

## 5. ANTENNA INSTALLATION

### 5.2 Location of VHF antennas

- ☒ 1. VHF antennas should be placed in a position which is as elevated and free as possible, with at least 2 metres horizontal separation from constructions made by conductive materials.
- ☒ 2. VHF antennas should have a vertical polarisation.
- ☒ 4. The location of mandatory VHF antennas should be given priority compared with mobile telephone antennas. If they are located on the same level, the distance between them should be at least 5 metres.
- ☒ 7. AIS VHF antenna should be installed safely away from interfering high-power energy sources link radar and other transmitting radio antennas, preferably at least 3 metres away from and out of the transmitting beam.
- ☒ 8. The AIS VHF antenna should be mounted directly above or below the ship's primary VHF radiotelephone antenna, with no horizontal separation and with minimum 2 metres vertical separation.  
If it is located on the same level as other antennas, the distance apart should be at least 5 metres.

### 5.3 Location and choice of MF/HF antennas

- ☒ 3. Whip antennas should be installed as vertical as possible and located in an elevated position on the ship at least 1 metre away from conductive structures.
- ☒ 5. The recommended minimum length of the antenna is 8 metres.
- ☒ 6. The down lead from the base of the antenna to the antenna tuner should be insulated and run as vertically as possible and not less than 45° towards the horizontal plane.

### 5.4 Location of antenna tuner for MF/HF transceiver

- ☒ The antenna tuner should normally be located externally (outdoor) and as close to the antenna as possible, and so that the down lead wire/cable from the antenna should be as vertical as possible.

### 5.5 Receiving antennas

- ☒ 1. As a general rule, all receivers including watchkeeping receivers should have their own separate antenna.
- ☒ 2. Antennas for watchkeeping receivers should be located as far away as possible from MF/HF transmitting antennas in order to minimise receiver blocking.

### 5.6 Satellite communication antennas

#### 5.6.2 Satellite communication antenna installation

The following guidelines should be observed in order to fulfil the above recommendations;

- ☒ 1. The antenna should be located at the top of the radar mast; or
- 2. On a pedestal, in the radar mast, or on the top deck so that:
  - for directive antennae; shadows from constructions, especially within a distance of 10 metres, is maximum 6° ;  
(Furuno comment: When Inmarsat-B is GMDSS)
- ☒ - for omnidirectional antennas; shadows from constructions, especially within a distance of 1 metres, is maximum 2° ;
- ☒ 3. Antennae should be installed in a readily accessible location.
- ☒ 4. Satellite antennae should not be located in an area where they can be damaged by heat and smoke.
- ☒ 5. The satellite antenna should not be located on the same plane as the ship's radar antenna.
- ☒ 6. GNSS antennae should not be located close to or on the same plane as the Inmarsat antenna.
- ☒ 7. Consideration should be given to installing the Inmarsat antenna on a suitable pedestal.

Note: - The mast/or pedestal should be constructed so that vibrations are reduce as much as possible.

#### 5.6.3 Safe antenna distances

The following "safe distance" from Inmarsat antenna other antennas and to the compass are recommended:

- ☒ 1. Distance to the HF antenna should be more than 5 metres.
- ☒ 2. Distance to VHF antennas should be more than 4 metres.
- ☒ 3. Distance to the magnetic compass should be more than 3 metres.

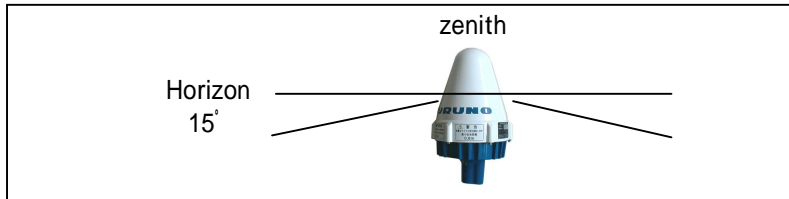
*(The installation manual for the equipment and Inmarsat guidelines)*

#### 5.6.4 Inmarsat-C antenna

**OK** The antenna should be constructed so as to function up to 15° pitch and roll.

In order to obtain this result, the antenna should be located in such position that on objects or constructions down to 15° below the horizon are degrading the performance of the equipment.

