

Chapter 1

Initiation of an Accident Investigation.

The Need for Investigation.

The objective of any marine casualty investigation is the prevention of further similar casualties by discovering the reasons behind the casualty and then promulgating actions, information and recommendations where appropriate with a view to preventing similar casualties. It is important that any recommendations arising from an investigation are based on sound analysis and are capable of practical implementation.

It follows from this that any accident, from the trivial to the major can be the subject of a marine casualty investigation. A simple personnel accident with the potential for learning something which could prevent recurrences might be worth investigating thoroughly while a major collision resulting from a straightforward wrong application of the COLREGS might not show anything new. Another different collision might indicate a need to look at fatigue, management procedures, training, certification and bridge design. Each accident which is reported should be assessed on its merits.

However, the “Code for the Investigation of Marine casualties and Incidents”¹ does provide some guidance. It states that:

“Flag States are encouraged to ensure that investigations are carried out into all casualties occurring to its ships. All cases of serious and very serious casualties should be investigated.”

What is a casualty?

The Code defines a casualty as an event which has resulted in:

- death or serious injury (caused by or in connection with the operations of a ship)
- loss of a person from a ship (caused by or in connection with the operation of a ship)
- the loss, presumed loss, or abandonment of a ship.

¹ IMO Resolution A.849(20) adopted 27th November 1997.

- material damage to a ship.
- the stranding or disabling of a ship, or its involvement in a collision.
- material damage being caused by, or in connection with the operation of a ship.
- damage to the environment.

However, this definition is not truly helpful and needs to be interpreted with care. For example, what is “material damage”? Is a minor contact while manoeuvring really a collision?

A true definition of a casualty is not easy. To fulfil the purposes of marine accident investigation it is obvious that all sorts of incidents may need to be investigated, so that a true definition is probably along the lines of :-

“any accident or incident which causes or threatens significant damage or injury”.

Within this scope it is for the accident investigator to determine the need for investigation in respect of each one that is reported.

The Code also defines Serious Casualties and Very Serious Casualties.

Serious casualty.

A serious casualty is a casualty which involves a fire, explosion, grounding, contact, heavy weather damage, ice damage, hull cracking or suspected hull defect resulting in:

- structural damage rendering the ship unseaworthy (such as penetration of the hull underwater, immobilisation of the main engines, extensive accommodation damage etc.; or
- pollution in any quantity; and/or
- a breakdown necessitating towage or shore assistance.

Very Serious casualty

A very serious casualty means a casualty which involves the total loss of the ship, loss of life or severe pollution.

The Code is clear that these serious and very serious casualties **“should be investigated”**, but it should not be forgotten that any accident can have the potential to reveal, in its analysis, a need for changes to prevent recurrences.

The selection of which accidents to investigate should be made with this in mind as it is normally a physical impossibility for any organisation to investigate every single reported accident, many accident investigation organisations suggest that they only conduct investigations in about 3% or 4% of reported accidents. It is essential, therefore, to select very carefully those accidents which merit an in-depth investigation.

Assessment of the Information available in an accident report.

Most flag state administrations and accident investigation authorities will have systems in place for reporting accidents. The first task in any investigation process is to assess this incoming data with a view to deciding which reported cases warrant investigation.

Obviously a major incident with injuries, environmental damage and media coverage requires no further discussion, an investigation should be mounted immediately and it will probably be a major investigation involving several investigators and a back up team of specialists. At the other end of the scale, many investigations can be dealt with by a request for reports from the ship and a close examination of those reports.

Probably the most common scale of investigation will involve one or two investigators who attend the ship, study the physical evidence, collect documentary evidence, and interview the participants. They then undertake any research that is necessary and compile to final report.

Levels and types of Investigation.

There are broadly 3 main levels of investigation depending on the severity of the casualty and its consequences, each requiring a different approach.

The most serious events require a major mobilisation of resources. There will be a team of several investigators under a lead investigator, supported by media co-ordinators, technical specialists, laboratory research facilities and a range of others, all in turn supported by the Flag Administration. The compilation of the final report may well involve an assessment board in some countries and will involve contributions from all those participating..

Less serious events will normally require a lower level of response, typically one or two investigators will attend, interview witnesses, collect evidence and then making use of

support facilities within the flag state and any necessary research work, compile the final report for the flag state.

Minor events, if a field investigation is warranted, will normally require only one investigator on scene who will conduct interviews, collect and examine evidence and then either prepare a brief report for consideration by the flag state or store the basic details for statistical analysis.

