATUS DISPLAYS ON SINGLE SPOT SHIPS

Reference:
NSA(NAVAL)1007(2009)HOS/1472 of 19 November 2009 (Edition 1) (Ratification Draft 1)

1. The enclosed NATO Standardization Agreement, which has been ratified by nations as reflected in the NATO Standardization Document Database (NSDD), is promulgated herewith.

2. The reference listed above is to be destroyed in accordance with local document destruction procedures.

ACTION BY NATIONAL STAFFS

3. National staffs are requested to examine their ratification status of the STANAG and, if they have not already done so, advise the MCMSB, NSA, through their national delegation as appropriate of their intention regarding its ratification and implementation.

Cihangir AKSIT, TUR Civ
Director, NATO Standardization Agency

Enclosure:
STANAG 1472 HOS (Edition 1)

NATO Standardization Agency - Agence OTAN de normalisation
B-1110 Brussels, Belgium Internet site: http://nsa.nato.int
E-mail: naval@nsa.nato.int - Tel 32.2.707.5599 - Fax 32.2.707.5718

STANAG 1472
(Edition 1)

NORTH ATLANTIC TREATY ORGANIZATION
(NATO)

NATO STANDARDIZATION AGENCY
(NSA)

STANDARDIZATION AGREEMENT
(STANAG)

SUBJECT: NVD COMPATIBLE FLIGHT DECK STATUS DISPLAYS ON SINGLE SPOT SHIPS

Promulgated on 7 September 2011

Cihangir AKSIT, TUR Civ
Director, NATO Standardization Agency

RECORD OF AMENDMENTS

No.	Reference/date of Amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This STANAG is promulgated by the Director NATO Standardization Agency under the authority vested in him by the NATO Standardization Organisation Charter.

2. No departure may be made from the agreement without informing the tasking authority in the form of a reservation. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.

3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

4. Ratification, implementation and reservation details are available on request or through the NSA websites (internet http://nsa.nato.int; NATO Secure WAN http://nsa.hq.nato.int).

FEEDBACK

5. Any comments concerning this publication should be directed to NATO/NSA – Bvd Leopold III - 1110 Brussels - Belgium.

STANAG 1472
(Edition 1)

NATO STANDARDIZATION AGREEMENT (STANAG)

NVD COMPATIBLE FLIGHT DECK STATUS DISPLAYS ON SINGLE SPOT SHIPS

Annexes: A. Single Colour Fashing Light Status Display
B. Three Colour Light with Symbology Status Display

Related documents:

APP-2	-	Helicopter Operations from Ships Other Than Aircraft Carriers
Mil-STD-3009	-	Lighting, Aircraft, Night Vision Imaging System (NVIS) Compatible

AIM

1. The aim of this agreement is to limit divergence in the design of NVD compatible Flight Deck status displays so that the maximum possible commonality between cross operating nations is achieved.

AGREEMENT

2. Participating nations agree to adopt one of the two methods, given in the annexes, of providing NVD compatible pilot information through Flight Deck status displays on single spot ships. They further agree to conform to the relationship between flash rates and/or symbology designed to be NVD compatible and the colour of displays.

BACKGROUND

3. Status displays in the form of a Red and Green light to control the launch and recovery of helicopters from single spot ships have existed for many years. The increase in maritime deck operations using NVD and, in some cases, an evolution towards ‘unmanned’ Flight Decks has necessitated the development of more complex status displays. Some nations have already developed such Flight Deck status indicator lighting systems and several other nations envisage a similar requirement for future ship programmes. To promote commonality and to avoid divergence from systems already developed; this STANAG provides the basis for the design of complex and NVD compatible Flight Deck status displays on single spot ships.

4. The focus of this STANAG is directed at single spot ships as many nations operating multi spot ships already have status displays that serve a similar but not

equivalent function. This STANAG does not address multi spot ship status displays, although the principles may be applied.

METHODS

5. Information can be passed to the pilot via a visual lighting system in one of three ways:

a. By using different coloured lights.

b. By using different flash rates of a single or multi coloured light.

c. By employing different shaped single or multi coloured lights.

As present NVD systems cannot detect colour, one of the second two options must be utilised if NVD compatibility is required. Annex A gives details of a single colour flashing status display and Annex B gives details of a three colour with symbology display.

TERMINOLOGY

6. The following terms apply to all Flight Deck status displays:

a. Flight Deck Status Display: A light emitting display designed to indicate the status of the flight deck. There are generally three types of indications; Clear Deck, Caution Deck and Foul Deck.

(1) Clear Deck: The flight deck is clear from obstructions and permission to land or take off is given. This is often referred to as a “Green Deck”.

(2) Caution Deck: The aircraft is on deck and permission is given to start up or engage/disengage rotors. This is often referred to as a “Yellow Deck”.

(3) Foul Deck: A fouled deck or wave off situation exists and landing or takeoff is prohibited. This is often referred to as a “Red Deck”.

IMPLEMENTATION OF THE AGREEMENT

7. This STANAG is implemented when the forces concerned have received the equipment covered by this agreement and are ready to use it.

ANNEX A to
STANAG 1472
(Edition 1)

SINGLE COLOUR FLASHING LIGHT STATUS DISPLAY

Definitions:

Flashing Rates: The on/off rate of the display in Hertz (Hz).

