All India Maritime Pilots' Association

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All India Maritime Pilots' Association

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From The President's desk

Capt. Gajanan Karanjikar
President- AIMPA

Dear Readers and Fellow Maritime Professionals,

This month I bring back into focus the issue of improving safety and safe work practices in India's port facilities. This is in relation to personnel transfer arrangements between ship and shore and/or port craft. I propose that this can be greatly aided by suitably amending existing workplace safety legislation.

All countries have some sort of "safety at workplace" laws. The aim of such laws is to oblige owners of enterprises to provide a satisfactory level of "workplace safety". Workplace safety includes safe access to that place!

But ships, especially those flying foreign flags, are governed by a different set of laws. These laws are of that ship's flag-state. Essentially, the flag state's laws implement the SOLAS and other Conventions as well as applicable resolutions adopted by the IMO. However the SOLAS convention and many IMO resolutions do not apply to port facilities. Such facilities have to comply with the applicable laws of the place they are located in. Thus, a grey zone between jurisdictions exists due to which redressal against ships, for poor work practices on board that endanger the safety of pilots - by way of non-compliant pilot transfer arrangements - becomes very hard to obtain. Due to asymmetries in their influence and powers, pilots working at port facilities have to mostly "accept" the status quo, "stop fussing and cribbing" or worse, suffer injury, even fatalities. While AIMPA suspects that this is the situation for maritime pilots at port facilities in many parts of the world, our focus will, naturally, be restricted to the situation in India alone. Essentially, what exacerbates this deplorable situation is the lack of a ready redressal mechanism for affected personnel in a port facility.

In the months before when AIMPA organized its first ever webinar in Oct 2020, I was in touch with Capt. Ravi Nijjer, an esteemed senior Australian maritime professional. Ravi told me that in Australia, after a long drawn effort, the pilot ladder got included within the "workplace safety" regulations. It became an item of equipment that had to meet standards of fitness and rigging.

How? By amending the applicable national / state legislation so as to include the ship as a "workplace" of the pilot. The port being the pilot's employer, by these amendments, thus became the entity directly responsible and strictly liable for providing for the pilot's safety at his workplace, the ship, which includes a safe access to it.

Presto! A port facility had to now bear the same standard of responsibility towards its pilots too. Just as it was already obliged to do so for its other employees and personnel of contractors engaged by it. These same laws already provided powers to and obliged port facilities to act, and enforce those actions, through the designated government enforcement agencies. So, it is our understanding, all that a pilot at an Australian port needs to do is report any deficiencies in a ship's pilot transfer arrangements to the port authority. Under their amended laws, that port authority is obliged to act on the pilot's complaint. (The port authority would, in all likelihood, inform the Australian maritime safety administration e.g. AMSA - of the pilot's complaint. AMSA would investigate the complaint and, absent a reasonable explanation from the

ship, issue orders to the ship for corrective action, or even more stringent measures depending on the circumstances. In due course, as the costs of non-compliances bite, including tarnishing of a clean track record in the PSC regime's database, ships will take more care in their pilot boarding arrangements).

Under AIMPA's auspices, moves are afoot to try and similarly do here, in India, what was done quite some time ago in Australia. That is, get the appropriate amendments inserted into the relevant national/state legislation. It won't be an easy task. But AIMPA feels that if we manage to get these enabling amendments to our legislation done, it will provide pilots anywhere in India, be it at major or minor ports, public or private ports/terminals, directly employed or via contract/sub-contract – with a robust mechanism to ensure, as much as possible, that pilot transfer arrangements meet the applicable safety standards.

To Note: The word "access" wherever used above in the context of a safe workplace in a port facility, relates to personnel transfer arrangements between ships and the jetty/wharf like shore gangways and ship's accommodation ladders, and arrangements for access by personnel to and from harbor craft and harbor craft jetties / moorings and not restricted to just those that may be provided by a vessel. Thus AIMPA intends the scope of its efforts to be wider!

Your opinion on this approach to help improve the safety of personnel transfer arrangements - whether provided by ships or by the port facility - and suggestions on how best to take this forward, are eagerly awaited by AIMPA.

With best wishes,

Capt Gajanan Karanjikar
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PILOT PERSONALITY OF THE MONTH

Capt Ashok Gole

Capt Ashok Gole retired in 2010 from Pipavav port as its harbour master. Even so he leads a very active life now, in Pune. Though his contribution to the Industry has been really significant, far too few knew of it until AIMPA interviewed him recently for its "Pilot ki Baat" Youtube show. Essentially, we learnt of his intimate involvement with the turning of a green-field port, located on a remote rural patch of the south coast of Gujarat, into a vibrant, profitable, modern port facility with infrastructure that would be the envy of any world class port. He helped establish excellent marine-side work practices and a happy work culture. The port thus enjoys a sterling reputation for safe and reliable services.

Capt Gole is of the 1968-70 batch of the TS Dufferin. After a satisfying sea career, in 1998 he seized his chance and joined as a trainee pilot at Pipavav port. Ashok learnt the ropes of pilotage at the hands of a senior retired ex-Mumbai Pilot – the late Capt Baldwin Nazareth (may he RIP) - who at the time was also the manager of a captive jetty of a cement factory. The then fledgling Pipavav port's seafront infrastructure was just this captive jetty and a jetty for bulk and generals about half a mile further in. Being located in a remote, rural area the port had poor infrastructure for its staff and challenging connectivity to the hinterland. Its navigation channel was littered with dangers, and the aids to navigation were insufficient. Pilotage thus was constrained to daylight hours. The maximum displacement of vessels calling was quite restricted.

In 2002, once Pipavav port was taken over by the AP Moller Group, it took off. Ashok participated with gusto in every aspect of the

port as he never believed in working in departmental silos. He soon became the harbour master of the port.

Everything had to be built new.

Road and rail connectivity,

- land reclamation for a container yard, storage planning for bulk and containers, a new container jetty, liquid cargo handling facilities,
- capital dredging of the channel including the widening of the opening in the reef,
- publishing a thoroughly re-surveyed and updated nautical chart for the harbour through the NHO,
- establishing navigation aids to allow night navigation,
- getting good tugs,
- approvals from the maritime administration.

The list can go on.

Ashok took a deep interest in all these developments. As if that were not enough he played a major role in convincing the port management to take certain measures towards the welfare of staff and the people in the surrounding villages. Through his tireless efforts the staff housing facilities were refurbished while a new staff colony was being built. The standards of the pre-primary school - for the children of the many young staff - were vastly upgraded. As part of CSR, material support was provided to nearby educational institutions.

He also started a sports club and a ladies club both of which held annual events and competitions that were great fun. He was greatly assisted in all these welfare activities by his wife Nandini who is herself a qualified and experienced school teacher. Ashok thus managed to establish ashore what good shipmasters seek to do at sea. That is, observe the age old wisdom that "a happy ship, is a safe (and productive) ship". To top it all, Ashok is a cook par excellence. Food diplomacy was his go to approach when he had to get his point across to management or colleagues or, at times, even Government officials. It worked famously! Ashok remains unfailing in his praise for the port's management and all its departments and staff for giving him so much support and encouragement.

AIMPA feels an important takeaway for ports elsewhere to emulate, whether in India or abroad, is to involve their marine department in all aspects of the port's development and operations. It pays. The solid legacy set by the management practices followed at Pipavav port during its initial developmental phase speaks of this fact.

AIMPA wishes Capt. Ashok and Mrs.Gole many more years of a happy, active retired life.

Capt. Ritesh Bhamaria

GALLANTRY AT SEA BY MARITIME PILOT

Capt Bhamaria is an Indian citizen, born and brought up in Mumbai and currently working in Australia as a pilot with Torres Pilots Pty Ltd.

