BRITANNIA LOSS PREVENTION

B-GUIDANCE

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SHIP PILOTAGE AND INTERVENTION

THE SHIP PILOT, AS AN EXPERT IN SHIP HANDLING WITH LOCAL KNOWLEDGE, WILL ENGAGE IN A SHIP'S PASSAGE IN ITS MOST CRITICAL PHASES WHERE MARINE INCIDENTS ARE MOST LIKELY TO OCCUR, SUCH AS IN CONFINED WATERS OR IN POTENTIALLY DANGEROUS SITUATIONS.

If an incident does occur when the pilot is on board, then the role of the pilot inevitably comes under close scrutiny.

The need to understand shipowners' concerns and the look at the various issues relating to the role of pilots resulted in the recent publication: "Report on P&I claims involving vessels under pilotage 1999-2019" by the International Group of P&I Clubs (IG)[1] (hereafter referred to as the IG Pilotage report). Data presented in this report indicates that over the last 20 years a total of 1,046 incidents have occurred where pilot error either caused or contributed to the incident. The total cost of these incidents was more than 1.82 billion USD, and translates to one incident per week with an average value of approximately 1.7 million USD per incident. The findings of the IG Pilotage report indicate that sub-optimal Bridge Resource Management (BRM) remains the dominant underlying cause.

Britannia's own review of claims involving pilotage reveals the lack or ineffectiveness of master interventions as one of the key contributory factors, as demonstrated by the case studies included below. This publication considers the role that this lack of effective intervention plays in pilotage-related incidents and explains what steps can be taken to reduce the risks involved.

1 International Group of P&I Clubs, "Report on P&I claims involving vessels under pilotage 1999 2019," 2020.

THE INDUSTRY APPROACH TO INCIDENTS OCCURRING UNDER PILOTAGE

THE APPARENT FREQUENCY AND SEVERITY OF INCIDENTS IN WHICH PILOT ERROR EITHER CAUSED OR CONTRIBUTED TO THE EVENT HAS BEEN A GROWING CONCERN AMONG SHIPOWNERS.

In addition to the recent IG Pilotage report[1], this has led to several initiatives which try and understand the underlying issues and also propose solutions. These include:

- in 1983, OCIMF, ICS and INTERTANKO published the "International Best Practices for Maritime Pilotage" which remain a valid guidance to the industry
- the International Chamber of Shipping's (ICS) "ICS pilotage, towage and mooring survey 2016"[2] which was submitted to the International Maritime Organization (IMO)
- the "ICS Bridge Procedures Guide" (BPG), an updated edition of which is expected in 2021.

The ICS Survey and IG Pilotage report highlight several recurring concerns, including:

- the importance of a proper and diligent Master-Pilot exchange (MPX), and the need to develop an international standard approach which discourages reliance on verbal communication alone
- the need for clear communication between pilots and bridge teams
- the additional burden on the pilot to translate orders and actions during towage and mooring, when communications with the pilot and local personnel are conducted in a local language.

The approach proposed in the IG Pilotage report is to embed best practices through enhanced and repeated training, with an emphasis on several matters of relevance to this article, including:

- the need for vigilance on the part of ships' officers in monitoring the progress of the ship with reference to the passage plan
- officers immediately raising awareness when any deviation from the plan is noted
- communication with the pilot, especially when there are doubts
- encouraging officers to question a pilot where there is any uncertainty about the situation, or the actions intended
- understanding the most effective way in which to make an intervention or challenge
- reinforcing the understanding of masters that, with the sole exception of the Panama Canal, the pilot directs the navigation of the ship, supported by the bridge team. **The master remains in command and has the right, and indeed the duty, to intervene if it should be felt that the actions of a pilot endanger the safety of the ship.**

2 ICS Pilotage, Towing and Mooring Survey 2016

CASE STUDIES*

BRITANNIA'S ONGOING REVIEW OF CLAIMS REVEALS RECURRING PATTERNS IN INCIDENTS OCCURRING UNDER PILOTAGE, USUALLY IN THE FORM OF THE UNDERLYING BRM ISSUES WHICH CAN BE FURTHER EXACERBATED BY THE LACK OF OR UNTIMELY INTERVENTION BY THE MASTER.

