

# Evacuation of a passenger ship – is panic a major factor?

## Introduction

The author of this research is concerned that many of the actions taken by those responsible for the safety of passengers on a ship are based on incorrect assumptions about how passengers will behave in an emergency. This leads to the misconception that notifying passengers that an emergency or potential emergency exists will result in large-scale panic. Consequently the decision to raise the alarm and begin preliminary evacuation preparations is often delayed with resultant disastrous consequences.

The 1995 amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, (STCW 95), outline specific requirements for safety-related training. Included in this training is the requirement that all persons having responsibility for the safety of passengers in an emergency on board a passenger vessel undertake training in crisis management and human behaviour in emergencies.

The research that is reported here sought to prove or disprove the following hypotheses:

That those in charge of an emergency on a passenger ship believe that:

- panic is a natural occurrence in an emergency
- sounding an alarm, such as a fire alarm, will cause panic
- as a result of the above, the alarm should be delayed until absolutely necessary
- the research also sought to prove that the above assumptions and beliefs are generally held as a result of media reporting of incidents rather than actual participation in emergencies.

Training in crisis management and human behaviour in emergencies needs to recognise these widely held assumptions and beliefs and make students aware of their existence. To support the author's hypotheses a survey was conducted of seafaring students studying at the Australian Maritime College. A questionnaire was supplied to students that asked them to answer whether or not they believed that passengers would panic in an emergency and whether, as a result, they believed that the alarm should be delayed

by Peter Ockerby, Lecturer - Marine Firefighting, Australian Maritime College, Launceston, Tasmania.

until absolutely necessary. To find out why participants held these views the questionnaire also asked participants whether they held these beliefs as a result of participating in an emergency or as a result of reading media reports about emergencies.

## Literature review

Panic is very often confused with stress and even people subjected to an emergency may reflect that they panicked, when in fact they only exhibited normal stressful behaviour.

There is a tendency to associate with panic actions that appear in retrospect to have been inappropriate. Yet none of these actions, even jumping, are clear or consistently reliable evidence for panic. For example, if an individual exposed to a fire as it spreads into a room is faced with a choice between perishing in the flames or jumping from a window, the latter would be a rational choice (Sime 1990, p. 74).

Stress behaviour may be defined as 'mental or emotional strain which may have some of the following symptoms: increased heart rate, sweating, nausea, breathlessness, speech difficulty and acute self-consciousness' (Truett 1988, p. 4). It should be apparent from this definition how easy it would be to confuse stressful behaviour with panic behaviour.

To assist in differentiating between panic and stress we can further categorise behaviour into two categories: coping and non-coping.

Panic is associated with non-coping behaviour while stress is associated with coping behaviour.

'The behaviour of passengers in a critical situation on board a passenger ferry' was a prize winning dissertation submitted by Jorgen Harbst & Freddy Madsen to the Danish Investment Foundation in 1991. In this research, Harbst and Madsen found that passenger behaviour is affected not only by the emergency, but also by factors leading up to the emergency.

Harbst and Madsen (1993) found that whether people are shopping in a supermarket, flying in a plane, staying in a hotel or travelling on a ship, they have generally accepted the risk. If they have generally accepted the risk they will not be motivated to study emergency instructions. Many people ignore airline flight attendants during their pre-flight safety demonstration or even if they do watch they may not really be paying attention. Similarly, very few people study the escape routes in a hotel. Therefore passenger behaviour should not be expected to be any different simply because people are on a huge ship that they believe to be invincible.

The concept of risk denial is also used to illustrate the belief that accidents only happen to other people. Dr Guylene Proulx from the National Fire Laboratory of Canada (Proulx 1994) has developed an underlying rationale for four concepts related to how people will react. These concepts are *avoidance*, *commitment*, *affiliation* and *role*.

Coping behaviour	Non-coping behaviour
Attempts to solve the problem	Makes no attempt to solve the problem
<i>For example:</i> Raises the alarm Removes threat Escapes rationally Considers others	<i>For example:</i> Reacts emotionally Becomes hostile Withdraws

Table 1: Coping and non-coping behaviours (adapted from Truett 1988)

## Avoidance

This concept assumes that people will tend to ignore an unexpected event in the hope that it will go away. This reaction appears to be particularly strong upon discovery of a fire. The initial reaction is often to either look for a reasonable explanation or to ignore the danger signs. This concept often leads to a delay in the raising of the alarm. During the Bradford Football Stadium fire in England in 1985, in which 56 people were killed, television cameras clearly showed spectators watching the football match while the fire in the stand behind them was rapidly building in intensity (Dowling 1994, Proulx 1994). Following the grounding of the M/V Yorktown Clipper near Alaska in 1993, passengers continued with what they had been doing, even though the vessel had started to list (National Transportation Safety Board 1994).

