Annex 1

Met Office Daily ABP Southampton Forecast

Daily Forecast

Tel: 0870 900 0100 www.metoffice.gov.uk

ABP (Ref: MO1)

Forecast Issued on Sunday, 09 March 2008 at 05:24

Forecast for the Solent, Spithead, Southampton Water and the Docks.

General Situation:
Showers will die out during the evening ahead of a front, which will bring heavy rain and gales, perhaps severe, to the Southampton area overnight and though tomorrow.

Wind (Southampton Docks):

	Sunday Mar 9 2008							Monday Mar 10 2008			
Time	**0600**	**0900**	**1200**	**1500**	**1800**	**2100**	**2400**	**0300**	**0600**	**0900**	**1200**
Degrees	230	240	280	240	250	240	200	190	180	240	230
Speed /kn	12	12	12	15	12	12	20	30	40	25	30
Gusts /kn	17	17	17	25	17	17	30	45	60	35	45
Temp	6	7	9	11	7	4	6	7	7	7	8

Forecast valid from 0700 until 1800 hours Today, Sunday.

Wind (General for Solent, Spithead, Southampton Water and the Docks):
Southwest force 3 to 5 (10 to 15kn gusts 25kn in or near showers) veering west to northwest for a time

Weather:
Occasional showers, some heavy, otherwise fair.

Visibility:
Good.

ABP (Ref: MO1)

Forecast Issued on Sunday, 09 March 2008 at 05:24

Forecast valid from 1800 today until 0700 hours tomorrow, Monday.

Wind:
Southwest force 3 or 4 (10 to 15kn) backing southerly force 7 to severe gale 9 (30 to 45kn gusts 45 to 60kn) tonight and veering southwest force 6 to gale 8 (25 to 30kn gusts 35 to 45kn) after dawn.

Weather:
Rain developing, heavy at times.

Visibility:
Moderate or good

Sea area forecast for the 24 hour from 0500 UTC Sunday 09 March 2008

DOVER
SOUTHWEST BACKING SOUTH 5 TO 7, OCCASIONALLY GALE 8, PERHAPS SEVERE GALE 9 LATER. MODERATE OR ROUGH, OCCASIONALLY VERY ROUGH. SHOWERS. MODERATE OR GOOD

WIGHT PORTLAND
WESTERLY 5 TO 7 BACKING SOUTHERLY 7 TO SEVERE GALE 9, PERHAPS STORM 10 LATER. MODERATE OR ROUGH INCREASING VERY ROUGH OR HIGH. SHOWERS THEN RAIN. GOOD BECOMING MODERATE OR POOR

PLYMOUTH
WESTERLY 5 TO 7 BACKING SOUTHERLY 7 TO SEVERE GALE 9, OCCASIONALLY STORM 10 LATER. ROUGH OR VERY ROUGH INCREASING HIGH OR VERY HIGH. RAIN OR SQUALLY SHOWERS. GOOD BECOMING MODERATE OR POOR

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Authorised for issue by Mo Scollay at 0524 UTC 09/03/2008

Annex 2

Bramble Bank remote weather station data

The abbreviations are:

WSPD Wind Speed in knots
WD Wind Direction in degrees
GST Maximum Gust in knots
ATMP Air Temperature in degrees C
WTMP Water Temperature in degrees C
BARO Barometric Pressure in millibars
DEPTH Water depth in metres
AWVHT Average Wave Height in metres
MWVHT Maximum Wave Height in metres
WVHT Significant Wave Height in metres
APD Average Wave Period in seconds

