Risk Management and Pilotage

Most vessel accidents occur in close proximity to land. As the vessel makes landfall or is taking departure there are many distractions that present themselves at the precise time the Master and Navigation Officer need to be focused on the primary task at hand – safe navigation. One risk management tool for navigation in near coastal waters has been around as long as there have been ships - the use of pilots. But the use of pilots, essentially a stranger who is given the control of the vessel and thus the fate of the cargo and persons aboard, is not without risk either.

Master/Pilot Information Exchange
In order for the Pilot to be an asset to the vessels Bridge Management Team, effective communication between the Master, Navigation Officer and Pilot is needed. The Master and the ship's navigation officers need to be aware of the pilot's intentions and be in a position to question the pilot's actions at any stage of the passage. In order to do this, they need information.

A well-planned voyage does not stop at the pilot boarding area. Passage planning needs to be done berth to berth. A complete berth-to-berth passage plan allows the Master and navigation officer to compare the progress of the ship with the planned track, enables them to be aware of hazard areas and other details of the passage.

The Master may be unfamiliar with the port. The Pilot may be unfamiliar with the vessel. These two problems can be minimized with the Master/Pilot Information Exchange. Soon after the Pilot enters the bridge, the Master and Pilot need to conduct a brief discussion about the intended passage. Among the items that need to be communicated include:

- Planned Route
- Anticipated Speed along the route
- Anticipated Underkeel Clearance
- Waypoint and Destination ETAs
- Vessel Traffic System Requirements
- Vessel Handling Characteristics
- Navigation Equipment Available for Use and How to Use It
- Need for any Port Services (i.e. tugs)
- Any Unusual Features and Relevant Information and
- Contingency Plans

Much of the above information is readily available on the Master Pilot Exchange Form, Pilot Card, and Wheelhouse Poster. It may be necessary to review and update the above information and the passage plan at various stages of the route.

Monitoring the Pilotage
Situational awareness is the accurate perception of the factors and conditions that affect the vessel during a specified period of time. The level of situational awareness needed increases proportionally with risk to the vessel's safety and demands on the mariner. Generally the closer to land you are, the greater the risks and demands and thus--the greater the need for situational awareness.

The safe progress of the ship along the planned route needs to be closely monitored when the Pilot has the conn. This will include regular position fixes and monitoring underkeel clearance. Verbal orders from the Pilot need to be checked to confirm that they are correctly executed. This will include monitoring rudder angle and rpm indicators after helm and engine orders are given. Any deviation from the

plan agreed to by the Pilot and Master must be brought to the Master's attention immediately. It is the navigation watch officer's responsibility to keep the Master properly informed at all times.

Loss of situational awareness by mariners during critical moments of navigation has lead to a host of marine accidents. Investigations have found that navigation watch standers lost track of the events going on around them. They failed to assess the importance and consequences of these events and did not take corrective action in time to save the vessel from peril.

Accidents and near misses do not occur as a result of a single event but rather a sequence or chain of events that climax in a mishap. This is known as the error chain. Error chains can occur within any event that involves human activity. Clues to identify the presence of an error chain include:

Failure to meet targets, milestones
Failure of the navigation team to attain or maintain targets, including ETA's vessel speed or passage plans.

Using undocumented procedures
The use of procedures to deal with abnormal or emergency conditions that are not prescribed in any approved company operations manuals, such as encountering sudden bad weather or unusual traffic situations.

Departing from standard operating procedures or "winging it"
This is an intentional or inadvertent departure from standard operating procedures such as the failure, for whatever reason, to adhere to a passage plan.

Violating minimum operating conditions or limitations
Intentional violation of minimum operating conditions or specifications as defined by regulation, Master's instructions, or company standards--such as excessive speed in reduced visibility, or not observing minimum closest point of approach (CPA) orders.

Not "minding the store"
The bridge team is not monitoring the vessel's navigation.

Incomplete or ineffective communication
This problem results when information is withheld and there is a failure to seek resolution of misunderstandings, confusion, or disagreements.

Ambiguity or confusion
Independent sources of necessary information (instruments, manuals, and people) are confusing or unclear. A sense of uncertainty, anxiety, or bafflement about a situation exists.

Fixation or preoccupation with distractions
Focus or attention to one item or event to the exclusion of all others can include any number of distractions that draw a watch-standers attention away form his/her duties. Distractions may result from high momentary workload, inclement weather, or abnormal or emergency situations. They can be caused by personal problems, inattention, complacency, fatigue, or an operational practice that requires the watch-stander to engage in activities not essential to safe navigation.

The presence of one or more of the above clues constitutes a likelihood that an error chain exists. Identifying the error chain alone may not eliminate the possibility of the accident. Error chain identifi-

cation is a warning that immediate action is required to avoid an accident. The two keys to successful error chain breaking is for the navigation watch standers to 1) be alert to the error chain clues listed above and 2) develop strategies to break the chain in a timely manner.

Situational awareness is accomplished when you have an accurate perception of the events both internal and external to your vessel. In other words, you are able to recognize a change in the situation. You understand the full impact of the change and you are able to accurately predict or project your situation in the near term future.

A higher level of situational awareness results in a lower level of risk. A low level of situational awareness is a key factor in the development of an error chain. The bottom line is, the Bridge Team (Master, Navigation Officer and Pilot) must continually observe what is going on in and around the vessel. They must analyze these observations, recognize developing problems, assess the severity of the problems, determine an appropriate remedy, take action to rectify the problem and finally, monitor the results.

- Lawrence B. Russell
Director, Safety Management
Marine Transport Corporation
Marine Section Member