Three case studies have been selected to illustrate these patterns.

CASE STUDY 1

The following incident illustrates that a master's intervention should be based on a robust decision-making process and a prior risk assessment, which should include consideration of the available contingencies.

A container ship was departing from a terminal with a pilot on board. At the time of the MPX, the weather conditions were good. The pilot planned to use a single tug, made fast on the port quarter, and the ship would turn bow to port, off the berth. In addition to the master and the pilot, two officers, one of whom was operating the telegraph, and a helmsman were on the bridge.

The tug pulled the ship off the berth, and the pilot ordered the engine "dead slow astern". Once the stern was clear, the master, who was on the starboard bridge wing, used the bow thruster to bring the bow clear. As the ship continued to manoeuvre off the berth, a squall increased the wind speed to about 35 knots from the port side. Despite the thruster being "full to port", there was no significant change in the heading and the ship, while moving astern, was gradually set towards barges moored nearby. The pilot ordered the rudder "hard to port", then the engine "dead slow ahead". Combined with the thruster still being "full to port", this moved the bow away from the berth and the stern then started to swing to starboard, closer to the moored barges.

The master became increasingly concerned about the situation, but the pilot reportedly did not share the same level of concern. Therefore, the master decided to take control from the pilot. The master initially ordered "slow ahead" then "half ahead". He also ordered the chief officer at the forward mooring station to standby the anchors. The stern continued to move closer to the barges and eventually made contact with the fender on the nearest barge. Once clear of the barges, the master maintained the same manoeuvring settings and the bow continued to swing quickly to port.

Shortly afterwards, the starboard quarter made contact at a speed of more than 3 knots with two gantry cranes on the berth the ship had departed from. The bridge telegraph was put to "dead slow ahead" then "stop", and the master ordered the rudder to "midships" then "hard to starboard" in order to try and stop the swing to port and get the beam away from the barge. However, due to the strong winds, the rate of turn increased and the ship's bow began to swing towards the gantry crane on the next berth. The master ordered the rudder "hard to port" again, and the bridge telegraph to "dead slow astern", then "slow astern". Due to the shallow water near to the next berth, it was decided to let go the port anchor and the bridge telegraph was ordered "full astern". Despite these actions and the bow thruster still at "full to port", the starboard bow made impact with the gantry crane on the next berth at a speed of more than 2 knots. A second tug later made fast forward and assisted in turning the ship to port so that she could move away from the berth. Although the ship sustained minor damage to her starboard bow and quarter, three gantry cranes sustained significant damage.

*The case studies have been based on, but are not necessarily identical to, facts relating to actual incidents involving ships under pilotage where more effective intervention could have arguably prevented the incident. Any comments are not intended to apportion blame on the individuals or company involved.

CASE STUDY 2

In the following event, the pilot's unplanned decision to anchor in adverse weather was apparently not fully assessed nor challenged by the master, which could have prevented the contact incident from occurring.

A bulk carrier under pilotage was transiting a channel on her way to a discharge berth. The ship passed under a bridge when the weather suddenly deteriorated, with gusts of up to 40 knots, and reported poor visibility of less than one ship length due to the heavy rain. The pilot decided to drop anchor and wait for better weather conditions.

The starboard anchor was dropped with 2 shackles in the water. However, the continuing strong wind caused the ship to move towards the adjacent dock, where a barge attached to the stern of a tug was moored. Shortly afterwards, the port side of the ship came into contact with the barge. The starboard anchor was weighed, and the ship resumed passage with the assistance of two tugs. Neither the ship nor barge suffered significant damage, and no injuries or pollution were reported.

CASE STUDY 3

The following illustrates how a timely intervention by the master could have prevented an incident, and how important it is for the bridge team to be aware of the threshold beyond which the intervention and/or the use of abnormal procedures is required.