BRAMBLEMET Archive

DATE	TIME	WSPD	WD	GST	ATMP	WTMP	BARO	DEPTH	AWVHT	MWVHT	WVHT	APD
10/03/2008	00 00	22 3	199	29.9	08.1	08.6	990.5	5.05	0.03	0.03	-1000.00	-1000.00
10/03/2008	00 05	23.1	196	30.9	08.1	08.6	990.1	5.07	0.03	0.04	-1000.00	-1000.00
10/03/2008	00:10	23 0	196	30.2	08.1	08.6	990.1	5.07	0.03	0.03	-1000.00	-1000.00
10/03/2008	00:15	21.1	195	26.7	08.0	08.5	989.9	5.07	0.03	0.03	-1000.00	-1000.00
10/03/2008	00 20	20.7	194	26.5	08.0	08.5	989.9	5.06	0.03	0.03	-1000.00	-1000.00
10/03/2008	00 25	21 3	196	32.3	08.0	08.5	989.6	5.06	0.03	0.03	-1000.00	-1000.00
10/03/2008	00 30	22 9	196	29.9	08.1	08.5	989.5	5.06	0.04	0.04	-1000.00	-1000.00
10/03/2008	00 35	22 6	193	28.8	08.0	08.5	989.3	5.06	0.04	0.04	-1000.00	-1000.00
10/03/2008	00:40	23 2	194	29.8	08.1	08.5	989.0	5.06	0.04	0.04	-1000.00	-1000.00
10/03/2008	00:45	25 8	189	34.0	08.1	08.5	988.8	5.06	0.04	0.04	-1000.00	-1000.00
10/03/2008	00 50	25 3	190	33.1	08.1	08.5	988.7	5.05	0.03	0.04	-1000.00	-1000.00
10/03/2008	00 55	23.7	190	33.1	08.0	08.5	988.7	5.04	0.03	0.04	-1000.00	-1000.00
10/03/2008	01 00	24 0	186	31.7	07.9	08.4	988.1	5.03	0.04	0.04	-1000.00	-1000.00
10/03/2008	01 05	24.4	184	29.9	08.0	08.4	987.8	5.02	0.03	0.04	-1000.00	-1000.00
10/03/2008	01:10	24.4	182	29.1	07.9	08.4	987.7	5.01	0.04	0.04	-1000.00	-1000.00
10/03/2008	01:15	25 2	182	29.1	07.9	08.4	987.4	5.00	0.04	0.05	-1000.00	-1000.00
10/03/2008	01 20	26 0	183	35.2	07.9	08.4	987.2	4.99	0.04	0.05	-1000.00	-1000.00
10/03/2008	01 25	27 2	185	34.7	07.9	08.4	986.8	4.99	0.04	0.05	-1000.00	-1000.00
10/03/2008	01 30	22 8	186	31.6	07.9	08.4	986.7	4.99	0.04	0.04	-1000.00	-1000.00
10/03/2008	01 35	24 3	183	31.0	07.9	08.4	986.3	5.00	0.04	0.05	-1000.00	-1000.00
10/03/2008	01:40	25.4	182	32.3	07.8	08.4	986.1	5.00	0.04	0.04	-1000.00	-1000.00
10/03/2008	01:45	26.4	180	38.5	07.8	08.4	985.8	5.00	0.04	0.04	-1000.00	-1000.00
10/03/2008	01 50	26.1	184	34.0	07.7	08.4	985.5	5.00	0.05	0.05	-1000.00	-1000.00
10/03/2008	01 55	26 9	183	37.1	07.8	08.4	985.2	5.01	0.04	0.05	-1000.00	-1000.00
10/03/2008	02 00	27 6	185	36.0	07.7	08.4	985.1	5.01	0.04	0.04	-1000.00	-1000.00
10/03/2008	02 05	28 0	182	35.4	07.7	08.4	984.7	5.01	0.05	0.05	-1000.00	-1000.00
10/03/2008	02:10	25.4	183	33.0	07.7	08.4	984.3	5.01	0.04	0.05	-1000.00	-1000.00
10/03/2008	02:15	29.4	180	38.1	07.6	08.4	983.9	5.01	0.04	0.04	-1000.00	-1000.00
10/03/2008	02 20	30 0	182	40.4	07.6	08.3	983.5	5.02	0.05	0.05	-1000.00	-1000.00
10/03/2008	02 25	28.1	179	41.1	07.6	08.3	983.4	5.02	0.05	0.05	-1000.00	-1000.00
10/03/2008	02 30	27 0	179	41.1	07.5	08.3	983.5	5.01	0.05	0.06	-1000.00	-1000.00
10/03/2008	02 35	29 3	178	40.9	07.4	08.3	982.7	5.00	0.05	0.05	-1000.00	-1000.00
10/03/2008	02:40	27 9	179	36.6	07.4	08.3	982.6	4.99	0.05	0.06	-1000.00	-1000.00
10/03/2008	02:45	29 2	176	37.4	07.4	08.3	982.1	4.97	0.04	0.05	-1000.00	-1000.00
10/03/2008	02 50	27 6	176	35.4	07.3	08.3	982.1	4.94	0.05	0.06	-1000.00	-1000.00
10/03/2008	02 55	27 9	176	36.1	07.3	08.3	981.7	4.91	0.06	0.06	-1000.00	-1000.00
10/03/2008	03 00	28 8	176	35.8	07.2	08.3	981.5	4.86	0.05	0.06	-1000.00	-1000.00
10/03/2008	04 00	33 8	169	42.5	07.3	08.3	976.9	3.66	0.08	0.09	-1000.00	-1000.00
10/03/2008	04 05	32.1	170	44.3	07.3	08.3	976.4	3.51	0.08	0.08	-1000.00	-1000.00
10/03/2008	04:10	32 5	172	44.4	07.4	08.3	976.2	3.37	0.08	0.09	-1000.00	-1000.00
10/03/2008	04:15	31 2	172	43.8	07.3	08.3	976.2	3.23	0.08	0.09	-1000.00	-1000.00
10/03/2008	04 20	33 3	173	48.7	07.3	08.3	975.9	3.08	0.08	0.09	-1000.00	-1000.00
10/03/2008	04 25	33.4	173	46.1	07.3	08.3	975.1	2.94	0.08	0.08	-1000.00	-1000.00
10/03/2008	04 30	33 6	173	43.0	07.3	08.3	974.9	2.81	0.07	0.09	-1000.00	-1000.00
10/03/2008	04 35	32 2	171	41.1	07.4	08.3	974.5	2.69	0.09	0.09	-1000.00	-1000.00
10/03/2008	04:40	33 9	172	44.8	07.2	08.3	974.5	2.56	0.08	0.09	-1000.00	-1000.00
10/03/2008	04:45	34 3	172	44.8	07.4	08.3	974.0	2.48	0.09	0.09	-1000.00	-1000.00
10/03/2008	04 50	32.4	170	45.6	07.4	08.3	973.3	2.37	0.09	0.09	-1000.00	-1000.00
10/03/2008	04 55	31.7	171	47.0	07.4	08.3	973.2	2.25	0.09	0.10	-1000.00	-1000.00
10/03/2008	05 00	36 9	172	45.3	07.5	08.3	972.6	2.16	0.10	0.10	-1000.00	-1000.00
10/03/2008	05 05	35 3	174	48.7	07.4	08.3	972.7	2.08	0.09	0.10	-1000.00	-1000.00
10/03/2008	05:10	36 0	174	48.7	07.3	08.3	972.3	2.02	0.09	0.09	-1000.00	-1000.00
10/03/2008	05:15	36 6	173	47.5	07.3	08.3	971.7	1.93	0.10	0.10	-1000.00	-1000.00
10/03/2008	05 20	37 3	176	49.8	07.2	08.3	971.5	1.87	0.10	0.10	-1000.00	-1000.00
10/03/2008	05 25	41 6	174	55.6	07.0	08.3	970.4	1.81	0.12	0.14	-1000.00	-1000.00
10/03/2008	05 30	39.1	175	51.9	06.9	08.3	970.7	1.77	0.12	0.13	-1000.00	-1000.00
10/03/2008	05 35	40.1	174	48.8	06.8	08.3	970.8	1.73	0.12	0.12	-1000.00	-1000.00
10/03/2008	05:40	40 6	174	48.8	07.0	08.3	970.5	1.71	0.12	0.14	-1000.00	-1000.00
10/03/2008	05:45	40 8	175	48.2	07.0	08.3	970.1	1.70	0.11	0.13	-1000.00	-1000.00
10/03/2008	05 50	39 0	175	48.2	07.0	08.3	969.9	1.70	0.11	0.12	-1000.00	-1000.00
10/03/2008	05 55	40 8	177	57.0	07.3	08.3	968.9	1.71	0.11	0.12	-1000.00	-1000.00
10/03/2008	06 00	37 8	178	47.9	07.4	08.3	969.2	1.71	0.10	0.10	-1000.00	-1000.00
10/03/2008	06 05	40 2	178	47.9	07.3	08.3	969.3	1.73	0.10	0.11	-1000.00	-1000.00
10/03/2008	06:10	38 3	176	49.8	07.5	08.3	969.0	1.77	0.11	0.12	-1000.00	-1000.00

Annex 3

IACS Requirements concerning mooring, anchoring and towing

A1 Equipment

(1981) (Rev. 1 1987) (Rev. 2 1992) (Rev. 3 1994) (Rev. 4 Aug. 1999) (Rev.5 June 2005)

A1.1 Design of the anchoring equipment (1981)

A1.1.1 The anchoring equipment required herewith is intended for temporary mooring of a vessel within a harbour or sheltered area when the vessel is awaiting berth, tide, etc.

A1.1.2 The equipment is therefore not designed to hold a ship off fully exposed coasts in rough weather or to stop a ship which is moving or drifting. In this condition the loads on the anchoring equipment increase to such a degree that its components may be damaged or lost owing to the high energy forces generated, particularly in large ships.

A1.1.3 The anchoring equipment presently required herewith is designed to hold a ship in good holding ground in conditions such as to avoid dragging of the anchor. In poor holding ground the holding power of the anchors will be significantly reduced.

A1.1.4 The Equipment Numeral (EN) formula for anchoring equipment required here under is based on an assumed current speed of 2.5 m/sec, wind speed of 25 m/sec and a scope of chain cable between 6 and 10, the scope being the ratio between length of chain paid out and water depth.

A1.1.5 It is assumed that under normal circumstances a ship will use only one bow anchor and chain cable at a time.

A1.1.6 Manufacture of anchors and anchor chain cables is to be in accordance with UR W29 and UR W18.