Prior conditioning will also affect how people react. For example, it is well known that prior to the Titanic disaster people were led to believe that the ship was unsinkable. Conditioned to this belief, many people reacted accordingly and denied that the ship was in danger of sinking.

## Commitment

This helps to explain the delayed reactions of people in response to signs of an emergency. Commitment assumes that people will finish one activity before paying attention to another, even if that other activity has the potential to put their lives in danger. If people have stood in a long queue or have paid for a meal in a restaurant they will be reluctant to leave. Ten people were killed in a fire in Woolworths in Manchester, England in 1979 (Dowling 1994). Although the fire started in clear view of over 100 people sitting in the store restaurant nobody took any action, continuing instead to eat their meals. In the fire in the Kings Cross Station in England in 1987 people were still entering the station despite smoke coming out of the tunnel system (Dowling 1994, Proulx 1994).

## Affiliation

Research has shown that if people enter a building or ship as a group then they will want to evacuate as a group. People will often spend time assembling before evacuating, and then they will only move as fast as the slowest member of the group.

This model predicts that ... individuals will not be concerned solely with self-preservation. They will be even more concerned than usual to retain or make contact with other

group members with whom they have close psychological ties and who are also threatened (Sime 1983, p.21).

For example, should a parent be expected to follow directions to an assembly station when they know that their child is asleep in a cabin two decks below? Yet to allow them to go down to their cabin will impede the evacuation of other passengers on their way up.

This caused problems during the Summerland fire on the Isle of Man in 1973 in which fifty people died. This building was a leisure complex and children's activities were quite separate from those of adults. Instead of making for the nearest exit many people, not unnaturally, tried to recover their children. This caused conflicting streams of traffic with some people trying to enter further into the building while most were trying to evacuate (Summerland Fire Commission 1974).

## Role

This concept is used to help explain the response of people according to their normal every day duties. Passengers and crew may be expected to respond quite differently in an emergency. Passengers will feel that it is not their duty to take charge or assist. Instead they will generally take a passive role and look to the crew for advice and assistance.

The above concepts are supported by other research that is shown below in tabulated form.

Harbst and Madsen (1993) indicate that when an emergency arises, passenger behaviour will be similar to the following model:

- 10% of people will accept that there is danger
- 30% of people will look for further evidence of danger
- 60% of people will initially ignore the signs of danger

Harbst and Madsen (1993) then quote research to illustrate the likely actions of people once they have accepted that a dangerous situation exists:

- 10% will attempt to evacuate.
- 5% will attempt corrective action; eg, start fighting the fire.
- 10% will attempt to warn others.
- 60% will wait for instructions or look to others' initiatives
- 12 - 14% will become paralysed and take no action; eg, wait in their cabins
- 1 - 3% will panic

Given that panic is undesirable the risk should be reduced as much as possible. A common approach is to delay raising the alarm.

*'We don't want to cause panic.'*

*'We don't want to alarm the passengers.'*

*'We'll go and investigate it first, see if it's worth notifying the passengers.'*

*'It may not be anything worth worrying about.'*

These and other similar responses are very common when signs of an emergency are present. Due to a misguided sense of wanting to avoid panic and not inconvenience the passengers, those in charge consistently delay raising the alarm. Besides the problems caused by a delay in raising the alarm one must question whether it is morally correct. Morally, can one justify not notifying the passengers of an emergency, or potential emergency, simply because of concern about how they may react? The author believes that it would be better to notify the passengers and give them the facts. If they are given sufficient, timely information, passengers should be able to take reasoned actions.

Media reporting of fires that attribute the cause of death to panic also serve to confirm this belief. 'For a long time, it has been common practice in the media to depict those who die in fires as victims of their own propensity for "panic" or irrational or egocentric behaviour, ...' (Proulx & Sime 1991, p. 844). For example, in 1977 a fire broke out in the Beverly Hills Supper Club in Kentucky, USA. Headlines that followed included:

### ***Panic Kills 300***

### ***Panic and 300 Stampeded to Death A Killer Called Panic***

The official report concluded that panic was not a major contributing factor to the loss of life. It did however, identify human factors other than panic, including a delay in notifying people of the fire. An announcement asking people to leave was not given until about twenty minutes after the discovery of heavy smoke. Additionally, there were 1350 people in the room where the fire originated, although the recommended capacity was only 536 people. It should also be noted that the number of deaths was 164, not 300 (Truett 1988).