Note: - As it may be difficult to fulfil this recommendation in fore-and-aft, the free area in this direction may be reduced to 5° below the horizon.

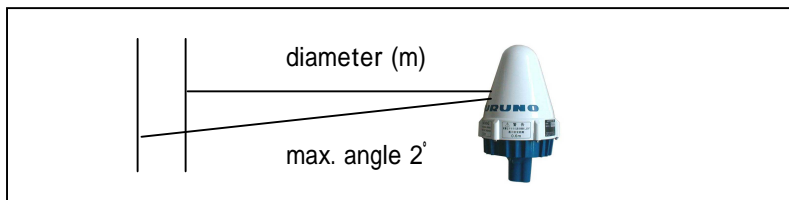


#### 5.6.5 Calculation of distance to obstructions:

**OK** If obstructions such as i.e. mast, funnel etc. is unavoidable, the following guidelines should apply:

The distance to the obstruction should be so that the obstruction only covers a 2° sector.

Note: - In such case the safe distance will be the following: 20 x the diameter of the obstruction (in metres).



**✗** If two Inmarsat-C antenna are installed the vertical distance between them should be at least 1 metre to eliminate interference.

#### 5.6.7 Antennas for voluntary radio equipment

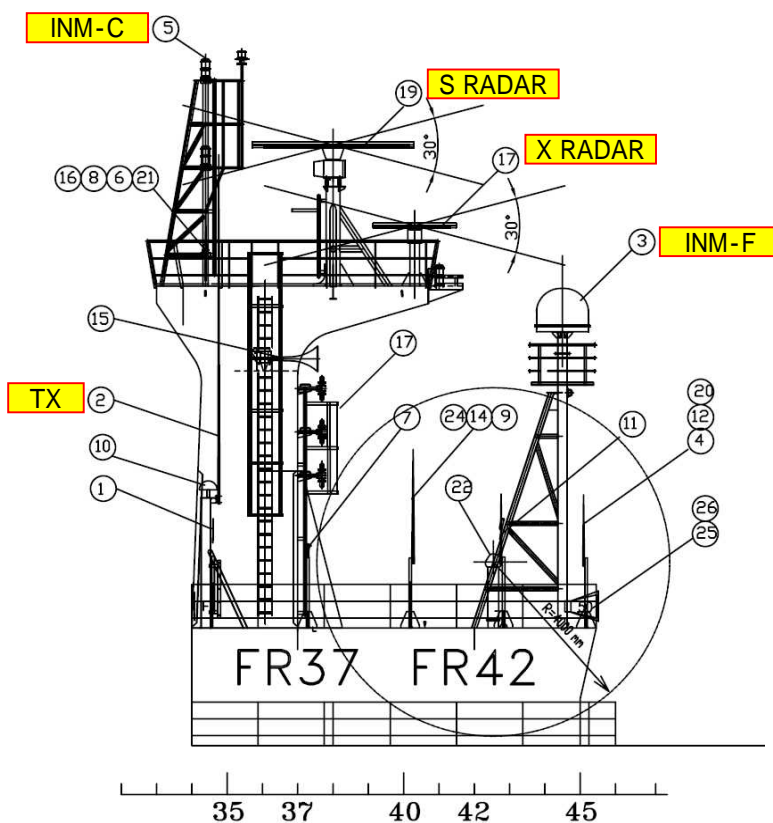
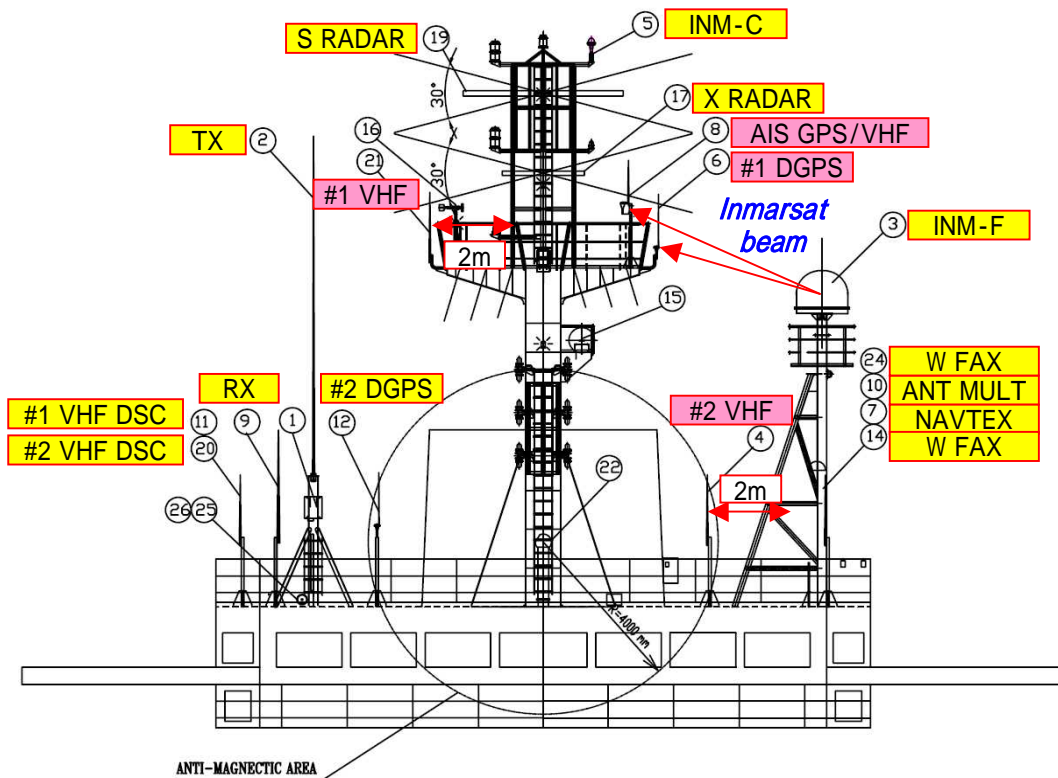
**OK** Antennas for voluntary radio equipment may be located on deck, provided its use does not interfere with antennas of mandatory radio equipment.