On the 3rd of December, 2020, Capt Ritesh Bhamaria, was piloting the Aframax tanker MT GODAM. At about 0715hrs, while the vessel was near the Kircaldie and Archer Reefs, enroute its voyage through the treacherous Torres Straits off the north coast of Australia, the ship's crew spotted something in the water. Taking a better look, it was found that it was two men on a wooden plank waving frantically for help. The weather conditions were 30kt winds with gusts to 45kts and swell of 2.5 to 3 mtrs. Pretty rough! Also, visibility was restricted to 1 to 1.5nm due to heavy **torrential rains.**

The waters of the Torres Strait and the adjacent Great Barrier Reef are a natural wonder and a world heritage Marine Park. In 1990, the IMO declared the Great Barrier Reef as a Particularly Sensitive Sea Area (PSSA). In 2015, the adjoining Torres Strait too was declared a PSSA. What this means is that anyone who causes damage to the reef or pollution in these waters is liable to stringent action which includes very heavy personal fines as well as jail terms. And these waters are notorious for the intricacies in their navigation due to strong, twisting currents **ranging from 2.4 knots – 8.0 knots** at different stretches in their numerous complicated narrow passages. Therefore, vessels are mandatorily required to have **an "AMSA certified pilot"** on board when navigating in these waters. And the pilotage regulations for these waters place the full responsibility for the conduct of the navigation of the vessel on the shoulders of the Pilot. Meaning that, if the pilot makes a mistake which results in damage to the reef or pollution of its waters he will, prima facie, be held personally responsible.

Aware of all these risks, Capt Bhamaria didn't hesitate. He sounded 3 long blasts, sent out a Mayday and also alerted the Reef VTS – who in turn alerted the AMSA. He consulted the Master and after assuring him he would be fully responsible, he turned the vessel around. This was within minutes of the men being spotted in the water.

Capt Bhamaria says, that turning the ship in restricted waters and the prevailing weather conditions was very difficult. They lost the sight of the people three times. **Moreover, at the time, the possibility of presence of more people being in water, in the absence of any distress alert sent out, or the nature of the distress being unknown, was anticipated, so the risk of running over people in the prevailing bad visibility, persistent heavy rains and rough weather was very high.** Therefore extreme cautions were being exercised while conducting search for people in water. If such were to happen, the pilot would face serious charges like culpable homicide. He knew that a rescue helicopter was on the way.

On the fourth sighting of these two people it was realised that there were Reefs and shallows behind them and any repositioning of the vessel could result in loss of their sight yet again. Moreover lowering of rescue boats in the prevailing weather was assessed as not to be feasible under the prevailing rough weather So he could have easily chosen to simply stand in the area at a safer distance and await its arrival. But deadly hammerhead sharks were seen circling the men in the water! That was when he knew he was doing the right thing and continued to make attempts to place the ship close to the men.

Stopping the ship's propeller inorder to make an attempt with shallows in close proximity and behind the survivors could render vessel un maneuverable and at the mercy of the weather as this approach could have taken her straight into shallows. Running a propeller closer to these people would have placed these people running under the propeller. However he made this approach keeping in mind the presence of the sharks, as with this maneouvre he chased the sharks away with the ships movements and secondly on the first pass he managed to get close enough to toss out a MOB life buoy to them before turning his ship around with just 1 and half ship-lengths clearance from a reef patch!

Releasing a smoke marker also helped for his next pass. Finally, he managed to bring the ship within **just 1 meter** of the men. One was picked up by the ship **and the other was lowered, to the helicopter's rescue diver, which arrived later, after being picked up half way through.** Later, both were lifted off the ship by the helicopter and taken ashore. They were local fishermen, **torres straits Islanders, whose small boat had sunk in the rough seas the previous evening at 1500 lt and they were lying on a wooden plank.** The rescue made news headlines in Australia. Capt Bhamaria received commendations **from the Queensland minister for Torres straits Islanders** and MP Mr. Craig Crawford and the Australian High Commissioner to India, HE Barry O'Farrell. On behalf of the Indian Maritime Pilot fraternity, AIMPA too conveys its congratulations to Capt Bhamaria, for his gallantry and the exemplary skill with which he saved two precious lives.

Sanjeev Pande

REPORT ON P&I CLAIMS INVOLVING VESSELS UNDER PILOTAGE 1999-2019

The International Group of P&I Clubs (IGP&I) has published its report on incidents involving vessels under pilotage for the period 1999-2019. The incidents included are those where liabilities were in excess of US$ 100,000 and where it is considered that actions of the assisting pilot have caused or contributed to the casualty.

Paul Jennings, International Group Chairman, in the foreword to the report writes "The report recognises that there is generally a shared responsibility for such incidents and, whilst the number and overall cost of the incidents covered by the report are significant, when viewed with reference to the number of shipping movements in and out of ports worldwide in any one year, the frequency of such incidents is low. Notwithstanding advancement in training and technology, it is nonetheless likely that there will continue to be incidents of loss or damage that arise with vessels under pilotage. When such incidents occur, the report recommends that there should be more specific follow-up action than has generally occurred to date. The need for engagement of both pilotage bodies and port authorities in this regard cannot be overstated. Collaborative engagement of all relevant parties in investigating the causes of more serious incidents can only be of benefit to industry, and society as a whole, when identifying measures that will assist in achieving sustainable risk mitigation and loss prevention.

The report reflects both the unique and invaluable forum that the International Group provides for sharing information on such matters of concern to Clubs and their Members, and the unparalleled source of knowledge and expertise which can be brought to bear in exploring and developing solutions and loss prevention measures. This resource will be increasingly important in providing support in the challenging and evolving times ahead for the shipping industry".

Excerpts from the Executive Summary of the report:

The report covers a twenty-year period between 1999 and 2019 in which there were 1,046 incidents and resulting liabilities in excess of US$1.82bn

Whilst there is volatility in the number and severity of incidents in each year, the yearly average of 52 incidents equates to one incident per week, and the average value per incident is approximately US$1.74m. Whilst the overall cost is substantial, the number of incidents is however very small in comparison with the overall number of acts of pilotage undertaken every year.

The report considers incidents in four categories – Allision/Contact with Fixed or Floating Objects (FFO), Collision, Grounding, and Navigation, the latter category encompassing incidents such as those caused by the wash of a vessel.

As may be expected, incidents in the Allision/FFO category constitute the majority – 60% of the total number – and cost in excess of US$1.14bn. Collision incidents represent 31% of the total number and cost in excess of US$479m.

Although the report is focused upon data in the Clubs' underwriting years up to and including 2018, there is comment upon some limited data for 2019. This is because of the severity of three incidents in that year, all of which involve contacts between container vessels and gantry cranes. There have in addition been two more recent incidents of a similar nature notified to the IG Pool for the 2020 underwriting year. The berthing of large container vessels is identified as an area of focus for further work.

When accidents occur whilst a vessel is under pilotage the cause is generally a collective under-performance of the bridge team and it is recognised that the ships' masters and officers will also have played a part. Consequently, the report recognises the importance to safe navigation under pilotage of an effective Master-Pilot Information Exchange (MPX) at the commencement of the pilotage, and good Bridge Resource Management (BRM) during the pilotage passage. The need to reinforce training in these areas is recommended.

The summary says that these are not new issues and there is nothing ground-breaking in this recommendation. And that "Enhanced and repeated training is an appropriate response to such issues".