Yet, those reporting on fires are usually observing from outside and when they make their report they have the benefits of hindsight and of having been able to gather all the facts. Sime (1990, p. 72) states that 'flight is not the normal way of leaving a building. Because of this, it looks much more disorganized to independent commentators on the fire or even individuals in the situation than in fact it is'. Sime (1990, p. 74) then discusses how 'the lack

of use of exits and competition for a single exit are often cited as evidence for panic'. In doing so, he quotes Turner and Killian (1957, p. 10, as cited by Sime 1990, p. 74) who state that:

When people, attempting to escape from a burning building pile up at a single exit, their behaviour appears highly irrational to someone who learns after the panic that other exits were available. To the actor in the situation who does not recognize the existence of these alternatives, attempting to fight his way to the only exit available may seem a very logical choice as opposed to burning to death.

Numerous case studies exist where the alarm was delayed because those in charge were concerned about panic. In some cases the gamble paid off, and no harm was caused. Yet in others, the delay in raising the alarm contributed to a major loss of life.

In 1989 the British ro-ro vessel *Earl Granville* struck a rock near the entrance to Cherbourg Harbour (Marine Accident Investigation Branch 1991). At the time she was carrying 707 passengers and approximately 170 cars from Portsmouth to Cherbourg. Following the grounding extensive flooding occurred within the double bottom. A substantial quantity of water also entered some machinery spaces and the carpenter's store. The Master, realising that there was a very real danger of capsizing or sinking, considered beaching the vessel in shallow water in the outer harbour. However, the vessel remained upright and passage was continued to the inner harbour and berth.

Despite the seriousness of the situation the Master stated that he did not make an announcement to the passengers at any time as he did not want to start a panic among 700 passengers. Additionally, no distress or urgency messages were sent, save for a radio message to the ship's agent requesting the port authorities to obtain divers, pumps and a lay-by berth.

A number of recommendations were made following the investigation into the incident, including:

Masters should not hesitate to alert crew and passengers, and to broadcast an urgency (PAN) signal, whenever an incident occurs which may imperil the ship. Undue alarm is far more likely to be caused if this is not done and then subsequently emergency procedures have to be pursued in haste than if preparatory action is taken in good time (p. 8).

In 1993, the US passenger vessel *M/V*

*Yorktown Clipper* struck a rock in Glacier Bay, Alaska (National Transportation Safety Board 1994). The hull was pierced in several locations and the vessel began to flood. On board were 134 passengers and 42 crew members. Despite the impact being felt and heard throughout the vessel the master did not sound the general alarm because he wanted to evaluate the situation first to avoid unnecessarily alarming the passengers. About 15 minutes after the grounding he used the public address system to advise passengers to return to their cabins and don life preservers. Although most crew members were prepared to react in an emergency, the lack of a general alarm created uncertainty about their actions. About 30 minutes later the master again tried to use the public address system to advise the passengers to muster. However, opened electrical circuits had caused failure of the public address system and crew members had to advise passengers individually.

All passengers and non-essential crew were safely evacuated and transferred to nearby vessels and there were no reports of injuries. The investigation into the incident by the US National Transportation Safety Board acknowledged that the procedure used by the master to assess the danger did not adversely affect passenger safety, in this accident. However, the report also states that:

Under other circumstances, a delay in getting the passengers into their life jackets and getting the crew and passengers to their muster stations could be critical to their survival. The Safety Board believes that precisely because the seriousness of the situation is unknown immediately after an accident, the general alarm should be sounded.

Rather than creating confusion, sounding the alarm will inform passengers and crew that the master is aware of the emergency and is taking action. Further, time spent making an evaluation before making an announcement cannot be recovered, and if a vessel is about to sink, there may be insufficient time left to conduct a safe and orderly abandonment (p. 33).

The above findings are supported by the results of research commissioned by the Tyne and Wear Metro Passenger Transport Executive to assess their communication system in relation to safety criteria set out in the Fire Precautions (Sub-surface Railway Stations) Regulations 1989. Proulx and Sime (1991)

report the results of this research in a conference paper titled 'To prevent panic in an underground emergency: Why not tell people the truth?'