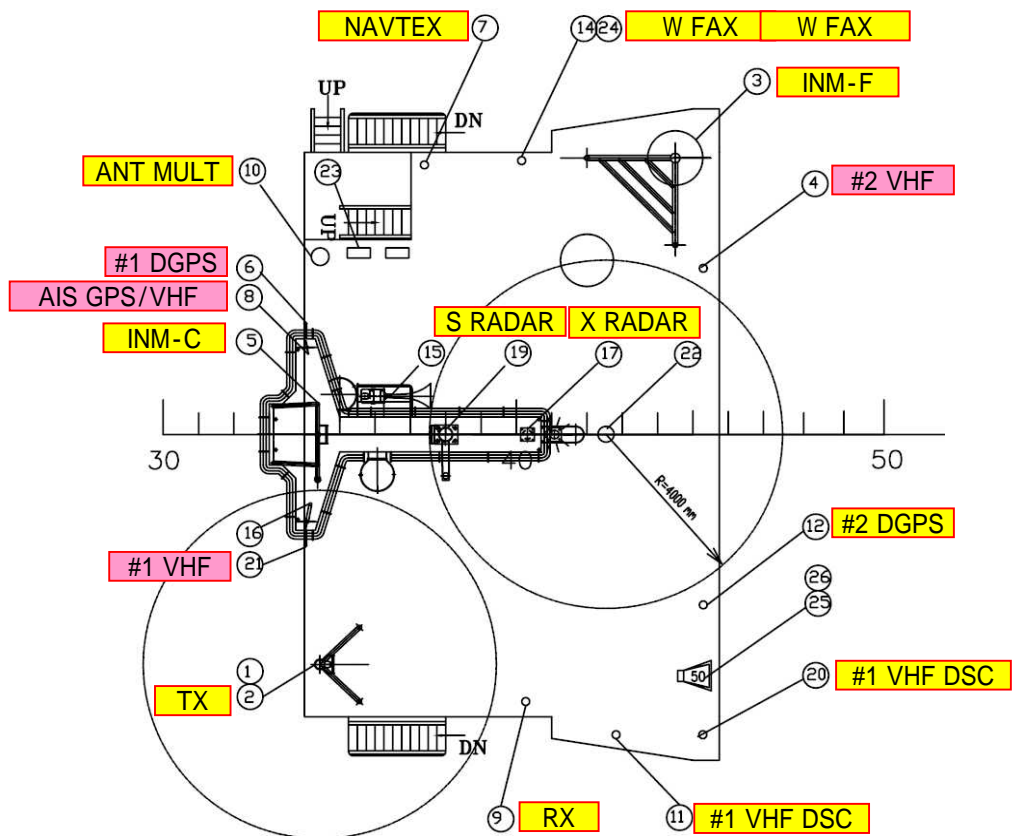
When mobile telephone is installed on board ship, special attention should be made to the facts that some types of mobile telephones (especially GSM telephone equipment) may interfere with the ship's navigational equipment (especially GNSS) and other electronic equipment.

26		JUNCTION BOX FOR 50W LOUD SPEAKER 50W JUNCTION BOX		JIS4-6	1	YARD
25		50W LOUD SPEAKER スピーカー		SP-50T	1	NHE
24		WEATHER FAX PREAMPLIFIER 気象ファクプリアンプ		FAX-5	1	FURUNO
23		VDR RECORDING UNIT VDRレコーダ		VR-5020-6	1	FURUNO
22		MAGNETIC COMPASS 磁気コンパス			1	TKC
21		#1 VHF ANTENNA #1 VHF アンテナ		CX-4 1.26m WHIP	1	FURUNO
20		#2 VHF ANTENNA (OSC) #2 VHF アンテナ		CX-4 1.26m WHIP	1	FURUNO
19		S BAND RADAR ANTENNA Sバンドレーダー		SN-36AF 12 FEET	1	FURUNO
18						
SER NO.	シンボル	名前	MAX HEIGHT (m) (地上高)	SPEC & TYPE 仕様・型式	QTY 数量	REMARKS 備考

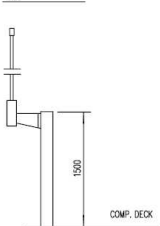
17		X BAND RADAR ANTENNA Xバンドレーダー		XN-24AF 8 FEET	1	FURUNO
16		WIND DIRECTION / SPEED TRANSMITTER 気象計		B79-3C	1	DEF
15		AIR HORN 汽笛		AC220V A200ESH-B	1	IBUKI
14		WEATHER FAX ANTENNA 気象ファクアンテナ		2.6m	1	FURUNO
13		WATERLIGHT JUNCTION BOX 水灯接続ボックス		JB-20	1	FURUNO
12		#2 DGPS ANTENNA #2 DGPSアンテナ		GPS-01B3	1	FURUNO
11		#2 VHF ANTENNA (OSC) #2 VHF アンテナ		CX-4 1.26m WHIP	1	FURUNO
10		ANTENNA MULTICOUPLER ANTENNA アンテナマルチクーラー		MA-11E OMNI DIRECTION	1	OKI
9		RECEIVING ANTENNA 受信アンテナ		04S4176/FAX-S 2.6 m WHIP	1	FURUNO
8		AIS VHF / GPS COMBINED ANTENNA AIS VHF / GPS 統合アンテナ		GVA-100	1	FURUNO
7		NAVTEX ANTENNA NAVTEX アンテナ		NX-7H 0.5m WHIP	1	FURUNO
6		#1 DGPS ANTENNA #1 DGPSアンテナ		GPS-01B3	1	FURUNO
5		INMARSAT C ANTENNA インmarsat C アンテナ		IC-115	1	FURUNO
4		#2 VHF ANTENNA #2 VHF アンテナ		CX-4 1.26m WHIP	1	FURUNO
3		INMARSAT F ANTENNA インmarsat F アンテナ		SF-170	1	FURUNO
2		TX ANTENNA 送信アンテナ		FS-5000 8m	1	FURUNO
1		ANTENNA TUNER		AT-5000	1	FURUNO

