

## NAVIGATIONAL ADVISORY PANEL REPORT

<b>NAP Date:</b>	19.01.10	<b>Owner:</b>	HM(SMS)	<b>NAP Ref:</b>	33	<b>NAP Title:</b>	MOORING OPERATIONS AT GREENWICH SHIP TIER
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### Panel Members:

Name	Organisation	Name	Organisation	Name	Organisation
David Phillips	PLA - HM(U)	Richard Flynn	PLA - River Pilot	David Sargent	Sargent Brothers
Terry Lawrence	PLA – DHM(U) 1	Ray MacLean	PLA - VTS Supervisor	Steve Rushbrook	PLA – DHM(U)2
Julian Parkes	PLA – HM(SMS)	Geoff Buckby	PLA - MSM	Chris Livett	Livett’s Launches
Paul Wilson	City Cruises	Richard Dockett	PLA - River Pilot	Lee Collins	Livett’s Launches
Mark Towens	PLA – DHM(SMS)	Kevin Gregory	PLA – DVTSM	Jim Denby	PLA - DMSM

Detail / Terms of Reference	Observation/Recommendation
<ul style="list-style-type: none"> <li>• Review the PLA’s overall mooring plan for Greenwich Ship Tier and provide any comments as necessary.</li> <li>• Identify the optimum method for mooring ships safely at Greenwich Ship Tier, noting:                             <ul style="list-style-type: none"> <li>○ that linehandlers cannot always be immediately available to run additional lines in the event of failure;</li> <li>○ neither are tugs readily available to assist in the event of a progressive mooring system failure;</li> <li>○ there is no formal arrangement to determine the size, suitability or quality of the lashings used on the mooring lines whether supplied by the vessel or by the contracted linesmen; and</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>1. Members noted the Terms of Reference for the NAP. No questions or points of clarification were sought.</li> <li>2. A brief on the PACIFIC VENUS incident, which had prompted the NAP, had been provided with the paperwork prior to the meeting. All present were familiar with the background and detail of the incident. No questions or points of clarification were requested.</li> <li>3. The PLA draft Greenwich Ship Tier Mooring Plan (again previously circulated) was discussed. This proposes a cohesive, structured process concerning the planning and mooring of a vessel on the Tier, from initial booking (usually many months in advance) to the safe departure from the Tier. The broad format of the process was agreed, and a number of additional considerations were raised, including:                             <ul style="list-style-type: none"> <li>• the importance of ensuring that the good practice of regular mooring checks by the ship’s crew is maintained throughout the vessel’s stay on the Tier;</li> <li>• good communications between the bridge and the fwd and aft stations (and tugs) during berthing/unberthing is essential; and can be compromised by language difficulties and manning levels on some ships;</li> <li>• emphasis to be placed on the dangers of strong prevailing winds from the SW and the need for the deployment of additional mooring ropes as necessary;</li> </ul> </li> </ol>

- design and optimum mooring configuration arrangements for varying wind, tide, windage, underwater areas, and tier length to ships length are not available on a scientific basis for the GST.
- Identify any additional factors or issues relating to the safe mooring of vessels on the tier.

The NAP should report its findings and any recommendations to the PLA's Navigational Management Team by 26 February 2010.

- the importance of ensuring ship's engines are put or remain on stand-by for short stays and/or during times of adverse weather or the forecast of such;
  - the procedure where the pilot booked for the vessel's departure arrives earlier than the scheduled departure time to oversee the initial departure preparations (e.g. Northfleet Hope Container Terminal should be extended to GST); and
  - whether a future, agreed standard mooring procedure for mooring at the Tier should apply equally to naval vessels as to cruise ships.
4. The Mooring Plan (attached at Annex) now needs to be developed, refined and implemented. This work will be led by HM(U).
  5. The NAP considered the current configuration of the Tier (buoys and ground tackle) and agreed it to be appropriate. The upper centre and wing buoys are fixed, but the lower centre and wing buoys can be moved to shorten the Tier to accommodate vessels smaller than the maximum. The Tier accommodates vessels between 128m and 208m, and has ruling depth of 8.0m.
  6. During the discussions, it was noted by all practitioners present that the actual tidal sets experienced by vessels on the Tier and those supporting them, differed from the Spring Tide Flows provided to the NAP by the Hydrographic Department. The Hydrographic Officer would be asked to investigate these potential discrepancies.
  7. A number of options for securing lines to the buoys on the Tier had been circulated for consideration prior to the meeting. Further possible options were considered and the difference between a half-hitch and a 'back-turn' was clarified.
  8. The various methods of securing to the buoys were discussed at some length. The advantages and disadvantages of the current custom and practice of lashing the mooring rope eye back onto the standing part were explored. Whilst some were in favour of continuing the practice, there are number of disadvantages, including
    - this system had failed in the case of the PACIFIC VENUS;
    - it relies on a standard form and length of lashing, a proper and effective lashing; and therefore appropriate diligence and expertise of the mooring boat crews; and
    - the lashings often slip and jam and can be difficult and slow to remove.
  9. Other issues impact upon the safety of the mooring operation:
    - mooring shackles, large wire pennants and strops can be heavy and cumbersome;
    - mooring chain cable to buoys is slow, heavy work and can be dangerous; but is secure; and
    - the use of mooring lines on a bight requires long lines, especially for the wing buoys, and can cause problems when letting go (propellers). They can also be difficult for the crews to handle in the boat.