To assess the behaviour of train passengers in an emergency an experiment involving five different evacuations was conducted in one of the underground stations. In each experiment the scenario was similar, the time of day was similar, only the information given to passengers varied. Each experiment provided progressively more information. For example, experiment one provided only a fire alarm whilst experiment five provided an alarm bell with directive public announcements.

The results of this research demonstrated that the more information that was provided to the passengers the better the evacuation results. In experiment one it took nearly nine minutes before passengers started to respond to the alarm and this was only achieved when the fire brigade arrived and started telling people to leave. The exercise was ended after nearly fifteen minutes with people still inside the station.

In contrast exercise five utilised the alarm bells followed by directive information including that there was a suspected fire, its location and how people should behave. In this exercise people were moving out of the station within one minute and the evacuation was completed within six minutes, save for two groups of people. One group had a baby in a pushchair and the other group had a big pram. These two groups took seven and ten minutes respectively.

In their research report Proulx and Sime (1991, p. 850) note that:

Some concern was expressed in prior discussion with senior management that an explicit P.A. reference to a threat, namely 'There is a suspected fire on the N/S escalators' might lead to 'panic'.

However, the authors note that the opposite occurred, and whilst the statement did not encourage panic it 'provoked sufficient stress to initiate an evacuation, while keeping passengers sufficiently calm to evacuate in a prompt and orderly fashion' (Proulx & Sime 1991, p. 851).

In their report of the above research Proulx and Sime (1991, p. 852) concluded that 'in an emergency telling people the truth about an incident appears to be the best way to convince them of the gravity of a situation'. Sufficient information should therefore be provided to enable informed decision making and provide people with ample time to safely evacuate. This is supported by research into other

types of emergencies:

Emotions or feelings generated by flood warnings can include disbelief, boredom, anxiety, fear or even excitement. It seems, though, that many warnings fail to generate any feelings or interest at all. The message should therefore contain wording which is designed to motivate or arouse (Emergency Management Australia 1995, p.27).

Barry Sweedler, director of the National Transportation Safety Board's Office of Safety Recommendations and Accomplishments states (The Associated Press 1998) 'if you're in a hotel room and smoke is detected, the alarm goes off, it doesn't go off in the manager's office. We don't have that on vessels. We'd like to see that'.

Readers should consider these comments, and those of the previous case studies and research reports in the context of the following incident:

In 1994 the passenger ro-ro ferry Estonia, travelling from Yallinn to Stockholm capsized and sank with the loss of over 900 lives. A summary of the conclusions, published in the journal Safety at Sea International in February 1998, notes the following:

The lifeboat alarm was not given until about five minutes after the list developed, nor was any information given to passengers over the public address system. By the time the alarm was given, the list made escaping from inside the vessel very difficult. This, together with problems in using life-saving equipment contributed to the tragic outcome (p. 15).

The above incidents illustrate the importance of raising the alarm and notifying passengers and crew. While in some cases a delay in raising the alarm does not result in undue risk it is very clearly a gamble. A gamble, that if lost, may result in unnecessary injury and loss of life.

### Data analysis

The following data analysis details the responses to the survey questions in relation to the hypotheses that were developed for this research.

Figure 2 illustrates that most of the respondents had been involved in an emergency. The question deliberately avoided specifying that the emergency had to occur on a ship as the author simply wished to know if respondents had been involved in an emergency of any type.

Although the majority of respondents who provided a response indicated that they did not feel the urge to panic they did not view the actions of others as favourably. This can be seen in the results

Question	Yes %	No %
Have you ever been involved in an emergency?	91	9
Did you feel the urge to panic?	33	67
Did other people appear to panic?	48	52

Figure 2: Had respondents been involved in an emergency?

Question	Yes %	No %
Have you seen or read media reports of emergency incidents where panic occurred?	70	30
Have you read official reports where panic occurred?	57	43

Figure 3: Had respondents read of incidents where panic occurred?

for the last question that shows a similar number of people thought others appeared to panic as those who did not.

The questionnaire then provided room for those who had been involved in an emergency to outline the type of emergency and their actions. Apart from one respondent who indicated that he had been involved in a house fire all the others who completed this section indicated that their emergency had occurred on board a ship. The types of emergencies described could mainly be described as fires or groundings although one did include a man overboard emergency and another included being hit by a missile during the gulf war.

