Safety first at the interface

A couple of high-profile tanker accidents in open seas have grabbed all the recent headlines. However, tankers are at greatest risk when in port and port approaches. Although progress is being made in improving the safety of tankers in port, much remains to be done

Coastal and port zones represent the most hazardous areas of operation for tankers. Of the 20 largest tanker oil spills over the last 30 years, all but five occurred within sight of land. Of the 2.4 million tonnes of oil lost in these accidents, 1.7 million tonnes escaped in nearshore waters and played havoc with coastal environments.

The explosion onboard a laden gasoline barge berthed at a Staten Island, New York fuel depot on February 21 provided a timely reminder of the hazards associated with cargo transfers in port. On that occasion it is thought that a faulty pump system gave rise to a spill of fuel which ignited and led to the deaths of two workers. The ensuing fire took two days to bring under control.

While in port waters, tanker masters are dependent upon the competencies of port authority and shoreside agencies over which they exert little or no control, i.e. pilotage and tug services, hydrographers, vessel traffic systems (VTS), weather forecasters and terminal operators.

The intense nature of port operations are not limited to that time when the ship is underway. While the ship is berthed, the master remains under pressure to optimise port turnaround times while dealing with everyone from the ship's agent and head office superintendents to ship inspectors and cargo surveyors.

PTS Mark I

One of the defining studies of the risks and problems faced by tankers while in port was the 1996 US Port & Terminal Safety (PTS) Study compiled by the International Association of Independent Tanker Owners (INTERTANKO). In the preamble to the PTS study the Association pointed out that while tanker shipping was subject to a harmonised international regime, harbour controls and their standard of implementation varied from port to port.

The discussion paper focused on the US because of the importance of tanker shipping to the US economy and the scale and diversity of the US tanker and terminal infrastructure. So great is the level of US oil imports and chemical exports that over 40 per cent of the tankers greater than 10,000 dwt in size visit the US each year. In addition, including river and waterway facilities, there are over 3,000 bulk liquid terminals in the US.

The PTS study identified several areas in which INTERTANKO believed that tanker port and terminal safety could be improved and made recommendations in the areas of waterway management; passage planning and pilotage; VTS; dredging, hydrography and navigational aids; underkeel clearance; human factors; inland and ocean tows; escort tugs; ship/terminal interfaces; and data transparency.

PTS Mark II

The findings of the PTS study were endorsed by the US Coast Guard upon publication in 1996, and the recommendations were taken onboard as part of the prioritising of its own work programme. The findings have also been acknowledged by the US Department of Transportation (DOT), not least in the 1999 publication "An Assessment of the US Marine Transportation System (MTS)".

The PTS findings have also received varying degrees of support from other parties amongst those groups that comprise the so-called tanker safety chain of responsibility. The links in the chain include pilots, tank barge operators and

hydrographers from the US National Oceanic and Atmospheric Administration (NOAA).
To assess the response to its recommendations and analyse the measures which still need to be addressed, INTERTANKO in October 2002 published an update of its PTS discussion paper. While acknowledging the progress that has been made, PTS Mark II points to a number of the original recommendations with which little advance has been made.
For example, funding for dredging in major ports like New York/New Jersey and Houston has not been forthcoming to anything like the extent and pace required. Similarly, the necessary financial support for a range of critical, new NOAA hydrographic data is yet to materialise and there has been a failure to utilise proceeds from the Harbor Maintenance Trust Fund (HMTF) for many worthwhile marine projects.
PTS II also states that virtually no progress has been made in the effort to address many of the substandard oil terminals found in the US. Many of these terminals date back almost a century and were originally built when tanker sizes were a fraction of those serving the port today. It is not unusual to come across wooden jetties at some of the more remote terminals.

Harbour committees
One of the major improvements on the US port scene in recent years has been the establishment of Harbor Safety Committees (as the first PTS study had recommended). Many of these HSCs have implemented unified waterway management systems for their jurisdictions for the first time, but a number of ports remain without such plans.
Many US ports are also reluctant to set waterway limits such as maximum allowable ship sizes and minimum allowable underkeel clearances, preferring to keep options open and to consider transits which may cause problems on a case by case basis.
Some progress has been achieved by the Waterway Management Directorate established by the US Coast Guard. This body had carried out port and waterway safety assessments for 29 different areas as of October 2002. Also, the September 11 terrorist attacks prompted the Coast Guard to make greater use of risk-based vulnerability assessments to help focus safety and security resources in the most critical areas.