The majority of reported incidents tend to be of a minor nature and will not require the attendance of investigators on site. It will often be sufficient to call for reports from the ship and examine them to establish the essential facts. Further investigations can be undertaken if the examination suggests a need, but in most cases the incident can be closed on the basis of the reports from the ship.

Appointing the investigator.

Each flag administration will have its own system of accident investigation, most commonly either a specialised accident investigation unit with a staff of dedicated investigators or a system where individual surveyors, normally engaged in ship survey work are tasked with accident investigation when necessary. Both systems have their individual strengths and are both equally valid in meeting international Convention obligations to investigate casualties..

The number of investigators appointed to conduct any investigation depends on the size of the investigation, the need for speed, the impact of the investigation, the location of the accident, and the individual skills and strengths of the investigators. Ideally investigators should be specially trained, at least in the techniques of interviewing witnesses. There are a range of techniques available such as cognitive interview techniques, which have the capability to allow an investigator to establish a much greater amount of recall from a witness than can be established by the untrained interviewer.

Legal powers of investigators.

The actual powers which can be exercised by an investigator will vary depending on the jurisprudence of the flag state. When the casualty occurs in international waters (on the “high seas”) with no impact or consequences for any coastal state, it will normally be the flag state which has sole jurisdiction and power to investigate.

This situation is modified when the event is a collision on the high seas, each flag state involved has sole jurisdiction in the case of its own ship and therefore, to make any reasonable investigation, there has to be an accommodation between the two flag states to agree some degree of co-operation.

When a casualty occurs in the territorial waters of another state, then the coastal state or states may, depending on domestic legislation, have some powers of investigation.

When the investigating team is attending a casualty outside its own state boundaries they will therefore be interacting in many cases with local officials from the state in whose waters the accident has occurred. In general terms a flag state has jurisdiction over its own ships and on board its own ships. However, it is also the case in international law that a port state has a degree of jurisdiction over events arising from a ship which impact on the external world in the port state. Thus if a ship grounds, spills oil, collides, involves local fire services or rescue services etc. the port state gains a jurisdiction. In virtually all casualty investigations where a state other than the ship's flag state is involved to any degree, that port state will have some right of involvement in the investigation.

The Code provides for co-operation between states and this, coupled with the growth of the Marine Accident Investigators International Forum (MAIIF), has greatly assisted in smoothing out differences in these cases. However it remains the case that a variety of legal jurisdictions and national interests will often become involved and there can be no guarantee of co-operation and simple things such as access to local pilots or VTS operators for example can be denied.

The appointed investigator, subject to the detailed powers assigned by the laws of his or her country, will normally have powers to interview witnesses, collect evidence, preserve evidence, and examine the scene.

In some cases he may have even wider powers and it is essential that before attending any casualty the investigator is fully aware of exactly what legal powers he or she can exercise. It is almost inevitable that either the owners lawyers or officials from the port state or both will seek to follow their own agendas and that there will be conflicts. The investigator need to be very clear as to what powers he or she can exercise.

Chapter 2:

Initial Actions

Notification of an accident may come in to the investigator in a variety of ways, possibly in a message from the owners, possibly one from the ship, possibly in press and media reports, possibly by notification from a port state or an RCC.

However the notification arrives, and assuming the event is one which warrants investigation there are a number of immediate actions that are needed. Not all of them will be needed in all cases but the following list is a good guide assuming a fairly major incident:-

At the flag state.

1. Designate an investigator or an investigating team depending on the seriousness of the event and despatch them to the scene.
2. Contact Owners, Managers, Classification Society and Port State officers to inform them that investigators are en-route and elicit their co-operation. If possible provide them with the names of the investigator(s) and their travel arrangements.
3. Contact emergency response agencies who may be involved at the scene and inform them that an investigation is being undertaken and seek their co-operation and assistance in preserving evidence at the scene.
4. Contact any other “interested states” who might be involved with a view to a co-operative investigation.
5. If the incident is a major one, prepare an initial press release and nominate someone with experience to deal with media queries.

At the investigation site (the investigation team).

1. Meet with representatives of any “interested states” if applicable.
2. Make an early overview of the ship / scene and get a broad picture of events from which a basic plan of approach can be drawn up. Take photographs / videos as soon as possible before the scene is disturbed. Often a ship’s master will already have drawn up a report to owners which can be used to get an overview of the events.
3. Make arrangements for the preservation of the accident scene and for the control of access if possible, particularly if the accident involves property belonging to a third party.
4. Make arrangements for a base ashore. Ideally this will be somewhere like the investigators hotel where a small room should be set aside on “neutral ground” where the investigators can interview witnesses and hold their own discussions and briefings. Telephone and fax facilities, and possibly photocopying, computer and data access facilities, will be needed in most serious cases.