A1.2 Equipment number and anchoring equipment table (for vessels of unrestricted service) (1981) (1999)

The equipment of anchors and chain cables is to be as given in Table 1 and is to be based on an "Equipment Number" calculated as follows:

$$EN = \Delta^{2/3} + 2{,}0\ hB + \frac{A}{10}$$

Where:

Δ = moulded displacements, in tonnes, to the Summer Load Waterline

B = moulded breadth, in metres

h = effective height, in metres, from the Summer Load Waterline to the top of the uppermost house; for the lowest tier "h" is to be measured at centerline from the upper deck or from a notional deck line where there is local discontinuity in the upper deck.

$$h = a + \Sigma h_i$$

Where:

a = distance, in metres, from the Summer Load Waterline amidships to the upper deck
h_i = height, in metres, on the centerline of each tier of houses having a breadth greater than B/4

Note:
Rev.5 of this UR is to be uniformly implemented by IACS Societies on anchors and anchor chain cables the manufacturing of which is commenced on or after 1 January 2007.

Annex 4

Admiralty Manual of Navigation, Volume 1 - Extract
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ANCHORING

SECTION 1 - ANCHORING A SINGLE SHIP

1410. Selection of Anchor Berth

In many ports or harbours, the shore or local harbour authority allocates anchor berths. However, there are numerous occasions when the NO is called on to select and pilot the ship to a suitable berth, particularly in out-of-the-way places visited by RN warships and RFAs.

a. **Choosing a Position in which to Anchor.** A number of factors have to be considered when choosing a position in which to anchor. The choice is governed very largely by matters of safety, but administrative or operational factors may also have to be taken into account. These factors are:

- The depth of water and the navigational difficulty involved.
- The length and draught of the vessel.
- The 'minimum' *Limiting Danger Line (LDL)* and (tidal) *Range*.
- The amount of cable available.
- The type of holding ground.
- The proximity of dangers (eg shoal waters, rocks, underwater cables / obstructions etc).
- The *Scale* of the chart.
- The strength and direction of the *Tidal Stream*.
- The strength and direction of the prevailing or forecast wind.
- The shelter from the weather given by the surrounding land.
- The proximity of adjacent ships at anchor.
- The proximity of landing places.

(1410) b. **The 'Minimum' LDL.** There must be an adequate depth of water under the vessel at all times. If the stay is to last for more than a few hours, this safe depth must be available at all stages of the *Tide*. Before selecting the anchor position and the tracks to it, the 'minimum' *LDL* must, therefore, be drawn for the anchorage area, taking into account the lowest *Height of Tide* (*HOT*) during the stay (see Fig 14-1 and Example14-1 below). The *Underkeel Clearance* necessary should be decided using the criteria at Para 1213 with particular attention to the following considerations:

- The reliability of the bathymetric data.
- The accuracy of *HOT* predictions.
- Validation of the vessel's draught (especially for variable draught vessels).
- The nature of the seabed.
- Proximity to adjacent hazards / shoal dangers.
- Any *Scend* or *Swell* in the anchorage.

Example 14-1. What is the 'minimum' *LDL* for a ship of draught 7.1m with a minimum *Underkeel Clearance* of 2.0m and a minimum *HOT* during the stay of 1.7m?

'Minimum' LDL 7.1m + 2.0m -1.7m 7.4m

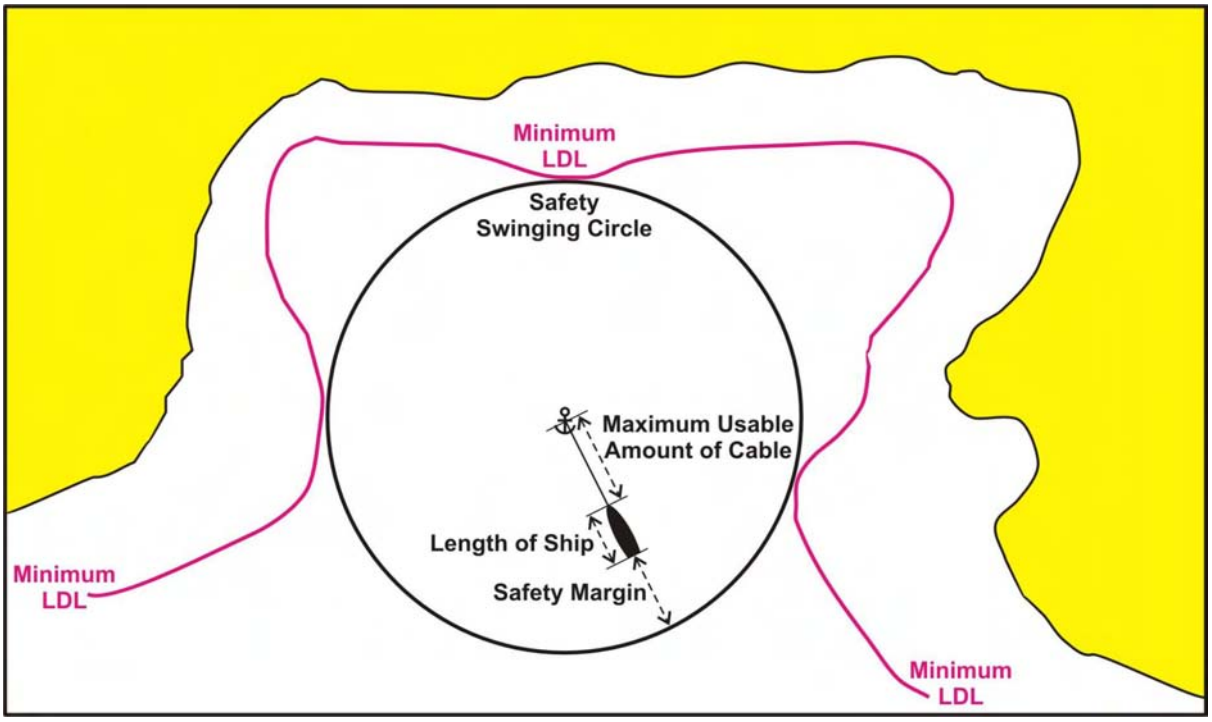

Fig 14-1. Minimum LDL and the Safety Swinging Circle

c. **Swinging Room when at Anchor.** A vessel at anchor must have room to swing clear of all dangers.

- **Charted Dangers.** To be safe from charted dangers, an anchorage must be chosen so that the *Safety Swinging Circle* (see details at Para 1410d opposite) is clear of the 'minimum' *LDL* (see Fig 14-1 and Example 14-1 above).
- **Ships.** The anchorage position must also provide room to swing clear of adjacent ships at anchor that are also swinging (see details at Para 1412).

(1410) d. **Charted Dangers - The Safety Swinging Circle.** The radius of the *Safety Swinging Circle* (see Fig 14-1 opposite and Example 14-2 below) **is independent of *Minimum Swing Radii* (Para 1412)** and may be obtained as follows:

- **Maximum Usable Cable.** Add the maximum usable amount of cable which can be veered on the selected anchor (the last shackle of cable will normally be inboard of the hawse pipe). This allows for additional cable to be veered if the weather deteriorates, while still maintaining an adequate safety margin.
- **Length of Vessel.** Add the length of the vessel.
- **Safety Margin.** Add a safety margin. The safety margin will vary with circumstances but as a starting point for single anchor, it is usual to allow at least one cable (0.1 *n.mile*), increased as necessary, to allow for:
  - **Navigational Inaccuracy .** The possibility that the ship may not 'Let Go' exactly in its intended anchoring position.
  - **Time Inaccuracy.** There is a time interval between 'Let Go' and the anchor hitting the bottom (usually only relevant if veering cable in deep water). An anchor should take about 3 seconds to reach the bottom in 30m of water (eg If the time from 'Let Go' to the anchor hitting the ground is 6 seconds, a ship moving at 2 kn will move 6m in that time).
  - **Holding Inaccuracy.** The anchor may drag before digging-in and holding, due to the nature of the sea bed.
  - **Dragging.** The factors at Para 1410g (below) may increase the likelihood of dragging. A fouled anchor may also result in dragging.