1	<div> <div>AT</div> </div>	ANTENNA TUNER アンテナ		AT-5000	1	FURUNO
SER NO. シリアル	SYMBOL 記号	NAME 名前	MAX. HEIGHT(m) (最大高)	SPEC & TYPE 仕様・型式	Q'TY 数量	REMARKS 備考

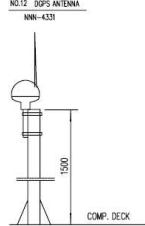




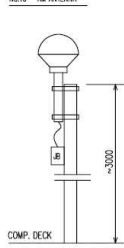
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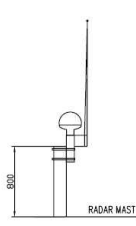
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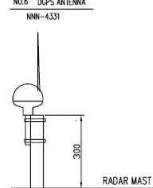
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(NO.10)AS ANTENNA



NO.6



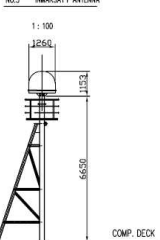
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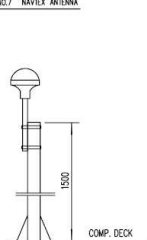
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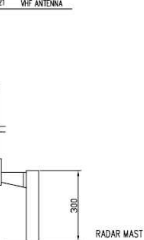
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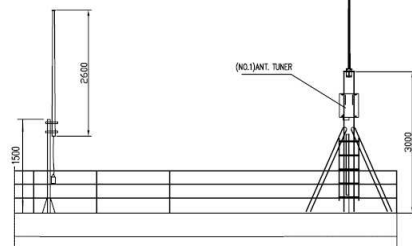


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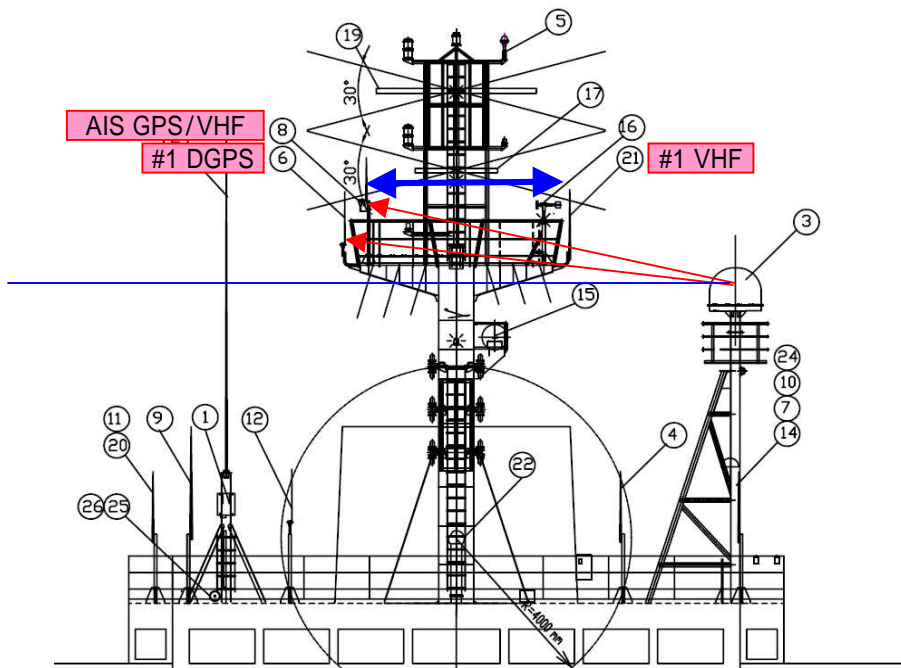
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RX ANTENNA