The next section of the questionnaire sought to find out whether respondents had read of incidents where panic had occurred. The results obtained to the questions relating to this area are summarised in Figure 3.

The results to this section indicate that the majority of respondents had seen or read of incidents where panic had occurred, either in the media or in official reports. Respondents were then asked to describe why reports of panic occurred, and of those that completed this section the comments included:

- lack of training/understanding
- it is my experience that the level of panic is proportional to the level of danger and the behaviour of the leader
- failure to issue orders
- during a fire on a passenger vessel the music continued to play in between announcements concerning the gradual disintegration of the ship; this deliberate obfuscating contributed to anxiety levels throughout the incident
- panic when people trapped in fire, no lighting, no plan or equipment

- passengers not being 'led' by crew. Crew did not communicate
- lack of communication, passengers not being told what was expected of them
- lack of command/leadership, communication problems, nationality/language problems
- media publicity is sold better with panic situations
- the crew or passengers were not prepared, no emergency drills were carried out on board
- media beat up is certainly common, ignorance of facilities and procedures is a far greater killer than panic but it doesn't make as good a story.

The comments here were pleasing in that where respondents had read of panic occurring they were able to see past the description of panic and ascertain the underlying cause. As can be seen above the cause mainly centred on communication, leadership and training aspects, although two respondents commented on the media using panic to make the report more exciting.

The third section of the questionnaire then asked respondents to indicate their views to a number of statements relating to human behaviour and panic. In this section respondents were provided with three response choices, 'yes', 'no' or 'don't know'.

Analysis of Figure 4 (overleaf) highlights some interesting results. Although the majority of respondents believe that passengers can be expected to panic in an emergency and that sounding the alarm will cause panic, they also believe that public address announcements should include the reason for the emergency. Therefore it would appear that most respondents believe that when, and if, passengers have to be told about the

Question	Yes %	No %	Don't know %
Passengers can be expected to panic in an emergency	59	18	23
Sounding the alarm will cause panic	30	57	13
Public address announcements should include the reason for the emergency	67	20	13
Panic is a major cause of death in an emergency	42	33	25
The sounding of the alarm should be delayed until absolutely necessary	25	71	4

Figure 4: Did respondents believe passengers were likely to panic in an emergency?

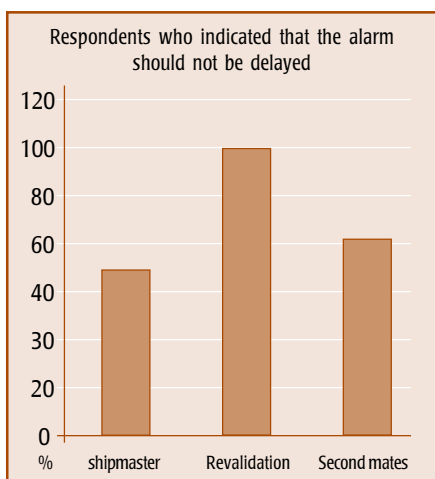


Figure 5: Breakdown of respondents into individual groups

emergency they should be kept fully informed.

Many of those who believe that passengers can be expected to panic also indicated that the alarm should not be delayed until absolutely necessary. Figure 5 provides an interesting comparison between each group of respondents to the last question.

The Second Mate students consisted largely of young cadets who had completed at least the minimum sea time of eighteen months that is required before being allowed entry to the course. Shipmaster students consisted of those students with more sea time who were studying to gain the qualifications to become a Master of a

ship. The Revalidation course is required by maritime legislation for those who wish to maintain their sea going qualifications but have not worked at sea for five years.

The revalidation students, who consisted of experienced senior seafarers, indicated that the alarm should not be delayed until absolutely necessary. Each respondent in this group also indicated that they had been involved in an emergency. In contrast only 50% of Shipmaster students and 66% of Second Mate students indicated that the alarm should not be delayed until absolutely necessary. This result therefore appears to indicate that experience demonstrates that it is best to raise the alarm early rather than leave it until there is no alternative.

The final section of the questionnaire related to the hypothesis that people believe that an alarm should be delayed until absolutely necessary.