Example 14-2. What is the *Safety Swinging Circle* radius for a ship of length 155m, with 10 shackles (275m) of usable cable and a 1½ cable (275m) margin of safety?

Safety Swinging Circle radius 155m + 275m +275m 705m (or 770yds, 3.85 cables).

e. **Reduced Safety Margin.** Rigid application of the considerations at Para 1410d (above) would preclude some anchorages which would be quite safe in benign weather conditions or for a short duration. In such circumstances, it may be appropriate to accept a smaller margin of safety, consistent with prudence.

f. **Anchorages of Varying Navigational Difficulty.** Anchoring by day in perfect visibility using a large-*Scale* chart in a flat calm with a conspicuous *Headmark* and *Beam Marks* should not present any great difficulty even to an inexperienced officer. The possibility that the ship may not achieve its intended position is slight. But achieving the planned anchorage position on a small-*Scale* chart, at night, in a gale, with difficult marks when the final run-in is only 1 or 2 cables, is an entirely different matter. These factors must all be taken into account when choosing a position in which to anchor.

g. **Dragging.** The likelihood of dragging the anchor is dependent on:

- **Weather.** The prevailing wind strength and direction.
- **Shelter.** Whether the anchorage is open or sheltered.
- **Tidal Stream.** The strength and direction of the *Tidal Stream*.
- **Sea Bed.** The nature of the sea bed.
- **Anchor.** The holding power of the anchor and amount of cable veered.

1411. Amount of Cable to be Used and Holding Power of Anchors

The amount of cable to be used (as opposed to the amount available) depends on a number of factors, including the type of cable and anchor, the windage of the vessel, the holding ground, and the strength and direction of the wind and *Tidal Stream*. The majority of RN warships are fitted with forged steel cable and one or two 'AC 14' anchors, although mine-clearance vessels are usually fitted with aluminium silicon bronze anchors and cable.

a. **Forged Steel Cables.** Assuming the maximum *HOT* expected during the time the vessel is at anchor, the amount of forged steel cable required for various depths **(based on a fine-hulled vessel in calm conditions experiencing up to 5 kn of *Tidal Stream* or *Current*** - but see Para 1411c below) may be calculated by the following approximate formulae, which allow a slight safety margin over the actual minimum necessary. **In strong winds or in very strong *Tidal Streams*, more cable will usually be required.**

$$\text{Amount of cable required (in shackles)} = 1\tfrac{1}{2}\sqrt{\text{depth (in metres)}} \quad \textbf{. . . 14.1}$$

$$\text{Or, } = 2\sqrt{\text{depth (in fathoms)}} \quad \textbf{. . . 14.2}$$

b. **Aluminium Bronze Cables.** For the heavier aluminium bronze cable, which requires less cable for the depth of water, the equivalent approximate formulae are:

$$\text{Amount of cable required (in shackles)} = \sqrt{\text{depth (in metres)}} \quad \textbf{. . . 14.3}$$

$$\text{Or, } = \sqrt{1.3\ \text{depth (in fathoms)}} \quad \textbf{. . . 14.4}$$

c. **Safety Factor.** Comparative analysis indicates that when employing formulae (14.1 / 14.2 / 14.3 / 14.4), the cable length could be reduced by 60% and still be effective in holding the vessel at anchor in 15-20 knots of wind with *Tidal Stream / Current* at less than 2 kn. Thereafter the safety margin reduces rapidly.

d. **AC 14 Anchors - Holding Power.** In good holding ground such as clay, soft chalk, sand, sand and shingle, the holding power of the 'AC 14' anchor is approximately 10 times its own weight. In very good holding ground such as a mixture of sand, shingle and clay or very heavy mud, the holding power may be as much as 12½ times. In poor ground such as soft silty mud or shingle and shell, holding power may be as little as 6 times. Rock, coral and weed are particularly bad types of holding ground.

e. **Holding Parameters.** The ideal anchorage situation is to have an anchor well bedded into the bottom with a length of cable lying flat on the sea-bed providing a horizontal pull on the anchor, thus bedding it in even deeper. Provided the combined holding power of this combination exceeds the load imparted by the combined effects of *Tidal Stream / Current* on the hullform and wind on the hull / superstructure, the vessel should not drag. The cable nearest the ship also provides a catenary that damps out movement of the ship. The usual result is that the cable near the anchor lies flat on the sea-bed and thus prevents the anchor stock being twisted or lifted, either of which will cause it to break out and drag. Thus there should be a length of cable nearest to the anchor that hardly moves and the vessel will swing about that static part of the cable.

(1411) f. **Movement of the Cable.** If a vessel at anchor experiences a 180˚ change in *Tidal Stream / Current*, or of the wind predominates over *Tidal Stream / Current* and changes direction markedly, the cable will be moved across the seabed and will probably slowly reposition the anchor; it is at this stage, particularly if the *Tidal Stream / Current* or wind are strong, some dragging may occur before the anchor beds in again. Thus, when anchored for prolonged periods, during a swing or significant change of prevailing conditions, the safety limits and state of the cable should be monitored very closely.

Annex 5

Veritas Safety of Navigation Policy and Anchoring Procedures

SHORE MANAGEMENT
BRIDGE STANDING ORDERS

It is the policy of Red AB Veritas Tankers AB to navigate its ships in the safest manner possible and to give priority to safe navigation before speed and economic considerations and ***the safety of life and the safety of the ship take precedence over all other considerations.***

Adequate navigation equipment and suitable training is provided to ensure the fulfilment of this policy.

International and local rules of navigation shall be complied.

While the Master bears the ultimate responsibility, the safety of navigation policy requires all officers and crew members to prevent situations arising, which may endanger those onboard, the ship, her cargo, or the environment.

SHORE MANAGEMENT
BRIDGE STANDING ORDERS

1. The Watch Officer is on no account to leave the Navigating Bridge when the ship is underway, unless properly relieved by the Master or another certified Deck Officer. A pro-per bridge watch shall be maintained by a certified Deck Officer when the ship is at anchor.

2. The Officer taking over the watch must not be under the influence of alcohol or drugs and must be fully alert.

PRIOR TO TAKING OVER THE WATCH THE RELIEVING OFFICER MUST FAMILIARISE HIMSELF WITH THE FOLLOWING:

1) the orders of the master, as detailed in the Passage Plan or in the Bridge Night Order Book. (The Master's orders should be signed when read and understood. Should there be any doubt as to the requirements of the orders, clarification should be obtained from the Master.)
2) the present geographic position, course, speed and draught
3) the general weather forecast, wind and tidal conditions
4) the operational status of all aids of navigation and manoeuvring system in use
5) the traffic situation, location of other ships, their characteristics, course and speed and/or navigation marks in the vicinity of the ship.