The summary goes on to -

Suggest that navigational audits or reviews can be of value in improving the quality of BRM, and that generic pilotage passage plans can help to facilitate the

understanding of the pilotage approaches to unfamiliar ports and facilitate the preparation of berth to berth passage plans;

That it is not considered appropriate or feasible to seek the establishment of regimes under which significant liability, backed by insurance, should attach to pilots or the appropriate pilotage body as a means of transferring liability exposure from the IG Clubs. Instead, a collaborative approach is preferred whereby coordinated efforts are made by all stakeholders to investigate and determine the root causes of these incidents when they occur in order to then identify and implement remedial measures that will prevent recurrence;

That many of the accidents giving rise to the claims that are included in this report do not appear to have been investigated by the relevant flag states. Consequently, the report recommends the establishment of more structured arrangements to facilitate fact-finding, root cause analysis and risk mitigation measures, particularly for the more serious incidents;

Recommends that consideration be given to the establishment of a Memorandum of Understanding arrangement with the entities responsible for pilotage in various ports or countries, pursuant to which there should be a commitment to cooperate with the IG Clubs in investigating the causes of the more serious incidents for the purpose of identifying measures that will assist in preventing further loss. Such an arrangement could initially and usefully focus upon the pilotage bodies involved with the most serious container vessel/gantry crane accidents, and the berthing arrangements for such vessels generally given the frequency and severity of these claims. The Suez Canal is also an appropriate area of initial focus given the frequency of groundings in that waterway.

It is satisfying to note that prior to publication, the draft of this report has been shared with the International Maritime Pilots' Association (IMPA) given the direct interest of their membership, and also the International Chamber of Shipping (ICS) in light of their (2016) Pilotage, Towage and Mooring Survey as the feedback therein has been taken into consideration.

The report then goes on to provide extensive statistics on each of the four categories of incidents Allision/FFO, Collisions, Grounding and Navigation. No clear pattern is discernible from these statistics as to the proximate cause, frequency or severity of incidents. However, the statistics do show that the number of incidents are higher in locations where traffic density is high. But this in itself does not mean pilotage standards are poorer in such locations, just that the sheer volume of traffic gives more opportunity for incidents to occur.

Of particular interest to our readers, it is felt, are the Annexes to the report as they carry a set of specific observations and recommendations. Readers should note that they should refer to the original report if they intend to act upon any of the recommendations in these Annexes which are published here.

Annex-1:

This is a submission made by the ICS to the IMO in Dec 2017 to its sub-committee on Navigation, Communication and Search and Rescue (NSCR). The submission contains the results of the ICS pilotage, towage and mooring survey carried out between Sept to Nov 2016. Annex-2 is the questionnaire that was used to carry out the survey.

For the sake of brevity AIMPA is publishing here just excerpts of the "Executive Summary" of Annex-1 as below.

- The survey reports the level of satisfaction of masters and bridge teams with pilotage, towage and mooring services.

Satisfaction rate (%)

Conduct of the Pilot – 84%; Conduct of the pilotage 82%; Use of electronic navigation aids 72%;

Towage and mooring services 78%

- Based on the responses received, the quality of pilotage, towage and mooring services worldwide have generally been reported to be of a satisfactory standard and, in particular:

- the survey identified no systemic concerns with respect to the content and application of the Recommendation on training and certification of maritime pilots other than deep-sea pilots (resolution A.960(23), annex 1);

- the survey identified no systemic concerns with respect to the content and application of the Recommendation on operational procedures for maritime pilots other than deep-sea pilots (resolution A.960(23), annex 2); and

- the survey identified no systemic concerns with respect to the provision of towage, mooring services or the Guidelines on minimum training and education of mooring personnel (FAL.6/Circ.11/Rev.1).

Despite the general level of satisfaction reported above, the following safety related findings from the survey are worthy of note:

- Communication difficulties between pilots and bridge teams is a commonly reported concern worldwide;

- the level of knowledge of the areas of the recommended syllabus for pilotage and certification or licensing contained in section 7 (syllabus for pilotage certification or licensing) of annex 1 of resolution A.960(23) which were addressed in this survey demonstrated concerning inadequacies by a minority of pilots;

- the availability and use of personal protective equipment (PPE) by pilots and the provision of appropriate vessels for Pilot transfer is an area of concern. In the case of PPE, there were 36 reports covering 16 different countries of pilots boarding without appropriate PPE;

- it is understandable that communications between

the Pilot, towage and mooring personnel are often conducted in a local language. However, this practice places a burden on the Pilot (that may interfere with the Pilot's primary role), to translate orders and actions during towage and mooring; and

- there may be a need for the development of an internationally standardized approach to the Master-Pilot information exchange (MPX) which emphasizes the visual presentation of the Pilot's plan for the pilotage during the MPX, and discourages reliance on a purely verbal exchange of information.

(The report mentions that these safety related findings have been shared with the IMPA)

Annex-3:

This is the submission made by the IMPA in Apr 2019 to the IMO's sub-committee on implementation of IMO instruments titled "Lessons Learned and Safety Issues Identified from the Analysis of Marine Safety Investigation Reports" – as regards Safe Pilotage Practice. The submission focuses on safety issues identified from an analysis of marine safety investigation reports regarding recent incidents involving ultra large container ships (ULCSs) while under pilotage.

Here is the annex with some minor editing:

Background

1 - IMPA has been following closely certain incidents involving ultra large containerships (ULCSs) in port/pilotage areas, which have resulted in injury to port workers and included damage to the ship, port and cargo-handling infrastructure.

The way forward

2 - Section 5 of annex 2 of the Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots (resolution A.960(23)), relates to the master – pilot information exchange before the piloting/berthing procedure commences.

3 - Accordingly, as a first step, it is suggested that all pilotage authorities should ensure that pilots are fully familiar with the recommendations outlined in annex 2 of resolution A.960(23).

4 - It is important for port and pilotage authorities to drive home the message to pilots and ship operators on the imperative need for an exchange of information between the master and the pilot and for the bridge team to take an active role in the ship's navigation in support of the pilot.

5 - The other practical issues that are of relevance are:

.1 inter-port rivalry for handling of ever larger ships may compromise safety judgments and propose ships movements that involve excessive risk owing to inadequate under keel clearance (UKC), channel width, safe turning basins, or other necessary navigation infrastructure;

.2 machinery failure;

.3 rudders with small surface areas and software managed engines to improve fuel economy make ship manoeuvring ever more difficult;

.4 absence and shortage of adequate number of assist tugs of suitable power for the size of the ships being handled; and

.5 escort tugs and/or powerful tugs for steering/pushing a ship away from a developing incident area.

6 - From a closer review of a recent Marine Accident Investigation Branch (MAIB) report of such incidents, some pertinent issues outlined above in paragraphs 5.1 to 5.5 relating to operational pilotage/berthing matters are of relevance. In terms of planning and execution of the ships' movement, there is always the important need for a master –pilot information exchange (resolution A.960(23), annex 2, section 5) and for the bridge team to take an active role in the ships' navigation in support of, and cooperation with, the pilot.

7 - There is also a pressing need for coordination in management of pilotage and port operations in respect of ULCSs. This is the norm in most major container ports. Impractical Key Performance Indicators (KPIs) for pilotage/berthing movements and their corresponding relationship to financial incentives can lead to unfortunate incidents/accidents.

Action requested of the Sub-Committee

8 - The Sub-Committee is invited to take note and action as appropriate, taking into consideration the following:

.1 IMPA is of the view that compliance with the very basic elements of safe pilotage practice outlined above merit careful consideration including an expert review by the Working Group on Analysis of Marine Safety Investigation Reports, if established; and

.2 it is hoped that the relevant expert recommendations can then be shared as deemed appropriate globally by IMPA with pilotage authorities to improve operational safety and to enhance safe berthing procedures in ports.

