Chapter 1

BRIDGE TEAM MANAGEMENT

Introduction

In times gone past a commercial voyage was considered to be an adventure. Today, fortunately, most commercial voyages are not adventures, merely the routine of safely and successfully completing the voyage and delivering the cargo.

Sometimes though, this is not the case. Voyages are not always completed, cargoes not always delivered. Non completion of the voyage and non delivery of the cargo always comes as a shock to the mariners concerned, the shipowners, the charterers, the shipper and the public in general. We expect cargoes to be delivered on time and ships to go safely about their business. We forget that, even in this day and age, although ships have reliable powerful engines and the latest technology helping the mariner, the voyage is still a risk and the ship and its crew still subject to the vagaries of nature.

Non completion of voyages though may not just be the result of a hostile environment. The majority of incidents at sea are the result of human error. In many of these cases information which could have prevented the incident occurring was available but was either unappreciated or not used.

Most accidents occur because there is no system in operation to detect and consequently prevent one person making a mistake, a mistake of the type all human beings are liable to commit.

This book is designed to make the voyage safer by explaining how to carry out the different aspects of bridge team management.

It is now some ten years since The Nautical Institute published the original edition of *Bridge Team Management*. The ideas in that edition had been largely developed through the author working at the Simulator Section of the Maritime Operations Centre of the Southampton Institute of Higher Education.

Although the first edition has been accepted throughout the world, as the definitive book on the subject, the world's shipping still does not necessarily follow team management and passage planning. But the world authorities are now catching up with the industry in realising that both management and planning are absolutely necessary in promoting safer shipping practice, indeed IMO has now come out with recommendations on both subjects.

This edition sets out in chapters 9 and 10 to put the IMO recommendations into plain seafaring English, following the format used in the first edition. The IMO recommendation is on the left-hand side of each page and its meaning alongside it.

5.14 Members of the navigational watch should at all times be prepared to respond efficiently and effectively to changes in circumstances. IMO STCW B-VIII Part 3.1 (Guidance on keeping a safe navigational watch)

IMO STCW 95 B-VIII Part 3.1 concludes with the above statement, making it quite clear that no matter how well a voyage may have been planned and conducted and no matter how well the team may have worked together, everything can change.

This is the time when team work and planning really come into their own, as any officer, including the most junior one in the team, may have to make decisions that he knows are really beyond his capability.

However if the ship is operating under a good system of bridge team management and the passage plan has been carefully drawn up, even the most junior and inexperienced officer will have a substantial fund of knowledge to back up his actions. He will know that the decisions he has to make will be safe and will apply the knowledge he already has to the system he has been working.

The original book *Bridge Team Management* was written before the IMO decided that it too had to produce a resolution on the subject. *Bridge Team Management* has been well received throughout the world and is proving to be the basis for most ship's passage planning and bridge resource management.

This, the second edition, seeks to explain the IMO's statements, confirming what so many of us already know and work to. It also brings the subject up to date with a new section on electronic navigation.

Team Management

One of the requirements for manning and running a ship is to have the highest calibre personnel and the latest equipment This must still be the wish of every shipmaster and officer but, faced with today's harsh economic realities, is often not possible. Frequently, bridge teams will consist of groups of mixed ability personnel working with outdated equipment. Nevertheless to achieve the successful completion of the voyage it is the concern of all ships' officers to make the best possible use of available resources, both human and material. Each member of the team has a part to play in this.

The title "Team Management" is the interaction required within the team for such a system to work. It does not refer to an act of management by one person but to a continuous acceptance and understanding by each of the team members that they all have to fulfil the roles to which they have been assigned.

To consistently achieve good results there are a number of factors that need to be addressed. Firstly those concerning technical knowledge and skills and then the requirements of the more traditional man management or "people" skills involved in the development of human resources. In looking at the technical skills, consideration must be given to the techniques involved in preparing for and conducting the proposed voyage (passage planning).