The results in Figure 6 appear to contradict the hypothesis as they show a clear majority of respondents believing that the alarm should be raised immediately an emergency or potential emergency occurs. However, analysis of the three groups of respondents produced the following results:

Figure 6 illustrates that people with the most experience are more likely to raise the alarm immediately. Additionally the only revalidation student who indicated that the alarm should be delayed explained

that his response was for electronic alarms only. An analysis of the explanations of those who indicated that the alarm should be raised immediately indicates that most believe that early information is vital to allow safe evacuation. It should be noted that the majority of the comments in support of raising the alarm immediately were from the revalidation students.

- From experience on merchant vessels and in the hydrocarbon industry, waking people up unnecessarily or interrupting meetings/work is far better than letting a situation develop further.
- The rationale for response is that an emergency or potential emergency will most likely be quite apparent to passengers/crew anyway. Armed with such awareness passengers/crew would immediately anticipate an announcement by the command concerning the emergency. Failure to provide such an announcement would contribute to increased anxiety levels.
- Emergencies can soon get out of control.
- Early warning and frequent information will alert and prepare people for the emergency. It is easier to cancel the alarm than to have mass panic at the last moment.
- Properly informed passengers are more likely to make more rational decisions if given time to prepare both mentally and physically.

The above comments illustrate that those who support immediately raising the alarm do so in the belief that the inconvenience of false alarms is outweighed by the necessity to prepare people mentally and physically when the emergency turns out to be real. Conversely the comments of those who support investigating before sounding the alarm do so out of concern for unnecessarily inconveniencing people for false or minor emergencies. Additionally there were very few supporting comments from those who indicated that further information should be sought before sounding the alarm. The main comments from those who indicated their support for this position were:

- Carrying passengers is a commercial enterprise and making their voyage enjoyable and incident free needs to be balanced with their safety.
- Many alarms are automated and can be activated by 'burning toast' and it is probably not necessary to unnecessarily alarm the passengers.
- If the emergency is only electronically indicated; e.g. fire alarm, then checking the alarm quickly is required. If it does

If an emergency or potential emergency occurred on a passenger ship do you think those in charge should:	Yes %	No %
Immediately sound the general alarm to notify crew and passengers	65	35
or		
Seek further information before sounding the alarm	35	65

Figure 6: In an emergency, should an alarm be delayed?

exist then notify others.

There were no comments from those supporting the delaying of the alarm to prevent panic. The main concern appeared to be unnecessarily worrying or inconveniencing passengers for false alarms, especially those activated by electronic means.

### Discussion

In this section the results of the survey are discussed and compared with the literature review in relation to each hypothesis. Readers should be aware that this section presents the author's interpretation of the results.

#### **That those in charge of an emergency on a passenger ship believe that panic is a natural occurrence in an emergency.**

Only nine percent of respondents indicated that they had never been involved in an emergency. Of those who indicated that they had been involved in an emergency, only thirty-three percent indicated that they felt the urge to panic. However forty-eight percent believed that others appeared to panic. This is consistent with the results of other research that found that because people were in a hurry to leave a dangerous situation 'it looks much more disorganised to independent commentators on the fire or even individuals in the situation than in fact it is' Sime (1990, p.72).

In relation to this hypothesis respondents were asked to indicate whether they thought that passengers might be expected to panic in an emergency. Fifty-nine per cent of respondents indicated that they would expect passengers to panic, twenty-three percent did not know whilst only eighteen percent indicated that they would not expect passengers to panic. The results would therefore appear to support this hypothesis. Given that nearly fifty percent of respondents who have been involved in an emergency indicated that others appeared to panic it is perhaps not surprising that respondents would expect passengers to panic.

Participants undertaking the Crisis Management and Human Behaviour in Emergencies course therefore need to be aware how observers view the behaviour of others. The behaviour of passengers hurriedly making their way to their cabins to locate family members, instead of following directions to assembly stations, should not inadvertently be construed as panic. Misinterpreting the behaviour of passengers could lead to flawed decision making. For example, if ship's officers observe the aforemen-

tioned behaviour in an emergency then next time they may consider delaying the alarm out of concern for 'causing panic'. Those responsible for the safety of passengers therefore need to have a good understanding of human behaviour so that they will be able to appreciate why people are acting in a certain manner.

#### **That those in charge of an emergency on a passenger ship believe that sounding an alarm, such as a fire alarm, will cause panic.**

The results of this research are consistent with other studies mentioned earlier in the literature review. In this study the majority of respondents indicated that sounding the alarm will not cause panic whilst only a minority indicated that they believe that sounding the alarm *will* cause panic. This hypothesis was therefore not supported as the majority of people believe that sounding an alarm will not cause panic.