In a major casualty, there will need to be a “command centre” ashore where the investigation team have facilities for interviewing numerous witnesses, collating large amounts of evidence, possibly storing physical evidence, and conducting their own briefing meetings. A large dedicated conference style room is ideal with separate private rooms available for interviews. The centre will need photocopying and communications facilities for fax, phone and data, preferably on dedicated lines.

An important function for the “Command Centre” will be media management and there should be facilities for press briefings, and interviews.

5. Make arrangements for access to local witnesses, pilots, VTS operators, members of the public, stevedores etc. if this is appropriate and set up appointments for interviews. Arrange interpretation facilities if necessary. Obtain copies of any VTS tapes, radio recordings, radar recordings and similar evidence. If officials such as pilots refuse to co-operate, seek the co-operation of the Port State and their jurisdiction to compel co-operation if possible.

Initial Assessment of Available Evidence.

In every case, from a grounding when the investigators reach the ship after she has been re-floated, to a fire where the ship is alongside and burning when the investigators arrive there will be a need to gather initial evidence as quickly as possible. No matter what the circumstances, the passage of time will dilute the available evidence. Potential witnesses will depart, physical evidence will decay, documentation will be collected by a variety of people, and memories will fade.

Perhaps more importantly witnesses and those involved will begin to rationalise their recollections of the events and, without meaning to, will tend to vary their memories and adjust the priorities of remembered facts as they inevitably talk with others. There may be press speculation and media coverage which, in turn, will tend to colour people's recollections.

It is critical, therefore, for the investigators to gather an overview as quickly as possible and then plan the scope and direction of the investigation to minimise these effects.

In many cases the most useful initial source of information is the ship's Senior Officers. In many cases they will, immediately after the event, have drafted a report to owners, or at least made log entries. It is in the nature of seafarers to do this and these initial reports are usually written virtually contemporaneously. They will often give a good picture of;

the overall events,

key timings and

the personnel involved.

In the absence of this sort of information the investigator should seek to establish, as quickly as possible from whatever source, this same basic information. In conjunction with the owners representatives and agents, if appropriate, the investigators should then set the priorities for evidence collection and witness interviews and make a basic plan which captures the best information possible.

In many cases the investigators will not arrive at the ship until a few days after the accident. Obviously it is in the nature of ships that, unless she is a total loss, controls and equipment will have been moved or used when recovering from the accident and making the ship safe with a view to returning her to service. The flag state co-ordinator who has despatched the investigation team should already have stressed to the personnel on-site the importance of preserving evidence as far as possible.

In the case of a major casualty there will be a corresponding need for the best possible preservation of evidence. Steps which should be considered, where appropriate, and which can be taken in any investigation include:

- removing and excluding all persons from the accident scene except essential emergency response personnel.
- cordoning off the area and locking doors and gates.
- posting warning signs.
- utilising security personnel to control access.

As important as the initial impression of the events is an initial “walkthrough” of the accident scene. This may, in some cases be the only and best opportunity the investigators have to assess the scene before it is disturbed by others and this opportunity should be taken to:

- photograph the scene as thoroughly as possible.
- make contemporaneous notes, sketches and diagrams, especially of evidence which can easily be destroyed - positions of controls and switches, location of used emergency equipment, extent of damage etc. It is often useful to take a small tape recorder and make continuous voice notes for later transcription while walking through the scene.
- record exactly what any emergency response personnel are doing. This allows the best chance of working back to the state of the scene before they started their activities.

Meetings with interested parties.

It is inevitable that in any casualty there will be other interested parties. Indeed the number of these, in the initial stages, will probably be greater in less serious cases than in major events. In major casualties, particularly those with loss of life, the other parties will often tend to defer to the flag state investigator. In less serious cases they will each be seeking to protect their own or their client’s positions. Regardless of the casualty investigation, there will be ensuing litigation and the parties involved will be anxious to protect their positions. It is probable that in many cases the investigator will come across all or some of:

- Investigators and surveyors from the Salvage Association.

- Surveyors from the owners P&I Club.
- Experts appointed by the P&I Club.
- Lawyers representing P&I interests.
- Surveyors and experts appointed by cargo interests.
- Lawyers representing cargo interests.
- Lawyers representing individual crew members.
- Lawyers representing salvors.
- Lawyers representing owners.