A tanker was approaching a discharge port in the early hours of the morning. After the local pilot boarded, the MPX took place. The forthcoming manoeuvre was reportedly discussed, and the pilot advised that the ship would be mooring starboard side alongside at the jetty, which required a 180° port turn to be carried out when parallel with the jetty. The two assisting tugs would meet the ship before entering the breakwater in order to be made fast forward and aft.

The tugs were made fast, and the ship entered the breakwater. In addition to the master and the pilot, a duty officer, a helmsman and a lookout were present on the bridge. The master asked the forward mooring station to provide clearances between the ship and the jetty during the turn.

The ship then began the port turn, as instructed by the pilot, about 0.1 nm away from the wharf and with a speed of about 3.5 knots, with the engines being used for forward propulsion.

The chief officer at the forward mooring station initially reported a clearance of 50m and that the ship was turning clear of the jetty. The ship continued to turn, and the pilot ordered the engine to "dead slow astern". However, with the ship still making just over 2 knots ahead, the chief officer reported that the distances were quickly reducing as the ship started to slowly turn.

Concerned about the speed, the master took control and ordered the engine "half astern". Shortly afterwards, the chief officer reported that the ship would make contact with the jetty. The master immediately ordered the engine "full astern". Despite this, the ship impacted the jetty at a speed of about 1.8 knots. It was reported that the aft tug continued to push the ship until the time of impact.

The allision resulted in a breach of the forepeak ballast tank and structural damage to the jetty.

CONTRIBUTORY FACTORS AND LESSONS LEARNED

ANALYSIS OF THE THREE CASES INDICATES THAT AN EFFECTIVE INTERVENTION BY THE MASTER COULD HAVE PREVENTED THE INCIDENT.

For such intervention to be successful it would have to have been timely, i.e. at the point where the chain of events was still controllable. Further lessons learned from the incidents include:

MASTER-PILOT INTERACTION AND MPX: It was apparent that an effective MPX had not been conducted in any of the three cases. Carrying out an MPX under excessive time pressure may lead to insufficient information exchange and, in extreme cases, a situation where various sections of the Pilot Card and the MPX checklist are not discussed and merely ticked to show compliance. A timely challenge from the master should assist in discussing the plan in sufficient detail and provide the opportunity to consider the risks and contingencies.

DECISION-MAKING WITHOUT SUFFICIENT CONSIDERATION: A sudden change in weather conditions was a contributory factor in two of the cases and resulted in impromptu decisions being made in order to try to ensure the control of the ship. Decisions taken without fully considering all available alternatives or operational limitations (for example the design limits of the anchoring equipment) may turn out to be sub-optimal. This risk could be mitigated by an effective risk assessment and contingency plan before the passage, which also supports effective decision-making while on passage, and the outcome of which should be integrated into the MPX. The master's timely intervention should aim to pre-empt situations where decisions are being taken under excessive time pressure and without adequate consideration.

UNDERSTANDING THE THRESHOLD FOR INTERVENTION: An appropriate risk assessment would have assisted the master and other bridge team members in understanding the tolerance and threshold for intervention in each of the cases. As an example, a deviation from the planned ship's track while turning will have a very low tolerance and may require an intervention and corrective action in a matter of seconds. Delaying the intervention may result in a situation where the corrective action is taken too late to be effective. Excessive speed is likely to exacerbate the problem.

DETECTING INSUFFICIENT SITUATIONAL AWARENESS: Enhanced situational awareness throughout each of the three events would have assisted the pilot and bridge team members in preventing the incident from occurring. Appropriate communication and rehearsed escalation practices should assist in detecting and addressing deficient situational awareness through a timely challenge or intervention.

CHALLENGING INEFFECTIVE COMMUNICATION: In one of the cases, the pilot was communicating with the tug/shore team in his native language, which was not understood by the master and apparently not translated by the pilot. Communication between the pilot and the tug/shore team in his native language may result in key pieces of information not being shared with the bridge team during the manoeuvre. This may also result in a situation where the master cannot assume control of the tugs without the pilot's co-operation, and this issue should be addressed by the master at an appropriate time.