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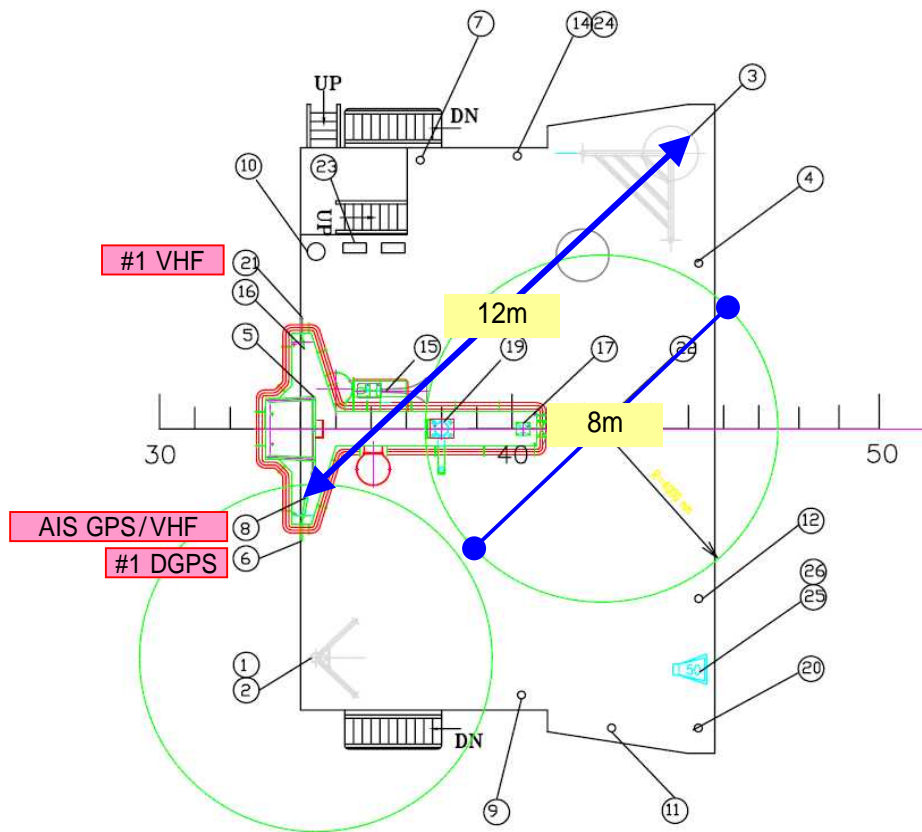