In conclusion, the author of this article is of the view that of all of the IG-P&I Clubs report's recommendations the one that recommends that globally, pilotage authorities establish the practice of providing a 'generic' pilotage passage plan sufficiently prior (72 hours?) to a vessel's arrival at their ports, must be taken up on priority. After all, if the vessel has made its plan for the passage from the pilot boarding point to the berth based on the generic plan provided, then all the individual members of the bridge team (including the pilot!) will more quickly arrive at the correct and shared mental model of the pilotage.

As a first step in an act of pilotage, nothing could be better – for the Pilot, the Vessel and the Port. Such good practice is already being followed in some pilotage areas. Unfortunately, these are more the exception than the rule. With advances in communication technology sending such plans in advance to vessels is so easy to do – (and which could include pictures or diagrams to overcome possible language barriers). Really, this is low hanging fruit. Let us pluck it and enjoy its benefits!

Pankaj Kapoor

SHOULD MASTER BE ALWAYS LIABLE?

While it is widely advocated that the Master has sole responsibility for safety and navigation of his vessel, there have been many incidents where courts have ruled that, if in error, a pilot must also be held accountable.

In one of the recent cases of the car carrier City of Rotterdam, both the Master and the Pilot were found at fault and sentenced to four months in prison for their involvement in a collision with the Ro/Ro Primula Seaways in December 2015. Capt. Ruslan Urumov and pilot Gehan Sirimanne both pleaded guilty to charges of conduct endangering a ship. Additionally, the Pilot was asked to pay a sum of $60,000 in court costs, an amount which was covered by his former employer, Associated British Ports.

In this case, on December 3, 2015, the City of Rotterdam departed the port of Inningham, England. While the vessel was outbound, strong winds and a pronounced tidal stream set her to the north, towards the inbound lane. The Primula Seaways heading inbound and making 14 knots was alerted by the VTS of the Rotterdam's situation and the growing risk of collision.

On board Rotterdam, the pilot made a number of course alterations to offset the wind and current and bring her back to the south. The heading changes were not sufficient, and the vessels collided. The Rotterdam suffered damage below the waterline and a long gash along her port bow, and the Primula had to undergo repairs of approximately USD 3 million on her bows and forecastle.

While it's true that soon after the pilot boards, the Master hands over the CONTROL of the vessel and not its COMMAND, it is also true that control is handed over with the confidence that the Pilot has intimate knowledge of the prevailing local currents and conditions. The Master relies on the expertise of the Pilot to take his vessel safely in and out of port. And any breach of that confidence and trust should only be expected by the Pilot to be highlighted.

The laws of mostly all countries define a Pilot in very general terms.

The Singapore MPA defines a pilot as “any person not belonging to a vessel who has the conduct thereof”, whereas Australia's Navigation Act defines a Pilot as 'a person who does not belong to, but has conduct of, a ship.'. Indian statute gives a rather more general definition by stating that a Pilot is “a person for the time being authorized by the Government to pilot vessels”

A word which strikes out is CONDUCT of the vessel. Surprisingly all these acts are silent on the definition of CONDUCT. What precisely is CONDUCT? Most courts have restricted themselves to the definitions given for “Pilots” in their respective statutes. Some assistance can be derived from Chief Justice Barton's remarks in the famous case of Fowles v/s Eastern & Australian Steamship co where he stated that "The master of every vessel not exempt from pilotage, arriving at or off any port whereat any pilot shall have been appointed for the purpose of entering any of the said ports or harbours, shall deliver and give in charge such vessel to the duly qualified pilot who shall first board or go alongside of such vessel in order to conduct the same into port, and such pilot shall if required by such master produce his authority to act as such pilot, and no master of any such vessel shall proceed to sea from any of the said ports or quit his station or anchorage in any port, without receiving on board the harbour master or some pilot appointed as aforesaid to move or conduct the said vessel to sea."

In another case of The Andoni, Justice Hill remarked that “In my opinion a pilot, prima facie means, to use Lord Tenterden's words, “A person taken on board at a particular place for the purpose of conducting a ship through a river, road or channel or from or into a port.” And where you find that pilotage is compulsory, that, prima facie, means that the pilot is entitled, and the master is bound to permit him, to conduct the ship, that is, to take charge of the navigation of the ship.”

It can thus be interpreted that when the Master hands over the conduct of the vessel to a pilot then it

is the pilot who should be legally responsible for his own actions. A Master's right to interfere is limited to circumstances where there is clear evidence of the pilot's incapability or incompetence. Even in the absence of the Pilot, the Master was anyway navigating the vessel, but after embarking the Pilot, the Master hands over the conduct of the vessel to the Pilot. Logically then, pilotage commences as soon as proper Master/Pilot exchange has been affected and thereafter the Pilot is in charge of the conduct of the vessel.

An early attempt to regulate the relationship between the Master and Pilot can be found in the Code of Oleron, which was published by a remarkable woman, Queen Eleanor of Aquitaine, round about the time when her son Richard the Lionheart was away on the Third Crusade – say between 1189 and 1192 – and she was vice-regent for him in his territories.

This is what she had to say about the Master- Pilot relationship:

If a Pilot undertakes the conduct of a vessel, to bring her to St Malo, or any other port, and fails of his duty therein, so as the vessel miscarry by reason of his ignorance in what he undertook, and the merchants sustain damage thereby, he shall be obliged to make full satisfaction for the same, if he hath the wherewithal, and if not, he ought to lose his head (rather harsh but true).

IMO has also under resolution A 960 provided as follows :

QUOTE

Annex 2 Sec 2.2 The master, bridge officers and pilot share a responsibility for good communications and understanding of each other's role for the safe conduct of the vessel in pilotage waters.

Annex 2 Sec 2.3 Masters and bridge officers have a duty to support the pilot and to ensure that his/her actions are monitored at all times.

Note: Above is a clear indication that everyone on the bridge is responsible for safe navigation while the pilot is on board. While Sec 2.1 states that "the presence of the Pilot does not relieve the Master and Duty officers from their obligations towards the safety of their vessel", it also can be interpreted as "a Pilot is also not relieved of his/her obligation towards the safety of the vessel"

Annex 2 Sec 3 Pilot boarding point

Annex 2 Sec 3.1 The appropriate competent pilotage authority should establish and promulgate the location of safe pilot embarkation and disembarkation points.

Annex 2 Sec 3.2 The pilot boarding point should be at a sufficient distance from the commencement of the act of pilotage to allow safe boarding conditions.

Annex 2 Sec 3.3 The pilot boarding point should also be situated at a place allowing for sufficient time and sea room to meet the requirements of the Master-Pilot information exchange.

Sea room to meet the requirements of the master-pilot information exchange (see par 3.3 The pilot boarding point should also be situated at a place allowing for sufficient time and sea room to meet the requirements of the master-pilot information exchange (see par Annex 2 Sec 3.3 3.3 The pilot boarding point should also be situated at a place allowing for sufficient time and sea room to meet the requirements of the master-pilot information exchange 3.3 The pilot boarding point should also be situated at a place allowing for sufficient time and sea room to meet the requirements of the master-pilot information exchange

UNQUOTE

There was a case where the Pilot along with two trainee pilots boarded the vessel well after the actual boarding ground thus leaving no time for a proper exchange. Even after boarding, the pilots were busy conversing in local language, interspersed with the Pilot giving orders to Tugs. None of this was comprehensible to the Master who did not understand the local language. The VDR recording proves that the Master made several attempts to communicate this to the pilot. Total confusion prevailed on the bridge as besides the three pilots, the Master, duty officer and duty AB were also present (bridge was crowded) and no one on the bridge understood what orders the pilot was giving to the tugs or shore personnel. This resulted in the vessel's bulbous bow striking the terminal head on as neither the tugs or vessels engines were able to control the vessel's swing speed. Should we blame the Master alone for this or should the pilot too take part responsibility for creating such confusion on bridge?