EFFECTIVE INTERVENTION

INTERVENTION AS A SAFETY BARRIER IS ONE OF THE KEY TOPICS IN HEALTH AND SAFETY MANAGEMENT AND THE SUBJECT OF INDUSTRY RESEARCH[3].

The research suggests that the most frequent reason why individuals refrain from a safety intervention is not connected to the company policy or organisation but related to their personal concern that the intervention may result in a defensive or angry reaction.

The OCIMF **"Guide to Best Practice for Navigational Assessments and Audits"**[4] provides best practices with regard to BRM and encourages the bridge team to foster a two-way flow of information and positive challenge. More specifically, it points out that intervention may be a difficult skill to learn and personnel may require mentoring in this respect.

It is recommended that masters and other bridge team members receive such mentoring and the practice of intervention and challenge is embedded through training and navigational assessments.

THE RESPONSIBILITY AND AUTHORITY OF THE PILOT

EXCEPT FOR TRANSITING THROUGH THE PANAMA CANAL, THE PRESENCE OF A PILOT ON THE BRIDGE DOES NOT GENERALLY RELIEVE THE MASTER FROM THEIR RESPONSIBILITY FOR THE SAFETY OF THE SHIP.

However, a perception gap regarding the allocation of power and authority between the pilot and the master may add another layer of consideration and affect the master's decision to intervene.

The master's and shipowner's perspective are largely determined by the applicable international and Flag State regulations. Consequently, the shipowner may define the pilot's role (and master-pilot relationship) in terms that fit the company's needs and objectives set by the applicable regulation.

The pilot's own perception of their role may be significantly different from that of a master. As a condition of entry to the territorial waters, the ship accepts the port state's jurisdiction. It is the port state that establishes the legal relationship between the shipowner/master and the pilot. The responsibility and authority assigned to the pilot may also vary between port states.

The article **"Master/Pilot Relationship – The Role of the Pilot in Risk Management"**[5] available on the International Maritime Pilots' Association's (IMPA) website provides an example of the pilot's perspective in this regard. Further, a resolution adopted by the American Pilots Association in 1997, suggests that a situation where the master has the right and duty to displace the pilot constitutes a "limited exception" to the general rule requiring the master to "cooperate closely with the pilot".

3 P. Ragain, "A Study of Safety Intervention: The Causes and Consequences of Employees' Silence," EHSToday, 2011.
4 OCIMF, "Guide to Best Practice for Navigational Assessments and Audits," 2018.
5 Capt. George A. Quick, "Master/Pilot Relationship – The Role of the Pilot in Risk Management," International Maritime Pilot's Association (IMPA), Date N/K.

BRIDGE RESOURCE MANAGEMENT (BRM)

THE BRM PRINCIPLES OF CHALLENGE AND INTERVENTION APPLY ALSO TO THE INTERACTIONS BETWEEN THE BRIDGE TEAM AND THE PILOT, WHO SHOULD BE CONSIDERED AS ONE OF THE RESOURCES AVAILABLE TO THE FORMER.

The Britannia article in Risk Watch (July 2020) provides a review of good BRM practices, with one of the highlighted aspects of effective BRM being assertiveness. An appropriate "Challenge and Response" technique and the escalating levels of intervention are at the core of good BRM – a meaningful challenge to any action or non-action should be respected and considered.

The effectiveness of challenge and intervention may be influenced, and in some cases severely impaired, by the cultural background, reflecting the "power distance" or reluctance to raise concerns or express disagreement. Although "power distance" typically applies to situations of hierarchy and authority, a similar context may apply to a master's intervention, not necessarily because of a perceived seniority of the pilot, but due to the concern with possible implications of challenging the pilot, such as negative feedback from external stakeholders.