Only when the Officer is satisfied that all the above requirements have been complied with, is he/she to take over the Navigation Watch.

3. The change of watch is not to take place when the ship is, or is about to be, engaged in a collision, avoidance manoeuvre or a navigational alteration of course.

THE OFFICER TO BE RELIEVED SHALL NOT HAND OVER THE NAVIGATION WATCH UNTIL HE/SHE IS SATISFIED THAT THE RELIEVING OFFICER IS:

1) not under the influence of alcohol or drugs.
2) fully alert and vision has adjusted to the prevailing conditions.
3) aware of the present geographic position, course, speed and draught
4) aware of the general weather forecast, wind and tidal conditions
5) aware of the operational status of all aids of navigation and manoeuvring system in use
6) aware of the traffic situation, location of other ships, their characteristics, course and speed and/or navigation marks in the vicinity of the ship.

Only when he/she is satisfied with all the above items, is the watch to be handed over.

4. The ship is at all times to be navigated in compliance with the "International Regulations for Preventing Collisions at Sea" and any local Regulations relating to navigation, which may be in force. Any actions taken should be positioned and taken in sufficient time. The Watch Officer must not leave other ships in doubt as to his/her intentions.

5. The position of the ship when underway shall be frequently verified. Whenever possible and appropriate at least two different methods should be used to fix the position. When in sight of land or charted navigation marks, use should be made of visual bearings in addition to the use of other Aids to Navigation.

Any discrepancy in the ship's position or speed between position determination shall be brought to the immediate attention of the Master.

6. The ship's position shall be fixed at the time of anchoring and checked frequently thereafter. The swinging circle of the ship is to be charted, centred on the position of the anchor. Particular attention is to be paid to the ship's movements during the change of tidal direction and changes in weather conditions. The Master is to be informed immediately if there is any suspicion that the ship is dragging anchor or if the charted positions falls outside the charted swinging circle.

7. Unless otherwise stated, the course to steer will be given as a Gyro Course. A frequent check is to be maintained on the corresponding course by Standard Compass.

The Gyro steering repeater shall be checked against the Master Gyro at the commencement of each watch. The remaining Gyro Repeaters will then be checked against the Gyro steering repeater.

Checks at frequent intervals are to be made throughout the watch between the Gyro steering repeater and the Standard Compass.

Whenever conditions permit, the errors on the Standard Compass and Gyro Compass shall be ascertained each watch..

If more than one course is steered, then an error for each course shall be determined.

Details of all compass errors shall be entered in a Compass Observation Book.

8. The Gyro Off-Course alarm is to be used at all times the ship is underway and steady on a course.

9. The Officer of the Watch will observe the course and distance as laid down in the Voyage Plan or otherwise approved by the Master. This should not prevent the Officer of the Watch from taking action under the "international Regulations for Preventing Collisions at Sea" or of taking action necessary to avoid casualty to the ship or its crew.

The Master is to be informed immediately if any deviation from the Passage Plan should become necessary.

10. Over reliance must not be placed on the automatic steering. Although the automatic pilot may under many circumstances be the most accurate means of keeping course, a qualified helmsman must be available on the bridge whenever the ship is in restricted waters. At no time should the Officer of the Watch, be without assistance and required to steer, when such actions may lead to a break in the continuity of the lookout from the ship.

11. If fog or other conditions of restricted visibility occur or are suspected, all radars must be brought into operation and the ship's speed adjusted to that of a safe speed. The Bridge is to be manned in accordance with the requirements. Full plotting of radar targets is to be carried out.

12. The Officer of the Watch must maintain a proper lookout at all times. This implies anticipation of any possible danger and the taking of appropriate action to avoid a dangerous situation developing. The Officer of the Watch should not place undue reliance on any Aid to Navigation over the need to keep a good lookout by sight and hearing.

13. When a watchman is posted as an additional lookout to the Officer of the Watch he/she shall not be called upon to carry out any other duty which may interfere with the keeping of a proper look-out.

During periods when it is not necessary for a watchman to be positioned on the Bridge and keeping a look-out, he/she should be on immediate call.

14. The Master is to be advised immediately of all equipment failures, which may be relevant to the safety of personnel, ship or cargo.

15. Full use is to be made of the Echo Sounder or other Aids to Navigation, which may determine the depth of water. When it is practical to do so, a check should be maintained on the depth of water when navigating in coastal waters. Full use should be made of any depth alarm facility (if fitted).

16. At those times when the Master takes over the command of the ship, he/she shall clearly indicate this fact to the Officer of the Watch.

Until this procedure has been completed, the Officer of the Watch is to continue to carry out his duties as if the Master were not present.

When the Master takes command, the Officer of the Watch should continue to carry out the duties, or as required by the Master.

17. The Master and all Officers of the Watch are to familiarise themselves with all local regulations and the nautical advice contained in the relevant Sailing Directions and other nautical publications carried onboard.

18. The presence of a pilot on the Bridge as an advisory capacity in no way reduces the responsibilities of the Master or Officer of the Watch in ensuring the ship is navigated in a safe manner.

19. Officers of the Watch are to be familiar and comply with their duties as defined in other sections of this Manual or as required by the Master.

20. Where the Master may on occasions act as the Officer of the Watch he/she shall comply with all the requirements of the Officer of the Watch. The Master must summon an additional certified Deck Officer to the Bridge to assist in navigating the ship when required.

21. Persons not directly concerned with the immediate navigation of the ship shall not be permitted on the Navigating Bridge without the permission of the Officer of the Watch.

22. These Standing Orders may not be amended without authority form Shore Management. The Master shall also issue his own Standing Orders in addition to the Shore Management Standing Orders.

23. Nothing in these Standing Orders shall be construed as relieving the Master or any Officer or Rating of his/her responsibilities, as defined by law or governmental regulations, or from the exercise of sound judgement. The prime consideration in the minds of all must be the safety of life and the protection of the environment and property.

24. Deck Officers shall sign the copy of any additional Standing Order issued by the Master, contained in the "Night Order Book" prior to standing his/her first sea watch signifying that he/she has read them and understands their meaning.

ANCHORING

1. The Master chooses suitable anchorage. At choice of anchorage consideration should be given to water depth, sea bed, wind stream and other ships in the area. If possible check with pilots.

2. Complete SMS 7.36 Anchoring checklist

3. Notify the engineroom about the anchoring.

4. The Master takes over the manoeuvring of the ship in good time before anchoring. The Officer is informed about which anchor shall be used and how many shackles he shall let go.

5. Reduce speed in good time before anchoring.

6. Start the echo sounder.

7. The AB releases both anchors and prepares lowering of the anchor which shall be used.

8. The Officer and the AB are ordered to the Forecastle to be stand-by for anchoring. Check that contact with walkie-talkie is working between Forecastle and Bridge.

9. Lower the anchor upon order from the bridge. (Usually via UHF)

10. When the agreed number of shackles are out and the chain is first tightened and then slackened, the Officer informs the Master over walkie talkie.

11. The Master checks the position of the anchorage with radar, GPS or other means of position fixing. The position is entered onto the chart.