Additionally, there have been various instances where Masters have reported misuse of mobile phones by Pilots during critical operations. Any requests from the Master for refraining from using a mobile phone is at times not taken in the right spirits by Pilots.

A Master's problems during pilotage are further exaggerated when the languages spoken are different than that of the Pilot. How then does a Master control a situation where despite repeated requests the pilot continues to speak to tugs in the local language and if an incorrect order results in an accident…should the master be pulled up for it, or as the ISM manuals and various guidelines state, that Master should take back the control of vessel? How would that be interpreted by the Pilot or the shore authorities? There are commercial pressures and no one needs an incident. A difficult situation indeed for the Master. While an alert Master would make an attempt to normalize a situation on the bridge, he may not be always successful and at times may even have to face uncalled for confrontation with the pilot with veiled threats included. Shouldn't a pilot with his intricate knowledge of the local conditions and expertise be held responsible for creating a situation whereby the safety of vessel is affected? Isn't it true that pilots in innumerable ports board the vessel well after the designated boarding area and leave well before the pilot disembarkation point? God forbid if the master refuses to accept this practice. His ship is "branded" whenever she visits the port next time! Should the pilots not be responsible for this reckless act? There have been various accidents of vessels in pilotage areas with no pilots on board.

A report by GARD states

"Statistics will invariably show that many marine accidents involve vessels which had a pilot on board. This is in most cases an obvious consequence of the fact that pilotage areas are close to the coastline or in restricted waters. Traffic and safety margins are therefore at a completely different level than on the high seas. Accidents are therefore more likely to occur. Nevertheless, pilotage remains a concern in many parts of the world and a number of recent disasters, such as the "SEA EMPRESS" and "DIAMOND GRACE" groundings, have put pilots and pilotage services under increased scrutiny from authorities, industrial bodies, classification societies and insurers. The varying standards of pilotage worldwide and the lack of international requirements with regard to pilot qualifications, master-pilot relationships and passage planning are of concern to the shipping community. Another concern is that pilots and/or the authorities which employ them, are often immune from liability when their negligence or misconduct causes a casualty."

Another stark example is the 'Wu Yi SAN' Vessel accident that occurred in Korea in 2014. The main cause of the accident was speeding by the pilot. This accident spilled a lot of oil. The company suffered huge monetary damages and the marine environment was seriously destroyed.

In conclusion, it's important to realise that this article is not meant to blame anyone. Pilots too are humans and susceptible to errors. But to the blame the Master and ships staff for every ill of the pilotage industry is also wrong. The aim of this article is to highlight the strains and pressures of ships staff and to ensure that they are allowed to work in stress free environment and not with a "Damocles sword" hanging over their heads at all times.

Editor's comments:

AIMPA thanks Capt Pankaj Kapoor for the forthright manner in which he has conveyed the difficulties and the dilemma of the ship master after he/she hands over the conduct of the vessel to the pilot. However, before reaching any conclusions, readers are invited to also read the summary of the report by the IG P&I Group on "Claims Involving Vessels Under Pilotage" – published in this very issue. Your attention is drawn to the following excerpt from that report:

"That it is not considered appropriate or feasible to seek the establishment of regimes under which significant liability, backed by insurance, should attach to pilots or the appropriate pilotage body as a means of transferring liability exposure from the IG Clubs. Instead, a collaborative approach is preferred whereby coordinated efforts are made by all stakeholders to investigate and determine the root causes of these incidents when they occur in order to then identify and implement remedial measures that will prevent recurrence"

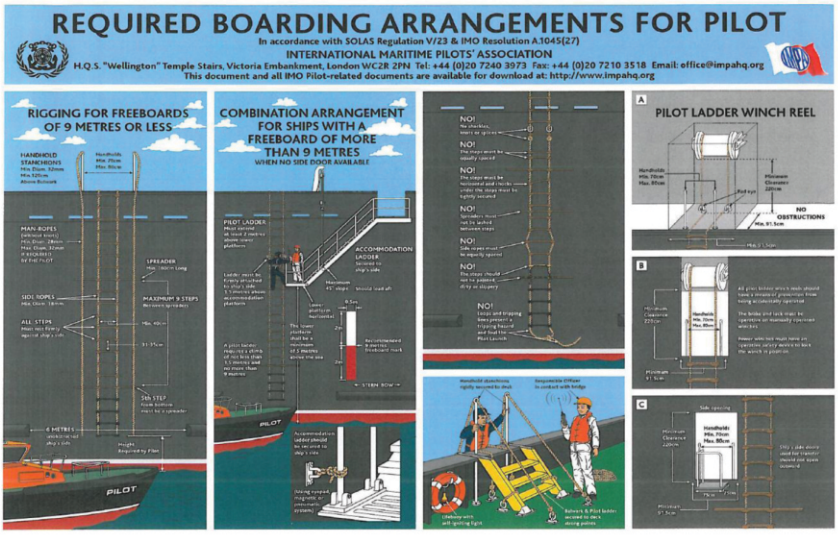
As also to Annex-3 of that report – part-5 (5.1 in particular), 6, 7 and 8.1

Arie Palmer's

THOUGHTS ON IMO PILOT LADDER POSTER

The well known pilot ladder poster is displayed on the bridge of every ship nowadays. Often another copy of the poster is displayed at the pilot boarding point. Crews rather use this poster to install the pilot boarding arrangement than reading another set of rules and regulations, after all a picture tells us more than a 1000 words.

In this article I would like to share my thoughts on this pilot ladder poster. Is it as good as we think or is there room for improvement? By taking you through this poster step by step I hope to explain what needs to be changed to make it similar to IMO an SOLAS regulations.



Pilot ladder poster issued by IMPA

I will tick of a number of improvements and get into a very important issue more extensively.

Combination arrangement section:

- pilot steps up from the ladder to the platform, where he should step only sideways.
- Pilot mark has been placed in the wrong position with the result some ship's do the same thing.
- Someone on the platform welcoming the pilot. The only place where this is mentioned is on the poster, nowhere else. Imho he could better stay on board instead of taking risks.
- Gangway is secured tot he hull by means of rope, a magnet is also allowed. Similar for the ladder: secured by magnets, but rope is also allowed.

Bulwark section:

- Pilot ladder without thimble eyes at the top end, secured with a wrong knot, similar for the sideropes.

Figure A,B and C:

- Drawing suggests pad eyes are the only solution to guide the ladder from vertical to horizontal, as we know more ways are possible.

- IMO A.1045(27) states in 7.4.2: "The pilot ladder shoud be secured to a strongpoint, independant of the pilot ladder winch reel". Not the case in any of the 3 figures
- IMO A.1045(27) states is 7.4.3:"the pilot ladder should be secured at deck level inside the ship opening or, when located on the ship's upper deck at a distance of not less than 915 mm measured horizontally from the ship's side inwards". Not the case or made clear in any of the 3 figures
- In figure C, the ladder is not secured to the ship's hull 1,5m above the platform as required.

Let's now focus on the most dangerous remark on the poster, the 9 m freeboard....

In the combination section is printed: "a pilot ladder requires a climb of not less than 1,5m and not more than 9m."

This suggests that a pilot is allowed to climb a 9m ladder despite the required height above the water. Should, as for example, the pilot boat require the ladder to be rigged at a height of 3.5 meters above the water as we do in our region when we get boarded by swath, this would mean an additional climb of 9 meters would be allowed, wich makes 12,5 meters in total. Absolutely dangerous as the table below explains.