Duty Cycle: The ratio between the on and off times in a flashing display (on-time/off-time).

Beam Spread of a Colour Sector: The included vertical and horizontal angles to the 10% intensity points of the illuminated colour.

NRIa: Night Radiant Intensity Type 1 Class A as defined in SAE ARP 4392 (Lighting, Aircraft Exterior, Night Vision Imaging System (NVIS) Compatible) and MIL-STD-3009 (Lighting, Aircraft, Night Vision Imaging System (NVIS) Compatible)

NOMENCLATURE

1. The Deck Status Light shall be designated as type ‘single colour flashing’.

CHARACTERISTICS

2. The flashing light shall be monochrome with a flash rate between 1.4 and 2 Hz to indicate RED deck and steady to indicate GREEN deck. (Yellow is not represented in this system) The duty cycle shall be 1:1. The location of this light is to be very carefully considered in order to avoid confusion with the GSI and other lighting systems. It is best fitted on the opposite side of the ship to the GSI. Procedures should be put in place to mitigate the risk of confusion eg: the GSI should be switched off once the aircraft is visual with the landing area.

VERTICAL BEAM SPREAD

3. The vertical beam spread of the light shall be no less than 9 degrees.

HORIZONTAL BEAM SPREAD

4. The horizontal beam spread of the light shall not be less than 40 degrees. The vertical plane through the center of the beam shall be directed to the desired approach or for multiple approaches be split between approach angles.

INTENSITY

5. The peak intensity of the light shall be as required by individual nations. The light shall have a maximum intensity of between 1×10^{-3} NRIa and be dimmable down to 5×10^{-6} NRIa prior to extinction.

INITIALIZATION

6. When the deck status light is initially powered on it shall display a foul deck.

INSTALLATION

7. The light shall be mounted such that an approaching aircraft can see it during the final 300' of the approach to touch down on the flight deck. The pilot shall have an uninterrupted view of the light while on deck.

ANNEX B to
STANAG 1472
(Edition 1)

THREE COLOUR LIGHT WITH SYMBOLOGY STATUS DISPLAY

Definitions:

Type Three colour light (RYG) Deck Status Display: This is a three colour traffic light display where the three colours can be arranged vertically one on top of the other or as a combined single unit. Only one light can be on at a time. Yellow is to be steady but Green and Red may flash at rates up to 2 Hz. To avoid the possibility of confusion it is recommended that the rate of flashing for Red be 5 times faster than that for Green.

Type Symbol Deck Status Display: This is a three colour status display that in addition to the colours described above, uses symbols to represent the deck status. The symbols are standardized to be an "O" for a clear deck, a "Δ" (delta) for a caution deck and an "X" for a foul deck. For example:

Flashing Rates: The on/off rate of the display in Hertz(Hz).

Duty Cycle: The ratio between the on and off times in a flashing display (on-time/off-time).

Beam Spread of a Color Sector: The included vertical and horizontal angles to the 10% intensity points of the illuminated colour or symbol.

NRIa: Night Radiant Intensity Type 1 Class A as defined in SAE ARP 4392 (Lighting, Aircraft Exterior, Night Vision Imaging System (NVIS) Compatible) and MIL-STD-3009 (Lighting, Aircraft, Night Vision Imaging System (NVIS) Compatible)

NOMENCLATURE

1. The Deck Status Light shall be designated as type ‘Symbol’.

LIGHT CHARACTERISTICS

2. The Deck Status display shall provide the color configurations described above. The green yellow and red colors of the light signals shall meet ANVIS colour requirements as defined in Mil Std-3009.

3. If flashing colours are required the duty cycle shall be 1:1.

VERTICAL BEAM SPREAD

4. The vertical beam spread of the deck status light shall be no less than 9 degrees.

HORIZONTAL BEAM SPREAD

5. The horizontal beam spread of the deck status light shall not be less than 40 degrees. The vertical plane through the center of the beam shall be directed to the desired approach or for multiple approaches be split between approach angles.

INTENSITY

6. The peak intensity of each of the colours shall be as required by individual nations.

The display shall have a maximum intensity of between 1 $x10^{-3}$ NRIa and be dimmable down to 5 x 10^{-6} NRIa prior to extinction.

INTENSITY BALANCE

7. The peak intensity of the yellow sector of the deck status display shall be not more than three (two preferred) times the peak intensity of either of the other two sectors.

INTENSITY CONTROL

8. The deck status display shall be capable of being dimmed to an intensity suitable for use on a clear dark night.

ANGULAR SUBTENCE OF SYMBOL DISPLAY

9. The angular subtence of the symbol display shall not be less than ten arc minutes (minimum size for recognition) at the desired acquisition range with sixteen arc minutes preferred.

SYMBOL ASPECT RATIO

10. The symbol aspect ratio (height/width) shall be no less than 1.0 with 1.25 preferred.

INITIALIZATION

11. When the deck status light is initially powered on it shall display a foul deck.

INSTALLATION

12. The deck status display shall be mounted such that an approaching aircraft can see the display during the final 300’ of the approach to touch down on the flight deck. The pilot shall have an uninterrupted view of the display while on deck.