12. Brake and secure the anchor.

13. Switch on anchor light and deck light. During daytime an anchor sign is raised.

14. Switch off navigation lights.

14. Control the input in the AIS equipment.

15. Notify “finish with engine” with the engine telegraph.

16. The routine according to SMS 4.10 Watch keeping at anchor applies.

WATCH KEEPING AT ANCHOR

1. The Master marks the position on the chart and makes a note in the Log book. (Positioning with optical cross bearings, radar, GPS, Decca navigator etc.)

2. The Master notifies Officer of the watch about ship's anchoring position.

3. Radar is adequately activated for position fixing and to detect dragging.

4. Anchor No 2 is prepared for lowering.

5. Officer of the watch checks the following:

   - position with more than one means of fixing method
   - anchor shapes and lights
   - movement of other anchored ships in relation to own ship
   - weather, sea and tide
   - VHF channel 16 and other channels for the actual traffic area and telex

6. Master's standing orders as well as chapter **At Anchor** in the Bridge Instructions issued by the Swedish Club shall be followed.

7. Fire rounds are done in accordance with routines at sea.

If the ship should start to drag:

1. Immediately notify Engineer on duty and Master.

Annex 6

Veritas Revised Procedures, implemented following the accident

Vessel at anchor when heavy weather are expected

We strongly advice that you will leave any anchorage and go out to sea when heavy weather are expected, even if this will cost additional money for pilots etc it is preferred to stay at sea instead of at a anchorage in bad weather. When the vessel navigate out at sea is it important that you keep a good distance well clear of any shallow water or land during the heavy weather. The anchor shall preferably be hoisted before the bad weather starts as it always are difficult to hoist anchor during strong wind, current and heavy sea conditions. There is also a risk to damage winches etc when you hoist the anchor during bad weather.

When a vessel start to drift during bad weather at anchor, then the time factor for a quick response are very important. A vessel often drift with a speed of 3 knots or more which means that quick response is very important for saving the vessel for any immediate danger. Even with a quick response can the vessel face problem with taking up the anchor, which also can make it difficult to keep the vessel clear of any immediate danger. One possibility that you might use if you have problem getting up the anchor when the engine is running, is to release the anchor chain to avoid that the vessel will drift into any immediate danger. If there is time then it is preferable to attach a line with a buoy to the anchor chain, so that it can be recovered later. During strong wind, current and sea condition it is important that you use sufficient engine power to manoeuvre the vessel away from any immediate danger.

Vessel on the way to anchorage when heavy weather are expected

We strongly advice you to not drop the anchor if you expecting heavy weather. It is preferable to stay at sea instead of at anchorage in bad weather. When staying out at sea it is important that you keep a good distance well clear of any shallow water, land or any immediate danger during the heavy weather.

Vessel remaining at anchorage during heavy weather (not recommended)

If you remain at the anchorage during heavy weather it is important that you consider to declare the anchorage as unsafe and follow procedure in SMS 5.81
The OOW shall keep a constant watch and use all available means to check that the vessel not are dragging.

Above are guidance only and the final decision what to do is always decided by the Master of the vessel.

ENGINE WATCH AT UNSAFE ANCHORAGE

When a ship is at anchor on open sea or other place witch not are protected, where the conditions are practically to be compared with those "at sea, or when the Master or OOW so request the Engineer on duty shall make sure that

- effective watch is kept (Watch in engine room shall be kept)
- regular check is made of all propulsion- and stand-by machinery
- all fire-, safety- and surveillance systems are in good working order
- steps are taken and necessary regulations are followed to protect the environment from pollution from the ship.

Before anchoring, the bridge shall be contacted to receive information if the anchorage is considered as safe or unsafe, and which level of engine preparedness that shall be in force. Note the information from the bridge in the Engine logbook and the Engine Night order book. It shall be noted that a anchorage that previous was considered as safe, can be changed to unsafe if i.e. bad weather condition are expected. The Master or OOW are responsible to inform engine when the status are changed from Safe to Unsafe.

Below procedure shall be followed when a anchorage are considered as UNSAFE

A. Increased preparedness

1. Locate an engineer in the engine room
2. Keep ME running
3. Function test the telephone communication with the bridge

B. Normal preparedness – with possibility to start the ME quickly i.e. within two minute.

1. Stop ME. See SMS 8.22 Arrival in port
2. Keep the starting air to the ME open – air compressor on AUTO.
3. Keep the lub.oil- CPP- and gear pump running if possible to do so.
4. Keep the indicator cocks closed.
5. Blow engine once every second hour, to prevent water hammering in cylinders.
6. One engineer in the engine room all the time
7. Upon order to re-start, see applicable parts in SMS 8.21 Departure from Port.

SHIP: M/T

DATE OF LAST REVIEW:

DATE OF PRESENT REVIEW:

Done by:

Master Navigational Review Instructions

The purpose of the Master Navigational Review is to carry out a general check on the procedures onboard the ship. The check list below has been produced to assist, and guide the in carrying out the review. In some cases due to Flag State regulations, certain questions will be N/A and should be indicated by an "F" in the N/A column. The remaining columns have been divided into, <25, <50, <75, 100. Therefore if you think a procedure is being carried out up to 50% of the time onboard, then please mark the column "<50" etc. **Procedures which are noted to be carried out <100% of the time should be commented on at the end of the checklist, and suggested corrective action in order to fully implement the procedure.** This review must be carried out at least twice a year as part of the Management Review.

In order to get a good overall view of the procedures onboard the reviews should be spaced as 6 month intervals as possible, but in such a way as to allow the sharing Masters to take part in one review every year.

Completed reviews (report and checklist with comments) should be then sent to DP.

	Navigational Review	N/A	<25	<50	<75	<100
1	Has the present Master posted standing orders?	☐	☐	☐	☐	☐
2	Have all the present bridge officers read and signed the Master's standing orders and company bridge standing order?	☐	☐	☐	☐	☐
3	Are the officers aware of when the Masters want to be called for bad visibility.	☐	☐	☐	☐	☐
4	Are the bridge officer aware where to find requirements for U.K.C.	☐	☐	☐	☐	☐
5	Are the bridge office aware where to find that ***"The safety of life and the safety of the ship take precedence over all other considerations"***	☐	☐	☐	☐	☐
6	Do the bridge officers understand the requirements of the Master's standing orders?	☐	☐	☐	☐	☐
7	Is the bridge night order book appropriately used?	☐	☐	☐	☐	☐
8	Has a list of watch keepers and their work hours been posted?	☐	☐	☐	☐	☐
9	Is a passage plan available for the following?:					
a	Pilot to Berth & Berth Pilot	☐	☐	☐	☐	☐
b	Pilot to Pilot.	☐	☐	☐	☐	☐
10	Are the above completed for all ports?	☐	☐	☐	☐	☐
11	Is a Squat calculation perform for all voyage	☐	☐	☐	☐	☐
12	Are minimum under keel clearance noted in passage plan	☐	☐	☐	☐	☐
13	When producing the passage plan, does the navigating officer indicate the following?					
a	Parallel indexing can be used.	☐	☐	☐	☐	☐
b	Danger areas.	☐	☐	☐	☐	☐
c	Emergency anchorages.	☐	☐	☐	☐	☐
d	Go no Go areas.	☐	☐	☐	☐	☐
e	T&P notices.	☐	☐	☐	☐	☐
f	Reporting requirements.	☐	☐	☐	☐	☐
g	Max draft and air draft.	☐	☐	☐	☐	☐
h	Max speed due to squat if applicable	☐	☐	☐	☐	☐
i	Navigational Warnings	☐	☐	☐	☐	☐