However, there are important implications for those responsible for the safety of passengers in an emergency. The underlying theme apparent from the literature review is that passengers will need more than one cue to motivate them to take the emergency seriously and begin evacuating. Whilst it appears that there is little need for concern about an alarm causing panic the fact that people largely ignore them is cause for concern. For example, in Proulx and Sime's (1991) study passengers needed an alarm plus authoritative public address announcements that there was a fire before they took the situation seriously.

Even in the Woolworth's fire in Manchester in 1979 (Dowling 1994) shoppers remained seated in the restaurant even though they were in full view of the developing fire. They did not begin evacuating until someone came over and shouted at them to leave. Harbst and Madsen (1993) found that when an emergency arises only ten per cent of people will accept that there is danger while the others will either initially ignore the signs of danger or look for further evidence.

Those with responsibility for the safety of passengers should therefore be aware that more than one cue will be needed for passengers to take an emergency seriously. Simply sounding an alarm and then expecting passengers to make their way to assembly points that have been identified during safety drills is unlikely to be successful. Authoritative public address announcements supported by the presence of uniformed staff giving

directions will be needed to ensure passengers appreciate the seriousness of the situation and begin to evacuate in an orderly and safe manner. Emergency Management Australia (1995, p.27) also states that:

Those designing messages should not be worried about causing inappropriate concern or 'panic': the real problem is usually one of persuading people to take action rather than doing nothing.

This point needs to be reinforced during the teaching of the Crisis Management and Human Behaviour in Emergencies course.

#### **That those in charge of an emergency on a passenger ship believe that as a result of the first two hypotheses that the alarm should be delayed until absolutely necessary.**

There were two questions relating to this hypothesis. The first asked whether respondents believed that the alarm should be delayed until absolutely necessary. The second asked respondents to indicate whether they would immediately sound the alarm to warn crew and passengers or seek further information before sounding the alarm.

The majority of respondents indicated that the alarm should not be delayed until absolutely necessary. A similar response was achieved to the question asking respondents to select their preferred course of action with the majority also indicating that the alarm should be sounded immediately an emergency or potential emergency exists.

Although the sample group was relatively small the results do appear to indicate that experience influences how a person will react. The revalidation students, who possessed considerable seagoing experience, all believed that alarms should be sounded immediately there is evidence of an emergency or potential emergency. These students believed that any inconvenience due to false alarms is outweighed by the necessity to begin emergency preparations in the event that the emergency proves real.

However, the comments from the shipmaster and second mate students, who had more limited experience at sea were mixed, with some believing that passengers should not be inconvenienced or unduly alarmed until an emergency is proven to be real.

The research and case studies that were cited in the literature review support the views of the revalidation students. Attention is drawn to the comments of

the Marine Accident Investigation Branch (1991) following the grounding of the Earl Granville in Cherbourg Harbour about the need to take preparatory action. The National Transportation Safety Board (1994) also made similar comments after the M/V Yorktown Clipper struck a rock in Glacier Bay, Alaska.

Those teaching the Crisis Management and Human Behaviour in Emergencies course need to be aware of the above results. Instructors should ensure that participants, particularly those with relatively little experience, are aware of the need to raise the alarm and begin preliminary evacuation procedures, especially when the seriousness of the situation is unknown.

### **That the above assumptions and beliefs are generally held as a result of media reporting into incidents rather than actual participation in emergencies.**

This hypothesis produced some interesting results. As reported previously ninety-one percent of the respondents indicated that they had been involved in some type of emergency. Of these, only thirty-three percent felt the urge to panic and only forty-eight percent thought others appeared to panic. Yet seventy percent had read of media reports where panic had occurred and fifty-seven percent had read official reports where panic had occurred. Why then do media and official reports differ from the experiences of those people who have been involved in emergencies?

The answer may most likely be found by revisiting the research of Sime (1990, p. 72) and Turner and Killian (1957, p. 10, as cited by Sime 1990, p. 74). These researchers concluded that with so many people evacuating together it is easy for the evacuation to look disorganised to observers.