The skills concerning the development of human resources are covered in depth in other publications. The smooth and efficient running of any bridge team depends upon the basic principles of good communication and man management. With current ship manning policies these skills must be developed on board to overcome cultural boundaries as well as those of a more traditional hierarchical rank structure.

Training and Coaching

The ability to do a job well depends, to some extent, on the quality of the training a person has received. A poorly motivated trainer will often produce a poorly motivated trainee. We all spend a great part of our lives either imparting knowledge to others or learning such knowledge. This starts when we are very young and continues, no matter what our chosen vocation, throughout our lives. Proportionally, very little of this is conducted in the formal atmosphere of a learning establishment, most learning taking place at mother's knee or in the workplace. As such we are all teachers and we should not be reluctant to pass on knowledge when required.

The methods of passing on knowledge are many and various. They may be split into two main groups – training and coaching. These differ slightly in concept. Training a person involves instructing them in the execution of various tasks or procedures to a required standard. Coaching, however, involves the development of existing abilities through delegation and monitoring. It is a fine line between delegation for coaching purposes and abrogation of one's own responsibilities! Care should be taken to avoid delegating at too early a stage of development. If the trainee is

unprepared for the task, the effects can be devastating. They can become demoralised and confidence will be undermined.

Training requirements for bridge tasks do not always lend themselves to direct training methods except perhaps in the case of very inexperienced personnel or for new concepts. The method of "Sit next to Nelly and she will show you" is not always appropriate because it is a drain on already stretched human resources. This is where the concept of coaching is appropriate. As with any coaching situation it is essential to maintain the supervision of the trainee and supply sufficient feedback on the progress being made. Lack of feedback prevents the trainee from understanding how to improve.

The development of a team from a selection of individuals may take a great deal of effort. Not all members will start with the same baseline of knowledge. Once the team is functioning, the flow of information will increase as a direct result of the newly found confidence of its members. All team members should be kept fully aware of what is expected of them and their performance of their job frequently monitored and feedback given. One of the primary functions of the team is the provision of a system of checking and cross checking decisions that will directly or indirectly affect the passage of the ship.

Well Being

The efficient team member will be both mentally and physically fit. Watchkeeping is often seen as being a passive role and in certain low-key situations this may be the case. The watchkeeper can then be considered to be in a situation requiring only the maintenance of the present unstressed situation. This role can change dramatically when risk develops, requiring more forceful action to prevent a situation arising, not merely responding to factors that may be getting out of control. This type of reaction requires both physical and mental well being of a high standard.

Morale

A demoralised team, or even demoralised members of a team, is not going to produce the high standards required ensuring the continuous safety of the ship. Morale depends upon a large number of factors. But good teamwork and effective operation will be achieved if the team members are clear as to their role in the team, can see the results of their own efforts, have their own deficiencies carefully corrected and are given credit when it is due.

Error chains

Maritime incidents or disasters are seldom the result of a single event, they are almost invariably the result of a series of non-serious incidents: the culmination of an error chain.

Situational awareness, i.e. knowing what is happening in and around the ship, helps the OOW or other watchkeeper to recognise that an error chain is developing and to take action, based upon this recognition, to break the error chain.

Indications of error chain development

Certain signs, apparent to members of a bridge team will indicate that an error chain is developing. This does not necessarily mean that an incident is about to happen, but that the passage is not being conducted as planned and that certain elements of situational awareness may be lacking. The ship is being put at unnecessary risk and action must be taken to break the error chain.

Ambiguity

Ambiguity may be easily definable or may be a subtle indication that things are not going as expected. In the event that two independent and separate position fixing systems do not agree,

Ambiguity (cont.)

e.g. Radar fix and GPS positions may not be the same; something is obviously wrong with one of the fixes and an ambiguity exists. Immediate action is required to correct this ambiguity and determine which one of the fixes is correct.