	Navigational Review	N/A	<25	<50	<75	<100
14	Has the passage plan been done in accordance with company requirement.?	☐	☐	☐	☐	☐
15	Are all charts corrected until latest NTM received onboard?	☐	☐	☐	☐	☐
16	Are all publication corrected until Latest NTM received onboard?	☐	☐	☐	☐	☐
17	Is the passage plan verified signed by the Master and Nav.Off.?	☐	☐	☐	☐	☐
18	Are run charts updated with info about T&P notices.	☐	☐	☐	☐	☐
19	Are pre-arrival and pre-departure checks carried out at the appropriate times and signed in Log book?	☐	☐	☐	☐	☐
20	Are steering gear tested before departure?	☐	☐	☐	☐	☐
21	When arrival and departure tests are carried out, is the bridge and engine room staff working together?	☐	☐	☐	☐	☐
22	Where appropriate, are UMS changeover done correct	☐	☐	☐	☐	☐
23	Do the respective bridge watch keeping officers understanding the reporting requirements of the GMDSS?	☐	☐	☐	☐	☐
24	Are all GMDSS test procedures carried out? Refer to instructions at the front of the GMDSS log and SMS procedures.	☐	☐	☐	☐	☐
25	Have position intervals been followed in accordance with the voyage plan	☐	☐	☐	☐	☐
26	Was hand steering tested during watch where the ship was manoeuvred by autopilot. Has it been noted in log book?	☐	☐	☐	☐	☐
27	Do the officer know where to find COLREG	☐	☐	☐	☐	☐
28	Do the Officer in charge of emergency communication know how to operate the GMDSS equipments	☐	☐	☐	☐	☐
29	Do the navigational officer know where to find all SMS procedures below, should be find in hard copy in SMS file	☐	☐	☐	☐	☐
a	Shore Management Bridge Standing Orders	☐	☐	☐	☐	☐
b	Quality of Navigational charts	☐	☐	☐	☐	☐
c	Guidance for Voyage Planning	☐	☐	☐	☐	☐
d	Voyage Planning	☐	☐	☐	☐	☐
e	Correction of Charts and Publications	☐	☐	☐	☐	☐
30	Are position fixing times written in chart for each leg	☐	☐	☐	☐	☐
31	Are Sources for determine positions noted in the chart for each leg	☐	☐	☐	☐	☐
32	Are all Deck Officers aware where to find T&P notice, Navigational warnings for the charts, Check all officers	☐	☐	☐	☐	☐

	Navigational Review	N/A	<25	<50	<75	<100
33	Does the master issue a written statement at what wind force he want to be notified when the vessel are at anchor	☐	☐	☐	☐	☐
34	Is a swing circle marked in the chart during anchoring	☐	☐	☐	☐	☐
35	Have it been noted in log book if anchorage are safe or unsafe	☐	☐	☐	☐	☐
36	Are the Master aware of SMS procedures for Safe / Unsafe anchorage	☐	☐	☐	☐	☐
37	Are the deck Officer aware of SMS procedures for Safe / Unsafe anchorage.	☐	☐	☐	☐	☐
38	Are the engine Officer including Chief Engineer aware of SMS procedures for Safe / Unsafe anchorage	☐	☐	☐	☐	☐
39	Is there an written instruction beside each GPS how to switch on the anchor alarm.	☐	☐	☐	☐	☐
40	Are the Master aware of SMS 5.4 Guidance for anchoring or staying at anchor in heavy weather	☐	☐	☐	☐	☐
41	Are SMS 5.4 Posted at bridge	☐	☐	☐	☐	☐

COMMENTS

	Rederi AB Veritas Tankers **Safe Management System (ISM)**		
Revision No: 0	**Replacement for revision No:**	**Valid from:** 2008-05-09	
Chapter: **Master Navigational Review**			**Page:** 7.124.6 (6)
Approved by: Ove Johnsson			

OBJECTIVE & SCOPE:	THE REVIEW WAS CONDUCTED TO VERIFY COMPLIANCE WITH THE SHIP MANAGEMENT MANUAL AND OTHER SHIPBOARD PUBLICATIONS ASSIGNED TO THE VESSEL.
REVIEW TEAM:	
AUDITEES:	
SUMMARY OF REVIEW:	BELOW PLEASE COMMENT ON WHICH PROCEDURES YOU DO NOT CONSIDER ARE WORKING CORRECTLY <100%, AND WHAT YOU THINK SHOULD BE DONE TO CORRECT THE SITUATION. COMMENTS ON TRAINING AND HOW THE SYSTEM AFFECTS THE SHIP CAN ALSO BE MADE BELOW.
SUGGESTED CHANGE	
DISTRIBUTION LIST:	ORIGINAL: ONBOARD FILE (Internal Review); COPY TO DP OVE JOHNSSON
REVIEW TEAM SIGNATURES:	
DP Verification	SIGNATURE DP OVE JOHNSSON

SHIP: M/T

DATE OF LAST REVIEW:

DATE OF PRESENT REVIEW:

Done by:

Internal Review Instructions

The purpose of the Internal Navigational Review is to carry out a general check on the procedures onboard the ship. The check list below has been produced to assist, and guide the in carrying out the review. In some cases due to Flag State regulations, certain questions will be N/A and should be indicated by an "F" in the N/A column. The remaining columns have been divided into, <25, <50, <75, 100. Therefore if you think a procedure is being carried out up to 50% of the time onboard, then please mark the column "<50" etc. **Procedures which are noted to be carried out <100% of the time should be commented on at the end of the checklist, and suggested corrective action in order to fully implement the procedure.** This review must be carried out at least once year as part of the Management Review.

In order to get a good overall view of the procedures onboard the reviews should be spaced as max 12 month intervals as far as possible. This review shall preferably not be done in the same time as Internal review of SMS.

Completed reviews (report and checklist with comments) should be then sent to DP.