The underlying reasons for 'panic' occurring can mainly be attributed to problems associated with communications, training, leadership or simply media 'beat up'. In fact whether panic did even occur is probably also open to conjecture. For example, in the Beverly Hills Supper Club fire, where headlines attributed the cause of death to panic, 'the cause of death was smoke and carbon monoxide inhalation' (Sime 1990, p. 66). The report attributed the lack of panic 'to insufficient appreciation of the seriousness of the emergency and acceptance by the staff of their responsible role in directing people to the exits' (Sime 1990, p. 66). Further, the report concluded that 'panic is not con-

sidered a major contributing factor to the large loss of life ...' (Best 1977, p. 66, as cited by Sime 1990, p. 66).

During the teaching of the Crisis Management and Human Behaviour in Emergencies course a mix of official reports and corresponding media reports should be used. Teaching methods may include the use of syndicate exercises whereby groups examine reports for panic and then try to ascertain if panic did occur and what were the contributing factors. Syndicate findings would then be presented to the rest of the course in a plenary session.

### **Recommendations**

After analysing and discussing the results of this research in conjunction with the literature review the author makes the following recommendations:

1. Those people who have responsibility for the safety of passengers in an emergency on a passenger ship should be made aware of how easily stress and/or flight behaviour can be misconstrued as panic. Misinterpreting the behaviour of passengers may lead to flawed decision making.
2. People with the responsibility for notifying passengers that an emergency or potential emergency exists must consider that the use of an alarm in isolation from other means of communication is unlikely to ensure an effective evacuation. Passengers need more than one cue before they will take the situation seriously so alarms must be supported by authoritative public address announcements and directions from uniformed ship's crew.
3. Where there is any doubt about the seriousness of an emergency, or when all the facts are not known, preparations for evacuation should begin. This does not have to mean a full scale evacuation of the ship but it should at least include notifying passengers and have them start to make their way to the assembly points. A delay in the early stages of an evacuation could lead to a massive loss of life during the later stages.
4. The teaching of the 'Crisis Management and Human Behaviour in Emergencies' course should incorporate the use of media and official reports to illustrate that panic is often misinterpreted for other forms of behaviour. These reports should also be used to examine the underlying reasons for any evacuation problems. Instructors should consider this and the aforementioned recommendations during the planning stages of the course.

### **References**

- Dowling D.M. (1994), 'Action in the event of fire: Human behaviour — a firefighter's view', *Fire Engineer's Journal*, vol. 54, no. 173, pp.20–24.
- Emergency Management Australia, (1995), *Flood Warning: An Australian Guide*, Mount Macedon, Victoria.
- Gardner J. (1996), 'Building design and human behaviour in fires', *Fire Engineers Journal*, vol. 56, no. 193, pp. 18–20.
- Harbst J. & Madsen F. (1993), 'The behaviour of passengers in a critical situation on board a passenger vessel or ferry', IMO Maritime Safety Committee, 62nd session, item 23.
- International Maritime Organization, (1996), *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 (STCW 95)*, London.
- Marine Accident Investigation Branch, (1991), 'Report on the grounding of the British ro-ro vessel Earl Granville off Cherbourg on 19 August 1989', Southampton.
- National Transportation Safety Board, (1994) 'Marine accident report—Grounding of U.S. passenger vessel M/V Yorktown Clipper in Glacier Bay Alaska, August 18, 1993', Washington.
- Proulx G. & Sime J.D. (1991), 'To prevent panic in an underground emergency: Why not tell people the truth?' in *Fire Safety Science: Proceedings of the Third International Symposium*, eds. G. Cox & B. Langford, London.
- Proulx G. (1994), 'Human response to fires', *Fire Australia*, August edn, pp.14–16.
- Safety at Sea International (1998), 'Estonia — the final report', no. 347, pp.14–15.
- Sime J.D. (1983), 'Affiliative behaviour during escape to building exits', *Journal of Environmental Psychology*, vol. 3, no. 1, pp.21–41.
- Sime J.D. (1990), 'The concept of panic', in *Fires and Human Behaviour*, 2<sup>nd</sup> edn, ed. D. Canter, David Fulton Publishers, London.
- Summerland Fire Commission (1974), *The Summerland Fire*, Isle of Man Government.
- The Associated Press (1998), 'Safety board recently weighed in on cruise ship fire safety', [on-line]. Available at: [www.chron.com/co.../96/09/29/cruise-29.html](http://www.chron.com/co.../96/09/29/cruise-29.html).
- Truett T. (1988), *Fire Safety Management 1 - Study Guide*, The School of Mines & Industries, Ballarat, Australia.

**This article has been refereed**