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Position report

Submitted by jvgils on Sat, 01/24/2015 - 13:02

Physical link: AIS

msg_ID: 3

Extended description: Special position report, response to interrogation; (Class A shipborne mobile eq

Priority: 1

Access scheme: RATDMA

Communication state: ITDMA

Transmitted by: Mobile station

Parameter	Number of bits	Description
Message ID	6	Identifier for this Message 1, 2 or 3
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	Unique identifier such as MMSI number
Navigational status	4	0 = under way using engine, 1 = at anchor, 2 = not under command, 3 = restricted maneuverability, 4 = constrained by her draught, 5 = moored, 6 = aground, 7 = engaged in fishing, 8 = under way sailing, 9 = reserved for future amendment of navigational status for ships carrying DG, HS, or MP, or IMO hazard or pollutant category C, high speed craft (HSC), 10 = reserved for future amendment of navigational status for ships carrying dangerous goods (DG), harmful substances (HS) or marine pollutants (MP), or IMO hazard or pollutant category A, wing in ground (WIG); 11 = power-driven vessel towing astern (regional use), 12 = power-driven vessel pushing ahead or towing alongside (regional use); 13 = reserved for future use, 14 = AIS-SART (active), MOB-AIS, EPIRB-AIS 15 = undefined = default (also used by AIS-SART, MOB-AIS and EPIRB-AIS under test)

Parameter	Number of bits	Description
Rate of turn ROTAIS	8	<p>0 to +126 = turning right at up to 708° per min or higher 0 to –126 = turning left at up to 708° per min or higher Values between 0 and 708° per min coded by $ROT_{AIS} = 4.733 \text{ SQRT}(ROT_{\text{sensor}})$ degrees per min where ROT_{sensor} is the Rate of Turn as input by an external Rate of Turn Indicator (TI). ROT_{AIS} is rounded to the nearest integer value. +127 = turning right at more than 5° per 30 s (No TI available) –127 = turning left at more than 5° per 30 s (No TI available) –128 (80 hex) indicates no turn information available (default). ROT data should not be derived from COG information.</p>
SOG	10	<p>Speed over ground in 1/10 knot steps (0-102.2 knots) 1 023 = not available, 1 022 = 102.2 knots or higher</p>
Position accuracy	1	<p>The position accuracy (PA) flag should be determined in accordance with Table 50 1 = high (± 10 m) 0 = low (>10 m) 0 = default</p>
Longitude	28	<p>Longitude in 1/10 000 min (±180°, East = positive (as per 2's complement), West = negative (as per 2's complement). 181 = (6791AC0_h) = not available = default)</p>
Latitude	27	<p>Latitude in 1/10 000 min (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement). 91° (3412140_h) = not available = default)</p>
COG	12	<p>Course over ground in 1/10 = (0-3 599). 3 600 (E10_h) = not available = default. 3 601-4 095 should not be used</p>
True heading	9	<p>Degrees (0-359) (511 indicates not available = default)</p>
Time stamp	6	<p>UTC second when the report was generated by the electronic position system (EPFS) (0-59, or 60 if time stamp is not available, which should also be the default value, or 61 if positioning system is in manual input mode, or 62 if electronic position fixing system operates in estimated (dead reckoning) mode, or 63 if the positioning system is inoperative)</p>
Special manoeuvre indicator	2	<p>0 = not available = default 1 = not engaged in special manoeuvre 2 = engaged in special manoeuvre (i.e. regional passing arrangement on Inland Waterway)</p>
Spare	3	<p>Not used. Should be set to zero. Reserved for future use.</p>

Parameter	Number of bits	Description
RAIM-flag	1	Receiver autonomous integrity monitoring (RAIM) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use. See Table 50
Communication state	19	See Table 49
Number of bits	168	

TABLE 49

Message ID	Communication state
1	SOTDMA communication state as described below table 10
2	SOTDMA communication state as described below table 10
3	ITDMA communication state as described below table 10

The communication state provides the following functions:
it contains information used by the slot allocation algorithm in the SOTDMA concept;
it also indicates the synchronization state.

The SOTDMA communication state is structured as shown in Table 10:

TABLE 10

Parameter	Number of bits	Description
Sync state	2	0 UTC direct (see § 3.1.1.1) 1 UTC indirect (see § 3.1.1.2) 2 Station is synchronized to a base station (see § 3.1.1.3) 3 Station is synchronized to another station based on the highest number of received stations (see § 3.1.1.4)
Slot time-out	3	Specifies frames remaining until a new slot is selected 0 means that this was the last transmission in this slot 1-7 means that 1 to 7 frames respectively are left until slot change
Sub message	14	The sub message depends on the current value in slot time-out as described in Table 11

The SOTDMA communication state should apply only to the slot in the channel where the relevant transmission occurs.

TABLE 11

Slot time-out	Sub message	Description
3, 5, 7	Received stations	Number of other stations (not own station) which the station currently is receiving (between 0 and 16 383)
2, 4, 6	Slot number	Slot number used for this transmission (between 0 and 2 249)
1	UTC hour and minute	If the station has access to UTC, the hour and minute should be indicated in this sub message. Hour (0-23) should be coded in bits 13 to 9 of the sub message (bit 13 is MSB). Minute (0-59) should be coded in bit 8 to 2 (bit 8 is MSB)

Slot time-out	Sub message	Description
0	Slot offset	If the slot time-out value is 0 (zero) then the slot offset should indicate the relative jump to the slot in which transmission will occur during next frame. If the slot offset is zero, the slot should be de-allocated after transmission.

TABLE 50
Determination of position accuracy information

Accuracy status from RAIM (for 95% of position fixes) ⁽¹⁾	RAIM flag	Differential correction status ⁽²⁾	Resulting value of PA flag
No RAIM process available	0	Uncorrected	0 = low (>10 m)
EXPECTED RAIM error is ? 10 m	1		1 = high (?10 m)
EXPECTED RAIM error is > 10 m	1		0 = low (>10 m)
No RAIM process available	0	Corrected	1 = high (?10 m)
EXPECTED RAIM error is ? 10 m	1		1 = high (?10 m)
EXPECTED RAIM error is > 10 m	1		0 = low (>10 m)

(1) The connected GNSS receiver indicates the availability of a RAIM process by a valid sentence of IEC 61162; in this case the RAIM-flag should be set to “1”. The threshold for evaluation of the RAIM information is 10 m. The RAIM expected error is calculated based on “expected error in latitude” and “expected error in longitude” using the following formula:

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(2) The quality indicator in the position sentences of IEC 61162 received from the connected GNSS receiver indicates the correction status.