10. After some discussion, the Panel agreed that the ideal solution – the safest and most efficient method of securing to the buoys, would be for all six buoys in the Tier to be fitted with integral hooks. (Either two separate hooks or a single hook of sufficient size to take two mooring ropes safely). The second best option would be for the wing buoys to be fitted with integral hooks and the centre forward and aft buoys to be hooks secured to the (Stayrite) buoy ring with a short cable or wire strop.
11. However, the Panel recognises that an associated cost/benefit analysis may well conclude that the expenditure associated with the provision of new and/or reconfigured buoys could well be prohibitive, especially given the safety increment and the projected use of the Tier in the future.
12. The Panel therefore discussed two new methods of securing to all the buoys: i) using a suitably rated shackle to secure the eye of the mooring rope back onto the standing part, having first passed the eye through the mooring ring; or ii) a short wire strop, of appropriate size, doubled through the mooring ring with a shackle through the strop eyes and then shackled to the eye of the mooring rope.
13. It was noted that there is an option to hire in shackles/strops from a local chandler for each berthing, rather than bear the purchase, maintenance and testing costs.
14. It is recognised that whatever mooring arrangement is accepted, a suitable and agreed system needs to be in place for the first cruise ship call of the season in the third week of May. (There are currently only five bookings for the GST in 2010). This is likely to preclude the provision of new buoys or buoys retrofitted with integral hooks. It was agreed therefore that this method (para 12 above) should be trialed for all the (5) vessels due on the Tier during 2010.
15. The Panel also suggested that consideration should be given by the PLA to deploying ‘Stayrite’ buoys in all six positions on the Tier, or at least consider that for the two up-wind wing buoys. This would provide a more robust and stable platform for mooring operations.
16. Standard Mooring Arrangement – The Panel discussed and agreed what should be the standard, minimum mooring pattern for the Tier (assuming the vessel has swung ‘head-down’) i.e.
  - i) The first lines run should be a single line, fore and aft to the centre buoys from the ship’s centre leads.
  - ii) This followed by the starboard wing buoys (bow/quarter lines), unless the weather conditions dictate otherwise. Two separate lines (eyes).
  - iii) The port wing buoys secured next using two separate lines (eyes).
  - iv) An additional line to the centre buoys should subsequently be deployed, either as a single line or a bight (which, as a bight, would assist the letting go routine, particularly from the bow if the ship is head-down and sailing on a flood tide).

17. WELCOME – In response to a query, the Panel briefly discussed the question of whether the PLA pontoon WELCOME introduced unnecessary loads on the vessel on the Tier (and thus her moorings) when moored alongside. The Marine Services Manager advised that extensive tests and calculations had been undertaken prior to the vessels original deployment and the associated loads were found to be minimal.
18. The Panel further agreed that should the above trial be successful, there may be a case for approaching the Royal Navy to suggest that naval vessels are also able to secure safely and quickly using this method, rather than require the centre forward connection to be the ship’s anchor cable, which brings its own difficulties in terms of the safety of personnel and the time taken to connect/disconnect the buoy.

**Recommendations**

The Panel makes the following recommendations to the PLA’s Navigational Management Team:

- A. The preferred solution would be to fit integral mooring hooks to all six buoys on the Tier.
- B. The second choice solution would be to fit integral hooks to the four wing buoys, but on the centre forward and aft buoys, utilise hooks secured to the (Stayrite) buoy ring with a short cable or wire strop or Option C if that proves successful).
- C. Recognising that the likely expenditure of Recommendations A and B may well be prohibitive, the Panel discussed the two securing options detailed in Item 12 above, one of which should be utilised on all six buoys. Both options have merit and NMT is asked to decide which should be used.
- D. As the first vessel this year is due on the Tier in May, Option C should, in any event, be used on a trial basis for the 5 ships booked on the Tier so far in 2010. **ACTION: HM(U) / MSM**
- E. The GST Mooring Plan (Item 4 above) is developed, refined and implemented. **ACTION: HM(U)**
- F. The Hydrographic Officer is asked to investigate the potential discrepancies in the tidal sets experienced at the Tier by practitioners and the Spring Tide Flows data provided by the Hydrographic Department. **ACTION: HO**
- G. The Standard Mooring Arrangement (see Item 16 above) should be adopted at the base, minimum mooring requirement (changed as necessary as circumstances dictate, and in agreement with the Harbour Master (U).
- H. The PLA should consider the deployment of Stayrite buoys at all buoy positions on the Tier, or at least on the southerly wing buoys. **ACTION: MSM**
- I. When a new regime is formally adopted (post trial) consider requiring naval vessels to use the same arrangements (i.e. no cables). **ACTION: HM(U)**

Panel Chairman:	Julian Parkes	Signature:		Date:	14.02.10
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