GRADED ASSERTIVENESS AND LEVELS OF INTERVENTION

BEFORE THE SITUATION DETERIORATES TO A CRITICAL LEVEL, WHICH IS WHERE THE MASTER DECIDES TO ASSUME FULL CONTROL AND DISREGARDS THE PILOT'S INSTRUCTIONS ALTOGETHER, THERE ARE USUALLY MULTIPLE OPPORTUNITIES TO ADDRESS THE MASTER'S CONCERNS.

Resolving these concerns at the earliest opportunity provides more time to look for an acceptable solution or alternative, therefore reducing the risk of an incident.

Masters, as well as other members of the bridge team, should be aware of the techniques that can be used to escalate levels of intervention. There are several techniques available. The advisable practice is to include selected techniques in training and the rehearsing of BRM practices, so they become natural to team members. A well-structured navigation assessment and/or audit programme may provide further guidance in this regard.

There are several communication models enabling "graded assertiveness" which have been introduced in safety-critical industries, such as commercial aviation, oil and gas and healthcare, as well as maritime. These models address the need for effective intervention in situations where a safety concern exists, by providing a pre-established, structured process to enable concerns to be articulated, and therefore recognised and understood.

These techniques rely in part on policy and training to prompt a reaction. Although a marine pilot may not have been subject to such training, the intervention of a master (or another bridge team member) using an established "graded assertiveness" model is more likely to be effective and deliver a clear message.

Examples of well-known techniques are listed below. The characteristic use of mnemonics such as PACE or CUSS may assist with the process in a stressful situation:

PACE is a communication technique that can allow anyone to challenge any action or behaviour they think is unsafe. The acronym reflects the levels of escalation:

- PROBE: *"Do you know that...?"*
- ALERT: *"Can we re-assess the situation...?"*
- CHALLENGE: *"Please stop what you are doing while..."*
- EMERGENCY: *"STOP what you are doing!"*

CUSS is an approach similar to PACE:

- CONCERN: *"I'm concerned that..."*
- UNCERTAIN: *"I am uncertain if..."*
- SAFETY: *"I am really worried it is unsafe to..."*
- STOP: *"Please stop, we need seek an alternative!"*

The **FIVE STEP ASSERTIVE STATEMENT PROCESS**, first introduced in the aviation industry:

1. Address the person by formal title: *"Captain,"*
2. State: *"I have a concern."*
3. Provide details of the concern: *"It appears the ship will not clear the jetty."*
4. State an alternate course of action: *"We should use the bow thruster to increase the rate of turn."*
5. Seek the approval/agreement (as appropriate) to implement the alternate course of action: *"Does that sound like a good plan?*

Of note: *"I have a concern"* is known as a trigger statement, which in aviation prompts a trained reaction and requires acknowledgement and consideration as a matter of policy. If desired, a trigger statement may also be successfully used in BRM.

The master's intervention in response to the pilot's error or unsafe instruction is likely to occur in a situation where the risk is relatively high due to the time constraints. In many cases, "standard" procedures may not be sufficient and "abnormal" procedures may be needed in order to rectify the situation. It is therefore important that bridge team members are aware of the threshold requiring the use of "abnormal" procedures, as well as the actions that these procedures entail[6].

6 TraFi Maritime, "Co-operation on the Bridge," Transport Safety Agency, Helsinki.

SUMMARY

THE INTERACTION BETWEEN MASTERS AND PILOTS IS SUBJECT TO A COMPLEX INTERFACE BETWEEN THE INTERNATIONAL AND PORT STATE REGULATORY FRAMEWORK.

Incidents while ships are under pilotage continue to occur, and the maritime industry continues to seek solutions and to gain a better understanding of the underlying causes in order to prevent such incidents from occurring. A well-rehearsed BRM process, including a timely master's challenge or intervention, appear to be vital elements.

Encouraging positive intervention and challenge through training and assessments should prepare masters and bridge team members for a situation where they need to apply a graded escalation. Following other good BRM practices should also enable a timely challenge and prevent a situation where an intervention occurs too late to avoid an incident.

FOR FURTHER INFORMATION

For further information, please do not hesitate to email lossprevention@tindallriley.com.

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