	Navigational Review	N/A	<25	<50	<75	<100
1	Has the present Master posted standing orders?	☐	☐	☐	☐	☐
2	Have all the present bridge officers read and signed the Master's standing orders and company bridge standing order?	☐	☐	☐	☐	☐
3	Are the officers aware of when the Masters want to be called for bad visibility.	☐	☐	☐	☐	☐
4	Are the bridge officer aware where to find requirements for U.K.C.	☐	☐	☐	☐	☐
5	Are the bridge office aware where to find that *"The safety of life and the safety of the ship take precedence over all other considerations"*	☐	☐	☐	☐	☐
6	Do the bridge officers understand the requirements of the Master's standing orders?	☐	☐	☐	☐	☐
7	Is the bridge night order book appropriately used?	☐	☐	☐	☐	☐
8	Has a list of watch keepers and their work hours been posted?	☐	☐	☐	☐	☐
9	Is a passage plan available for the following?:					
a	Pilot to Berth & Berth Pilot	☐	☐	☐	☐	☐
b	Pilot to Pilot.	☐	☐	☐	☐	☐
10	Are the above completed for all ports?	☐	☐	☐	☐	☐
11	Is a Squat calculation perform for all voyage	☐	☐	☐	☐	☐
12	Are minimum under keel clearance noted in passage plan	☐	☐	☐	☐	☐
13	When producing the passage plan, does the navigating officer indicate the following?					
a	Parallel indexing can be used.	☐	☐	☐	☐	☐
b	Danger areas.	☐	☐	☐	☐	☐
c	Emergency anchorages	☐	☐	☐	☐	☐
d	Go no Go areas.	☐	☐	☐	☐	☐
e	T&P notices.	☐	☐	☐	☐	☐
f	Reporting requirements.	☐	☐	☐	☐	☐
g	Max draft and air draft.	☐	☐	☐	☐	☐
h	Max speed due to squat if applicable	☐	☐	☐	☐	☐
i	Navigational Warnings	☐	☐	☐	☐	☐

	Navigational Review	N/A	<25	<50	<75	<100
14	Has the passage plan been done in accordance with company requirement.?	☐	☐	☐	☐	☐
15	Are all charts corrected until latest NTM received onboard?	☐	☐	☐	☐	☐
16	Are all publication corrected until Latest NTM received onboard?	☐	☐	☐	☐	☐
17	Is the passage plan verified signed by the Master and Nav.Off.?	☐	☐	☐	☐	☐
18	Are run charts updated with info about T&P notices.	☐	☐	☐	☐	☐
19	Are pre-arrival and pre-departure checks carried out at the appropriate times and signed in Log book?	☐	☐	☐	☐	☐
20	Are steering gear tested before departure?	☐	☐	☐	☐	☐
21	When arrival and departure tests are carried out, is the bridge and engine room staff working together?	☐	☐	☐	☐	☐
22	Where appropriate, are UMS changeover done correct	☐	☐	☐	☐	☐
23	Do the respective bridge watch keeping officers understanding the reporting requirements of the GMDSS?	☐	☐	☐	☐	☐
24	Are all GMDSS test procedures carried out? Refer to instructions at the front of the GMDSS log and SMS procedures.	☐	☐	☐	☐	☐
25	Have position intervals been followed in accordance with the voyage plan	☐	☐	☐	☐	☐
26	Was hand steering tested during watch where the ship was manoeuvred by autopilot. Has it been noted in log book?	☐	☐	☐	☐	☐
27	Do the officer know where to find COLREG	☐	☐	☐	☐	☐
28	Do the Officer in charge of emergency communication know how to operate the GMDSS equipments	☐	☐	☐	☐	☐
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30	Are position fixing times written in chart for each leg	☐	☐	☐	☐	☐
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32	Are all Deck Officers aware where to find T&P notice, Navigational warnings for the charts, Check all officers	☐	☐	☐	☐	☐

	Navigational Review	N/A	<25	<50	<75	<100
33	Does the master issue a written statement at what wind force he want to be notified when the vessel are at anchor	☐	☐	☐	☐	☐
34	Is a swing circle marked in the chart during anchoring	☐	☐	☐	☐	☐
35	Have it been noted in log book if anchorage are safe or unsafe	☐	☐	☐	☐	☐
36	Are the Master aware of SMS procedures for Safe / Unsafe anchorage	☐	☐	☐	☐	☐
37	Are the deck Officer aware of SMS procedures for Safe / Unsafe anchorage.	☐	☐	☐	☐	☐
38	Are the engine Officer including Chief Engineer aware of SMS procedures for Safe / Unsafe anchorage	☐	☐	☐	☐	☐
39	Is there an written instruction beside each GPS how to switch on the anchor alarm.	☐	☐	☐	☐	☐
40	Are the Master aware of SMS 5.4 Guidance for anchoring or staying at anchor in heavy weather	☐	☐	☐	☐	☐
41	Are SMS 5.4 Posted at bridge	☐	☐	☐	☐	☐

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REVIEW TEAM SIGNATURES:	
DP Verification	SIGNATURE DP OVE JOHNSSON

MAIB Safety Flyer

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MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY

Grounding of the product tanker *ASTRAL*, after dragging anchor off the Isle of Wight, England, on 10 March 2008

Astral

Narrative

On 10 March 2008, the Swedish registered tanker *Astral* dragged her anchor in Storm Force 10 winds and grounded on the Princessa Shoal, east of the Isle of Wight. The vessel sustained indentations to her hull and extensive damage to her rudder and steering gear; there was no pollution and the vessel remained watertight.

Astral had anchored at the Nab Anchorage, 0.9 mile south of the Princessa Shoal, on 7 March 2008 to await a berth at Fawley Marine Terminal to discharge a cargo of diesel oil. On 9 March increasingly severe weather forecasts were received predicting gale force winds from the south. Later that evening the duty Vessel Traffic Services officer advised all the vessels at anchor of the weather forecast and recommended that their engines should be available if required.

During the early morning of 10 March, the weather deteriorated as the wind increased to southerly Force 10. At 0650 *Astral* started to drag anchor to the north. The officer of the watch alerted the master at 0710 and requested the main engine, which was on 10 minutes notice, be started. The engine was available for use at 0721 and the master applied power ahead. However, the vessel continued to drag northwards and grounded on the Princessa Shoal at 0725.

The MAIB database shows that since 1992 there have been 21 accidents in United Kingdom territorial waters involving merchant vessels of over 500 gross tons dragging their anchor and subsequently grounding. Weather conditions contributed to 19 of these accidents, the anchoring position was relevant to 16, and in 7 cases the engines were not ready when needed.

Safety Lessons

The MAIB continues to see examples of vessels grounding, having dragged their anchors in heavy weather because the masters, in general, have:

- Not planned the anchorage sufficiently.
- Not ensured that the anchor position is obtained on anchoring, and the bridge and safety swinging circles have been plotted.
- Not instigated an effective anchor watch which ensures the vessel's position is frequently and effectively checked.
- Not ensured main engine readiness is appropriate to the circumstances.
- Following warnings and forecasts of adverse weather, not reviewed their precautions and taken further steps as necessary.
- Remained at anchor off lee shores or in the vicinity of hazards in conditions exceeding, or forecast to exceed, the limitations of their anchor equipment and their ability to get underway safely.

To try and prevent such accidents occurring in the future, **Owners and operators** are strongly advised to review their SMS procedures for anchoring to ensure they address the above safety issues and, specifically:

1. That masters have clear guidance on the capability of their vessel's anchoring system, including the:
   - Holding power of the anchor in various bottom types.
   - Strength of the anchor system components, including that of the windlass.
   - Effect of windage and yaw in various loading conditions.
2. The hazards to personnel working on the foc'stle or cable deck in adverse weather.
3. That although an anchorage might have been allocated by a harbour or VTS authority, the safety of the vessel and decision to sail remains the master's responsibility.
4. And, most importantly, that masters should not hesitate to get underway or to seek a more sheltered anchorage should the forecast or actual weather and sea conditions warrant it.

Further details on the accident and the subsequent investigation can be found in the MAIB's investigation report, which is posted on its website:

www.maib.gov.uk

Alternatively, a copy of the report will be sent on request, free of charge.

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