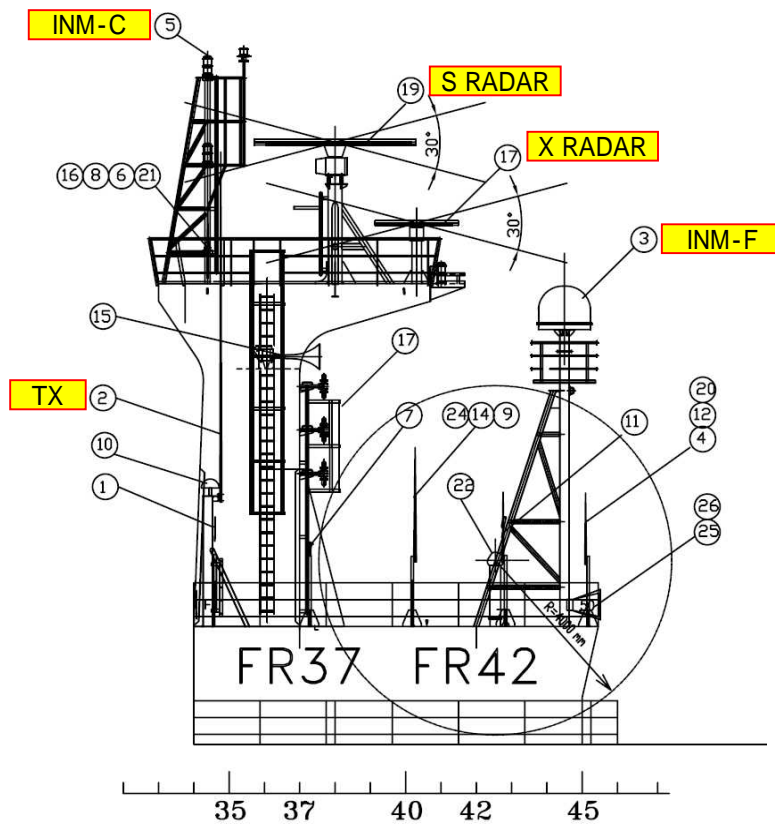
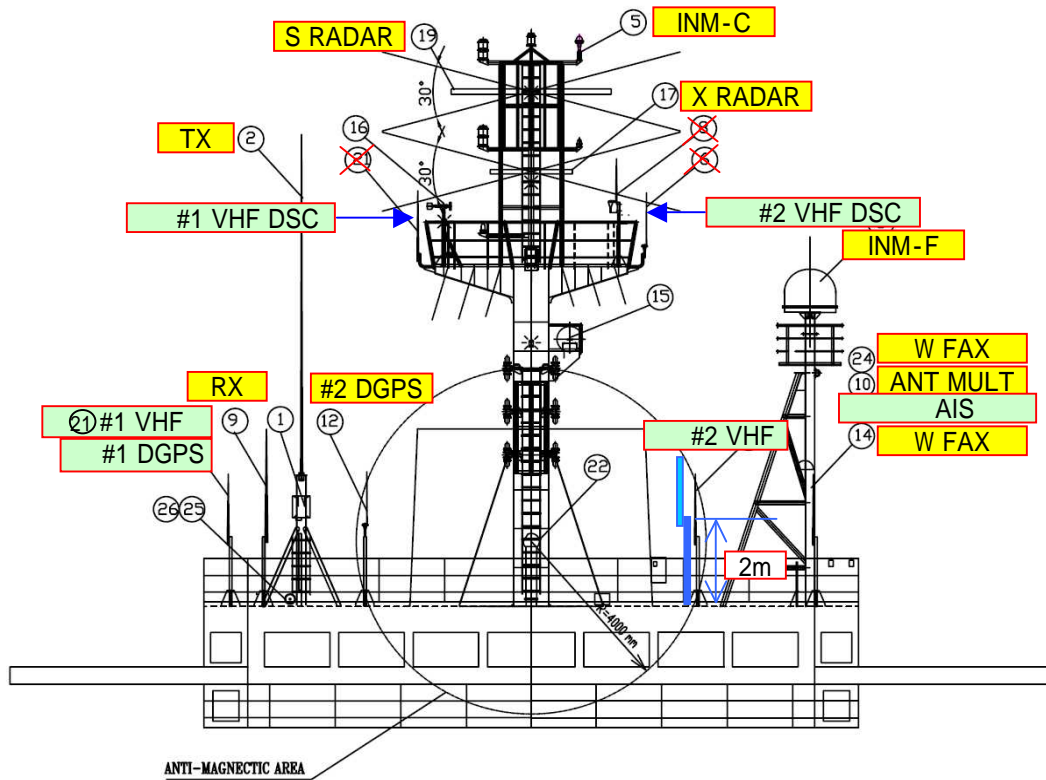
*Modification 20050802*

## *Modification 20050802*









**Furuno Recommend**