SOLAS ch. V reg.23 tells us very clearly in 3.3.1: a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m **above the surface of the water so positioned and secured that.....**

This is quite different than the maximum climb of 9 meters the pilot ladder poster mentions. People have died falling from heights. Dropping from a height of more than 9 m will most certainly result into fatal injuries. Falling from lesser heights gives you a chance of survival. The table below in which I put dropping height in relation to speed illustrates this. Dropping from a height of even 3m will result in a final dropping speed of almost 28 km/h before you'll hit the deck...from 10 meters even 50km/h, like driving into a wall..

height in m	speed in km/h
1	15,94
2	22,54
3	27,61
4	31,88
5	35,64
6	39,04
7	42,17
8	45,08
9	47,81
10	50,4
15	61,73
20	71,28

As you can see, gravity pulls hard on us....

All together it shall be clear that the poster is a very good asset to give a general idea, but it must be correct and similar to IMO and SOLAS rules, therefore an update is required.

Arie Palmers

Reg. Pilot

Santosh Nayak

SHIP HANDLING: THEORY

Concepts associated with execution of large alteration of courses for larger vessels in Confined waters or in Harbour limits.

Alteration of courses has much significance during manoeuvring of ships anywhere in the world. Alteration of courses in open water is a minor or routine job by the navigator out at open seas. But execution of a perfect alteration of course in confined waters in proximity to navigational hazards is critical task. Though it is a routine and regular job for the pilots and seasoned ship handlers, the stakes involved during the process is very high - thus makes it a critical task to be carried out. The pilots usually carry out critical and large alterations of courses almost by the feel of the relative positioning of the vessel with the help of their highly alert senses and commendable reflexes!!! There is an appreciable processing of information happening in the feedback mechanism running across the minds of the pilots. Yet there is a certain degree of uncertainty always lies in the mind while executing large alteration of ships in confined waters especially in harbour limits.

During this process there may be some misinformation or mis-processing of information. This is very much on the cards. This causes the misplaced execution of the alteration of courses. As long as this misplaced alteration is within the tolerance limits of safety margin, the potential accidents are avoided. But when degree of misplace exceeds the safety margin, there occurs accidents - accidents with heavy claims of millions of dollars.

Alteration of course of a vessel in restricted waters with abundant navigational hazards in proximity is an art as well as a science. Its science because the handler needs to understand the existing forces and calculate their effect and at the same time apply correction in such a way that the alteration is smooth without any overshoot or landing in danger. It's a science as the understanding of the various forces acting on the vessel and best use of them is necessary to carry out a perfect turn. It's an art as it is perfected with experience to carry out a large and tight but smooth alteration of course without any stress on the vessel while avoiding the navigational hazards in proximity.

When a vessel alters her course while turning, there are various forces that act on the vessel to cause her to turn. To understand the dynamics of the turning the ship, we have to understand the following:

a. Relation between ROT and Speed
b. Paths traversed by bow, stern and pivot point
c. Relation between Heading and COG
d. Lateral Traverse (Xr & Xm) of the stern due to Inertia of rest and motion
e. References to be monitored during turning

a. Relation between ROT and Speed

In restricted waters or in harbours, the navigator has to follow a designed turning path. There is not much room to deviate from the designed path. The designated path is proximate to shallows and dangers. There is always a risk of running on to danger of getting aground and or collision.

For execution of a good turn in restricted waters, vessel has to keep right speed in proportion the right ROT.

Let's assume,

r = Radius of the turn,
V = Speed in m/s
@ = Turn Angle,
t = Time taken to complete the turn,
d = Distance travelled on a circular path
ROT = Rate of turn of vessel in degrees / second
w= Distance from wheel over point to the

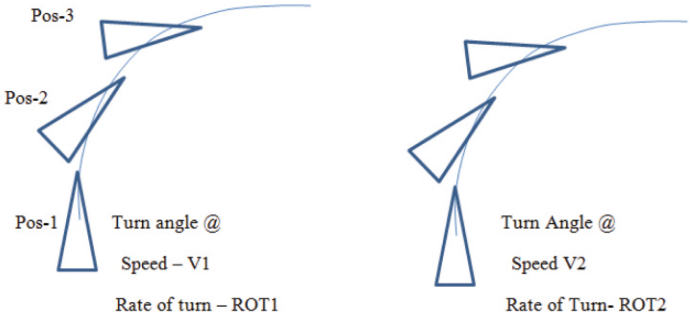
point where vessel actually starts turning

Thus, ROT= @/t V= d/t, V/d = ROT/@ ROT= V@/d

Also, d=r@ ROT = @/t= d/r*t = V/r ROT=V/r

From above linear equations it is clear that the ROT is directly proportional to speed of vessel, V

If Vessel making a speed of V has to turn a angle of @ at a Rate of Turn - ROT, ROT has to be directly proportional to speed V. If a vessel is making more speed, her rate of turn has to be more and the vice versa.



When vessel moves from position-1 to position -2 the distance covered and angle turned by the vessel are the same in both the diagram. But the speed in one diagram is V1 and another is V2. So the ROT in one diagram should be different from other one.

V1 /V2 = ROT1 / ROT2 ROT2 = (V2/V1)*ROT1

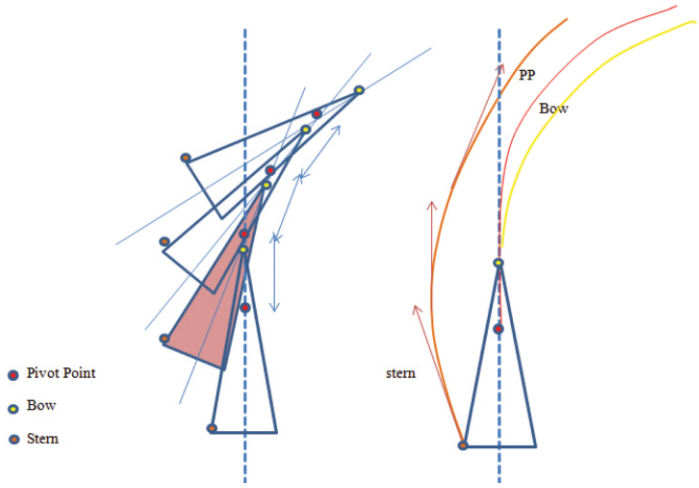
Thus to make a particular turning path, the ship handler has to adjust her speed and ROT accordingly to get a designated turning path. If the vessel is making a lesser speed the rate of turn (or Swing) has to be slower and if the sped is more the rate of turn has to be higher for the vessel to follow the planned path.

a. Paths traversed by Bow, Stern and Pivot Point

While vessel is making a turn in open waters with abundant sea-room, the paths traverse by the bow stern and pivot point matters a little to the ship handlers. But when the sea room is very less, in a range of few metres, it is very important to understand the difference in the paths traversed by bow, stern and pivot point.

At the beginning of the turn, the path of the stern is of much interest to the handler as the stern moves away from the path towards the probable danger at the stern. Bow is supposed to be in safe waters as the bow is turning towards the new course of the vessel.

However towards the end the alteration, the path of the bow is important as the bow would move away from the new course once she overshoots the course. The stern is still coming and yet to come to the new course.



Regarding the paths traversed by the Stern, PP and Bow, the following observations are clear from above diagram:

1. The stern starts moving away from the original path in opposite direction of the alteration of course for some time and then the stern starts moving in the direction of alteration.
2. PP keeps on moving on the same course for some time till the time the inertia of rest is overcome by the PP in her original course. After the inertia of the rest is overcome, the PP starts moving in the direction of alteration on a circular locus.
3. The bow immediately starts moving in the direction of the alteration away from the original course.