Pilotage issues
Despite a recommendation in PTS I that pilots and masters to discuss and agree ship passage plans, based on documented procedures specific to each area, little progress has been made. Pilots in the majority of ports worldwide, not just in the US, are reluctant to supply passage plans, not least because of liability concerns.
Although some pilots have responded positively to calls for greater accountability of their performance, according to PTS II "the majority seem to adhere to the concept that pilotage is an art which must remain self-regulated, and resist IMO intrusion".
Discussions on introducing some element of competition into pilotage services have commenced in various US and European ports in recent years, but pilotage rates and competitive pilotage are sensitive issues. While competition may be commercially desirable, it should not be allowed to compromise pilotage safety.

VTS progress
An area where more progress has been made since the appearance of the first PTS study six years ago is in the area of vessel traffic systems. This has been due to the introduction of the universal automated identification systems (UAIS).
In PTS I INTERTANKO was critical of the failure of many US ports with extensive maritime traffic to adopt VTS despite the increased safety that would accrue. It was pointed out that use of technology based on differential global positioning systems

(DGPS), electronic chart display and information systems (ECDIS) and "silent laptop VTS" would yield advantages at modest cost.
The adoption of AIS-based systems has allowed a number of ports to improve the management of vessel traffic in their waters, but in the US more federal funding is needed to support the spread of this technology to other tanker ports.
Also, training has proved to be a key issue. In many cases, while being provided with the latest navigational technology, mariners and shore VTS personnel are not sufficiently trained to ensure the AIS equipment is utilised to optimum effect.

Know your channels
The new, second PTS study finds that US federal funding for the provision of better hydrographic data and real-time weather, tide and current information is still inadequate for a nation that relies so heavily on seaborne commerce, not least to meet its energy needs.
The funding for dredging, too, needs to be increased. Container traffic through US ports is forecast to at least double over the next 20 years and much of the increased flow will be carried in the new generation of large container ships. Many container ports will be unable to accommodate such vessels in their current state.
INTERTANKO has recommended that the Harbor Maintenance Trust Fund and the Oil Spill Liability Trust Fund, both of which collect fees from ships, be utilised to contribute to the financing of the necessary charting and dredging services. However, as yet, Congress and two administrations have failed to take up the recommendation. Lack of awareness of the importance of ocean commerce to the US amongst the general public is hindering progress.
Another critical area is the approaches to berthing areas, outside the federally funded main channels in a port. Again, many tanker berthing areas in US ports do not have adequate water depth data, and there is no unified, nationwide requirement for the provision of such information. PTS II reiterates the need for local harbour authorities and pilots to work closely with the US Corps of Army Engineers, which is responsible for federal dredging, to work closely together to ensure that the latest water depth and real-time data is available.

Terminal vetting
While ship inspections are widespread and, in the case of class, flag state and port state requirements, mandatory, the shore terminal inspection regime is piecemeal. While certain oil majors vet terminals, there is no formal terminal vetting scheme in place.
Shipowners believe this constitutes a weakness and that poor jettyside equipment and improperly trained terminal staff can jeopardise the safety of their vessels.
In response INTERTANKO and a number of companies which trade frequently to the US developed a pilot terminal evaluation programme to test on the facilities in a particular area. A simple one-page terminal vetting form has been developed which masters on INTERTANKO member company tankers are encouraged to complete for each terminal visited worldwide.
The accumulated data should facilitate an improved dialogue between tanker and terminal operators and highlight what weak spots, if any, exist at specific terminals and within the overall system.

Future efforts
In overall terms, tanker shipping's safety record, with an average of one major accident every 20,000 voyages over the past 30 years, is a good one, and one that has shown particularly good improvement over the past decade. The amount of oil pollution from tankers, both accidental and operational, has been reduced by approximately 80 per cent over the last 20 years.

However, as recent events have once again shown, a single tanker oil spill is one too many. All those bearing a share of the responsibility for safe passage and operation of ships in port waters have a key role to play in the drive towards the goal of 'zero accidents'.

A key first step is to increase awareness of the importance of maritime commerce to the US economy amongst the general public. Also, the new focus on maritime security measures, with the emphasis on risk analysis, is expected to bring benefits to maritime safety in general.

Shipowners regard proper funding of waterway management essentials, adequate training in the use of new technologies and improvements in terminal vetting as the other essential ingredients for cleaner, safer tanker ports.