A more subtle ambiguity may occur if the echo sounder reading does not agree with the charted depth shown. The less conscientious OOW may just accept this fact, another may not be satisfied and will try to determine why there is a difference between the anticipated and actual sounding.

Ambiguity may exist in that two team members do not agree on a point of action. Ambiguity exists; of itself it may not be dangerous, but it does mean that there is a difference and the cause of this difference needs to be understood. One of the team members may be losing, or has lost his situational awareness and an error chain may be developing.

The OOW may be aware that certain pre-agreed decisions, e.g. night orders, company procedures etc. are not being followed. Again ambiguity exists, he must ask himself why has there been deviation from the accepted procedures?

Ambiguity may be a result of inexperience or lack of training. The junior officer may feel that he is not in a position to voice his doubts. This should not be the case. Every member of a well constructed and well briefed team will feel confident that his doubts or fears can be expressed without his being reprimanded for what may turn out to be, in one instance an unwarranted worry, in another a very pertinent and relevant remark identifying a real hazard.

Distraction

Distraction, the full attention of a person upon one event to the exclusion of others or concentration upon what is often an irrelevancy can be an indication that situational awareness is beginning to break down, even if only for a restricted period. Distraction can be caused by an excessive workload, stress or fatigue, emergency conditions or, all too often, inattention to detail. It can also be caused by an unexpected, though not threatening event, such as a VHF call, which can take the full attention of a person to the exclusion of other more urgent needs. In such an event, a senior officer, e.g. a pilot having the con, may have to be made aware of the distraction.

Inadequacy and confusion

Inadequacy and confusion must not be mistaken for the confusion of a junior officer who just does not have the experience or knowledge to cope with a complex situation. Such a situation arises with even senior officers in disaster circumstances and needs to be noted and corrected before it can become dangerous.

Communication breakdown

Breakdown in communications can occur in several ways. It may be that members of a team simply do not understand one another due to being from different backgrounds or even different parts of the same country. Merely practising communications in their everyday life can easily rectify such differences.

Further difficulties may occur in trying to understand a pilot of a different cultural background. Rectification in this case will not lend itself to practice, but can only develop with experience. However such a situation should have been allowed for at the planning stage of the passage.

Other difficulties may occur in trying to understand a person using the radio in a shore station, or on another ship. Patience and perseverance are the only methods to rectify this situation.

Improper con or lookout

It is not always clear who actually has the control of the ship. This can occur in several ways. The arrival of the master, on the bridge, does not necessarily transfer the con to him. In fact until he states otherwise the con remains with the OOW. The easiest way to clarify this situation is for the OOW to make a log book entry to the effect that the master has taken the con, otherwise it may be assumed that it remains with the OOW. This procedure is recommended in the ICS *Bridge Procedures Guide.*

A similar situation can arise when it is not clear who has the con when there is a pilot on board. Normally the master will have the con when making the pilot station and should quite clearly state when the pilot takes the con, thus clarifying the situation to all concerned. This too can be clarified by the OOW making a log entry to this effect.

A lookout who is unclear about his duties is usually a result of poor team management.

Non-compliance with the passage plan

Non-compliance with the passage plan may result from the improper con noted above, and is another indication that situational awareness is breaking down. Unjustified departure from a clearly defined and understood passage plan must be recognised as a breakdown of situational awareness. As an example, the OOW of a ship that is proceeding in the wrong lane of a Traffic Separation Scheme must ask himself why am I doing this? The ship will be off the planned track and it is in direct violation of the International Rules. If the OOW is both deviating from track and ignoring the Rules then it is likely that he is not fully aware of the position of the ship.

Any indication of any of the above requires action on the part of the person becoming aware of it. He must either correct the fault, particularly if it is his own responsibility or draw the attention of other individuals, or even the whole team, to the error.

Procedural violation

Procedural violations will occur similarly to that of not complying with the passage plan. Again the question has to be asked, "why are we doing it this way?" If the question cannot be easily answered then the OOW or watchstander must be doubly careful.