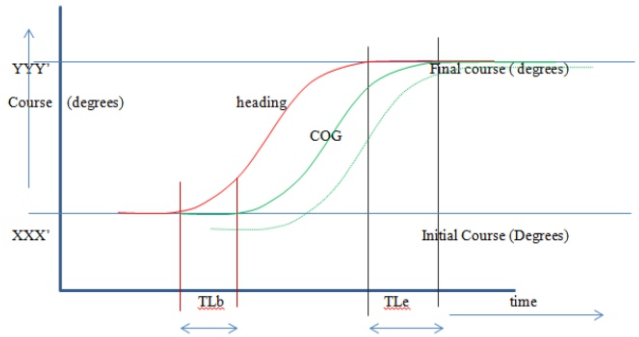
This helps the ship handler in minding where the bow or the stern exactly be landing while altering the course in a restricted waters. This helps the ship handler in preventing the bow or stern to come closer to any navigational hazard in proximity.

a. Relation between Heading and COG

Once the vessel gives wheel over to any side she starts turning to that side after the vessel overcomes her inertia of rest on her original course. There is a time and distance lag before she actually starts turning after wheel over is given. As the vessel starts turning, the heading starts

changing as well as the COG (Course Over Ground); but the heading changes earlier than the COG. There is a time and angular lag between the Heading and the COG.

At the beginning of the turn as the vessel's heading starts turning to one side while the COG remains same as before and doesn't change right away. After some time the COG also starts turning to the same side. Let's assume, the time lag between the turning of heading and turning of COG is TLb. Similarly when the vessel's heading completes the turn and comes to new course the vessel's COG is still not settled down in the new course. At that time the COG is still changing towards the heading. Assume that the time lag between the settling of final heading and COG is TLe.



XXX' : Initial course

YYY': Final Course

TLb : Time Lag between Hdg & COG at the beginning of the turn

TLe : Time Lag between Hdg & COG at the end of alteration of Course

It is to be noted that TLb & TLe may not be the same.

What is the significance of TLb & TLe?

At the time of alteration when wheel over is given to one side, the stern moves in opposite direction from the original path. As vessel keeps on turning to one side the stern keeps moving onto opposite side. The lateral traverse of the stern due to inertia of rest (Xr) of the vessel keeps on increasing during the TLb till it reaches maximum. This happens due to "inertia of rest". As soon as the COG starts turning towards the heading the lateral traverse of the stern starts reducing from the maximum. If there is ample sea room on the stern there is no issues. But if the stern-room is restricted, then the lateral traverse of the stern could cause it to touch the ground or smelling the ground. It could complicate the alteration process. This is critical while altering in the channel. If the white margin of the channel is less than the "maximum lateral traverse" of the stern, then there is risk of the stern being grounded or damage to the buoys if at the stern.

During the alteration of course, there is a continuous lag between the Heading and COG of the vessel.

Towards the end of alteration of course, once the vessel reaches her final course, there is still a lag exists between the heading and the COG. The stern still moves away from the settled new course of the vessel due to the "inertia of motion" away from the newly attained course. The stern keeps on moving from the new course within the period of TLe till it reaches maximum. This is "lateral traverse of the stern due to inertia of Motion"(Xm). This would land the stern off the centre line of the course. If there is not much sea room available at the stern on the opposite side of the turn, this could cause a significant disaster if not controlled properly. The classic example of a disaster due to this is the accident of container vessel M.V. Milano Bridge in the Port of Busan in Apr 2020.

This "lateral traverse of the stern due to inertia of motion (Xm) during TLe is dangerous and pose serious threat to the vessel and environment in restricted waters, channels and harbours. This is due to following reasons:

1. The inertia of motion for large and loaded vessels is very high. This is even higher when moving at a higher speed. To control this inertia of motion possibly the handler may reduce speed in advance for loaded or larger vessels.
2. The time period of TLe is relatively unknown to the handler. The time period may be longer or shorter varies from vessel to vessel. During this period there is a degree of uncertainty in the position of the vessel as it continuously keeps on changing.
3. If there is effect of weather exists at the time of alteration, the amount of set generated by the external force e.g. current or wind etc. is unknown to the handler in the final course of the vessel. Though the direction of wind remains same relatively, the current may be different in the new course. And with the changed course, the relative direction and strength of the combined external forces with respect to the heading of the vessel would be quite different. Thus the amount of set is unknown to the handler. Though the pilot handles the vessels regularly and they can expect the amount of set on a new course. This varies with time in a diurnal range, month of the year, local disturbances in the weather system, strength and direction of tidal stream. There is a certain degree of uncertainty in this regard.

4. This set so generated due to external forces adds up the "lateral traverse of the stern due to inertia of motion" would cause a great amount of uncertainty on the positioning of the vessel in the new course.

5. The time to give correction is also very critical. If not acted swiftly vessel will land upon danger.

Due to above reasons it is very important to understand and take corrective action for this so as to keep the vessel in safe waters all the time during large alteration of courses in restricted waters.

Corrective action to Lateral traverse of Stern (Xm)

Corrective action involves 3 issues – displacement of vessel, speed of vessel and existing external forces causing set and/or leeway.

1. Handler can do nothing about the Displacement of vessel. Looking at the displacement of vessel handler may decide on what speed to keep during the alteration and ask for additional assistance of tug if necessary.

2. Speed is critical. Maintaining an optimum speed is the key. For high displacement vessels, it is preferable to reduce the speed in advance so that the inertia of motion would be lesser. For lighter vessel handler may choose to keep higher speed.

3. Regarding the existing weather creating set and/ or leeway, it is advisable to keep the heading towards the weather so that there is a little safe margin on the lee side of vessel during the period of uncertainty of TLe. If not heading to the weather side and there is no safe margin on lee side, if the set is more than expected and by the time handler realises it and vessel is drifted few metres onto the lee side. If not, she will be drawn to the edge of the channel and face consequent hazards.

Even after the alteration, it advisable to alter few more degrees (+Cz') towards the altering side before she settles on the final new heading. This may be called as "Corrective Angle". This is +ve if altering to stbd side and –ve if altering to port side on the 3 digit notation of the course. Then give wheel hard over on opposite side so as to break the inertia of motion of the stern away from the new course. This would cause the COG to settle down quickly on the finally desired COG.

The Cz' should further be increased or decreased depending of the direction of weather and consequent set of the vessel. This additional correction +/-Wz may be called as the "Weather correction". This is the resultant of the effects due to current, leeway and Tidal stream on the vessel

Thus the final corrective angle may be called as Weather Corrective Angle (wCz')

wCz = Cz +/- Wz

Final heading = final charted course +/- wCz (+ for stbd side, - for port side)

Green dotted line in the above diagram of graph shows the path of COG if there is a current or weather exists on stbd side and vessel is having a set to port side. After alteration of course the set may not be the same as before alteration of course.

a. Lateral Drift of the Stern and the Bow while turning

When vessel is turning, though the heading of the vessel keeps on changing the COG of the vessel doesn't change appreciably till she settle on a new heading. Once she settles on a new heading her COG changes gradually and settles down near the heading with applicable set.

As the PP lies about 1/5th of L from the bow, when a vessel turns to any side her stern moves in the opposite direction of the turn substantially and bow onto the direction of the turn lesser than the stern.