Casualties and their causes

At the International Safety Conference (INTASAFCON III) held in Norway in 1975 it was agreed that two principal factors seemed to be the main causes of collisions and groundings namely:

1 **Weaknesses in bridge organisation** and the result of such weaknesses.

2 **Failure to keep a good lookout.**

Such casualties may have been avoided by: -

Setting double watches in appropriate circumstances

Too often it is considered adequate to proceed in a more complex situation with the same bridge manning levels as if the ship were deep sea with less immediate potential hazards.

Ensuring sufficient personnel are available in special circumstances

Additional personnel are often required to prepare equipment or to be available under certain circumstances. However if calling them is left too late they may not become available until the ship is in the situation that they could have helped prevent.

Precise instructions for calling the master

Too often the master is called after a situation has irredeemably deteriorated. If the OOW is unclear as to when he should call the master then his indecision may lead to his not calling the master. If the OOW is any doubt whatsoever then he should call him.

Posting look-outs

The OOW may consider that he alone can keep the look out in addition to his own duties. However not posting a lookout may cause him to neglect other important duties.

Manning the wheel

An unmanned wheel requires the OOW to monitor and correct the steering. This too may cause him to overlook other duties.

An established drill for changing over from automatic to manual steering

Modern steering gear can usually be changed easily from one system to another. However major incidents are on record where lack of awareness of the precise steering system currently in operation, or a lack of knowledge of how to change from one system to the other, has led to disaster.

Precise instructions regarding reducing speed in the event of reduced visibility

A busy OOW may not realise that the visibility has deteriorated, particularly at night. Even when he has realised that the situation has deteriorated he may not appreciate the increase in workload and may consider that he can still cope. Precise instructions in night or standing orders will prevent this situation arising

Groundings and their causes

The following features have been noticeable as causes of grounding:

Failure to pre-plan a track

Frequently it is not considered necessary to plan a track and show it on the chart. This may be because the mariners concerned feel that they know the area sufficiently well or because there is a

pilot on the bridge. There is however little point in planning and then not showing the track on the chart.

Failure to adequately monitor the vessel's progress along the planned track

Although a planned track is shown on the chart OOWs may not always constantly and regularly fix the ship. This may lead to the OOW not being aware that the ship is deviating from track, perhaps towards danger.

Failure to take immediate action to regain track having deviated from it

Even when aware that deviation from track is occurring, the attitude may be that it doesn't really matter because there is enough safe water, when this is not actually the case. Ships are never planned to go aground, so compliance with the planned track will ensure safety.

Failure to cross check fixes by comparing one means with another

If only one method of fixing is used when the ship is in constrained waters, mis-identification of a navigation mark or faulty electronic information, left unchecked and unobserved, can leave the OOW with a false sense of security.

Failure to use visual fixing when available

Electronic position fixing may sometimes be more accurate or convenient but electronic fixes do not necessarily relate the ship's position to navigational hazards. Ignoring visual fixing may lead to the OOW becoming unaware of his situation.

Failure to use the echo sounder when making a landfall or navigating in constrained waters

Except when alongside or threatened by another ship, the nearest danger is inevitably vertically below. Although it cannot be considered to be a position fix, observation and appreciation of the under keel clearance will often warn the observer of approaching danger or that the ship is not in the position that it should be.

Failure to correctly identify navigational lights

An observer may convince himself that he sees the light he is looking for, not the light he is actually looking at. This mis-identification can lead to subsequent error or confusion.

Failure to ensure that important navigational decisions are independently checked by another officer

By their very nature human beings are liable to make errors. It is essential that such human errors cannot occur without being noticed and corrected. An integral part of the navigational plan and bridge organisation must be to constantly double check and minimise the risk of such errors going unnoticed.

Many of the instances cited above occur because the OOW does not appreciate the complexity of his role in a deteriorating situation This may be because such responsibilities have not been made clear to him.