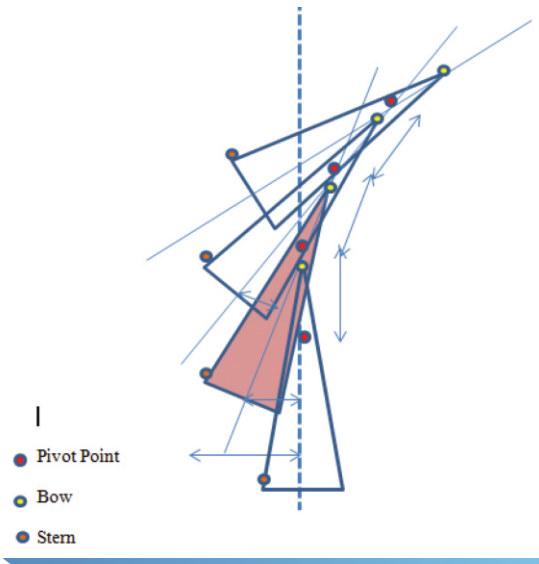
Let's examine how the bow and the stern moves from their original positions in the following diagram

For small alteration of course,

Lateral movement of stern = K+B/2 + (4/5)L tan@

Let's say,

ROT = r, Speed = v, Turn Angle =@ in the time period of TLb , Time taken = t (TLb), Distance travelled= d



At position P-1,
Lateral movement of stern = - (K+B/2 + (4/5)L tan@)
Lateral movement of Pivot Point = 0
Lateral movement of bow = + (B/2 + (1/5)L tan@)

At position P-2,
Lateral movement of stern = ((2L/3)- Xsec2@) tan2@ =
Lateral cross track of the pivot point, X = + d * tan@ x"= (d+Xsec2@) tan2@
Lateral movement of bow = X + (B/2 + L tan2@)/3) = (L/3+ X sec2@) tan2@

Thus lateral movement of the stern follows function as below:
4L/5 * tan@
4L/5* tan 2@ - d*tan@*sec2@* tan2@
4 L / 5 * t a n 3 @ - (d + X s e c 2 @) tan2@*sec3@*tan3@

Above function shows that as soon as the PP starts moving on the circular path, the lateral traverse of the stern starts reducing after reaching the maximum value of 4L/5* tan@, where @ is the change in the heading of the vessel time lag at the beginning of the turn (TLb).

a. References while making tight turns

The most important tangible objective of the pilot is to keep vessel's position in safe depths so as to keep her always afloat at any given point of time during pilotage. The pilot mostly is aware and confident on the vessel's position except during alteration of course until she settles down on a new course.

While vessel alters her course, there is relative degree of uncertainty in the position of the vessel in the perception of the navigator as position continuously keeps on changing during the process. The navigator needs to actively observe vessel's change in position, rate of change of position as well as the position itself.

During this uncertainty, it is the physical references that come to the rescue of the ship handler. The ship handler should find 2 fixed land objects to understand the relative change in position and the rate of change position. The motion of the fixed land objects relative to one another shows clearly the change in position and rate of change in position.

Execution of Large but Unaided Alteration of Courses in Limited Sea rooms

Execution of large alteration of courses in limited and highly restricted sea rooms is as tricky as dangerous. The stakes are very high when executing a large alteration of course particularly in harbour limits or in close proximity to hazards of navigation or harbour structures. Many accidents has been recorded over history and in recent past also caused due to wrongly executed alterations of course.

All the concepts related to execution of turns have been discussed earlier in the chapter. Let's now see how to execute large unaided alterations of course safely and comfortably.

1. Large alteration with restricted sea room

When a large alteration of course is to be made in highly restricted waters, it may be executed in several smaller parts looking at the physical references. Though the alteration is a continuous process, it can be checked by the pilot with the physical references whether the alteration is going smoothly within the tolerable limits. If something is going beyond the limits, corrections may be given to control the alteration in tolerable limits.

As shown in the figure below, the course is divided to 4 legs reference lines – RL1, RL2, RL3, and RL4. Their corresponding ahead reference points are RA1, RA2, RA3, and RA4. RL5 is the reference line at which the vessel already settled on her new course.

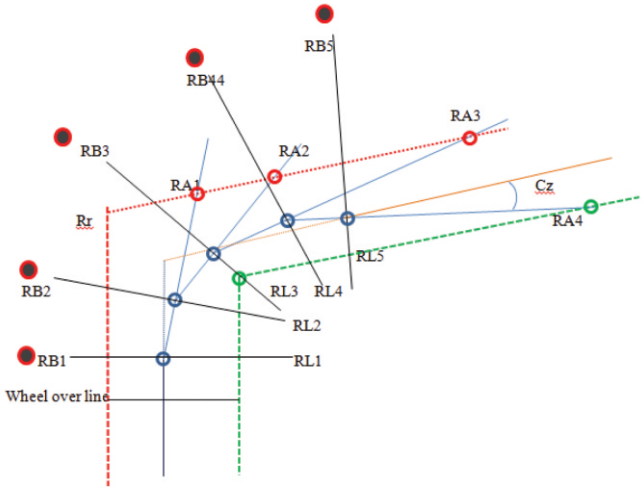
Thus while alteration of course the pilot need to check that when passing any fixed point on the reference line RL1, she should head towards Reference point ahead-RA1. The vessel keeps on swinging to starboard side under helm till she passes any fixed object along RL2. While passing RL2 vessel should head towards reference point RA2. Similarly the alteration would proceed till end.

There is no hard and fast rule on the dividing the course to how many parts. This may depend on following:

1. Number of available fixed reference points on the bow and corresponding reference points on the beam of the vessel.
2. Should not be in large numbers that it is difficult for the pilot to monitor them
3. Ideally 3-4 numbers depending on amount of alteration.

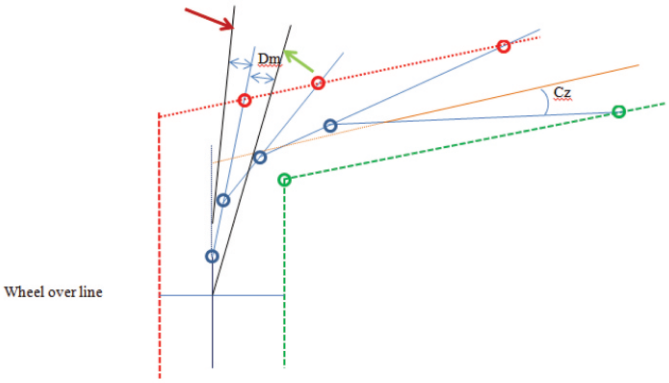
At any point if it is felt by the pilot that while passing a fixed land object at reference line RL, the corresponding reference pilot on the bow is not

reached, then he may increase the swing (ROT) to catch the next reference point on time. Similarly at any time if it is felt that the bow reference point (RA) is overshoot while passing the corresponding reference line (RL), then the swing (ROT) of the vessel would be reduced to accordingly.



1. Large alteration with restricted sea room under External force

Similarly when there exists some external force like wind or current to cause set and drift or leeway on the vessel, the alteration of the course may be carried out little early or late depending on the direction of the set.



In the figure given above, if the from stbd side (green), then the course should be altered early so that while passing reference line RL1, the corresponding reference object on bow is already passed on to her port bow. Similarly the alterations would be executed further while passing subsequent RL.

If the Force is from port side (Red), then the course should be altered little late so that while passing reference line RL1, the corresponding reference object on bow is not yet crossed, thus be visible on her stbd bow. Similarly the alterations would be executed further while passing subsequent RL.

This ensures the vessel has a margin of safety due to drift (Dm) at the beginning of alteration. Same maintained regularly. At any time if this Dm becomes excess or reduced due to unpredictable wind or current, it must be corrected in the next RL.

Conclusion

As pilots execute large alterations of fairly larger vessels within harbour limits at appreciable speed the momentum of vessel involved is fairly large. If not properly executed alterations within very narrow sea room, the potential risks to the vessel as well as the harbour infrastructures are very high. Such improper alterations would damage the vessel as well as the port infrastructure with loss amounting to millions of dollars. Off late it has been observed that many accidents are happening while such alterations of couse in harbour limits. Thus it is advisable the ship handlers and pilots must understand the theory behind the alteration of courses in harbour limits. I hope this would help them in execution of alterations with much ease and confidence with reduced risks to the property and life on board!

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