All these are in addition to emergency services and port state officials who may be present.

In an incident, especially one which is not a major disaster, these representatives will all be seeking to protect their own client's interests. When there has been damage, especially cargo damage, the owner will be very conscious of the fact that in the future, he will be facing litigation in respect of cargo and insurance claims, and while these other parties will usually defer to the investigator in major cases, or where there has been loss of life, in other cases they will actively pursue their own cause.

The investigator should remember that most of these representatives have a right to be there and many of them may well arrive on-scene before the investigator. They can, sometimes unknowingly, cause problems for the investigation. The owner's lawyers, for example, will almost certainly wish to interview the crew and may well have started this process before the investigator arrives. They represent their clients interests and while they will not usually hide evidence they will often, in their questions, have the effect of leaving crew members with a recollection which can be biased towards the owners view of events. They may also seek to remove certain physical evidence for analysis by their own experts to support their client's case. They will certainly attempt to obtain and hold documentary evidence. It must be remembered that in many cases they will have a perfect legal right to do so.

In these circumstances there can be often be a conflict between the investigator and these representatives and for this reason the investigator needs to be very certain of his or her own legal powers as they apply to the situation.

The most effective way forward in these situations is for the investigator to hold a briefing meeting with all the interested parties as soon as possible after arriving on-scene.

The briefing meeting should seek to set out and explain for everyone:

- that the flag state investigation is the prime investigation, but the investigator will cooperate with others as far as possible so long as it does not interfere with the prime investigation.
- the legal powers held by the investigator making it clear that they will be used if necessary.
- the procedures for interviews and the legal rights of interviewees, the legal status of their statements and rights of access to them, and the rules governing access by third parties to interviews.
- the procedures for dealing with physical evidence and documentation and the procedures for sharing copies of this with other interested parties.

An effective meeting can go a long way to avoiding conflicts and duplication of work.

Chapter 3:

Managing the Investigation

Preservation of Evidence

There are three types of evidence: physical, human, (obtained through witness statements or interviews) and documentary (including photographic media.)

Physical evidence may include solids, liquids, or gases. Documentary evidence includes all documentation developed by the investigator as well as accident related paperwork (and electronic data) such as charts, logbooks, instrument charts, as-built drawings, schematics, engineering analyses, vendor information, correspondence, computer software and data printouts. Particularly valuable are contemporaneous notes made by personnel involved such as bridge and engine room notebooks.

Physical Evidence

Most physical evidence can be left intact at a protected accident scene to await later investigation. Some evidence may be perishable and have to be removed quickly and preserved (for example liquid samples that might require chemical analysis need to be collected quickly and sealed if the subsequent analysis of content is to be useful, likewise fluid samples which might evaporate or be absorbed need to be collected quickly). Some physical evidence may have been removed during the emergency response or casualty evacuation and the investigator should be aware of this and an early question to be directed to emergency response personnel should be in relation to any material of any kind that they might have removed from the scene during their work.

For physical evidence to be truly useful its integrity needs to be preserved and the investigator, before moving anything should record, the exact location of the evidence at the scene, its orientation, its time of collection and its status using measurements, logs, sketches, photographs or video where appropriate.

Collected evidence needs to be stored and to maintain its integrity after collection, the investigator should ensure:

- that it is stored in a secure location;
- that a “chain of custody” record is created which documents clearly the chain for each item;
- that access is controlled where necessary.

Note: The investigator should be conservative in deciding what items are “evidence”. It is easy to discard those “not useful” but virtually impossible to return and collect “forgotten” items later.

Human Evidence

Human evidence also needs preservation. Human recollection of events, like many types of physical evidence, tends to degrade over time and recollections recorded immediately after the event tend to be more accurate than those collected later. All persons involved in any accident will tend naturally to try and “make sense” of the event afterwards and shipboard personnel will naturally talk to each other and speculate on the causes in the aftermath. This leads to an inevitable tendency for witnesses to unconsciously vary the priority and importance of certain facts that they have witnessed to suit the group’s overall picture of the event.

These distortions are natural and can be filtered out by careful questioning but the best way to avoid them is to collect the human evidence as quickly as possible. This should not preclude the opportunity to interview the same witness again later. It is equally true that many people will remember useful facts surrounding the accident only some time afterwards and it is often the case with key personnel that an initial interview will reveal the main facts while a subsequent interview will bring out further detail which can sometimes be crucial.

Note: Quickly identify key witnesses and collect their statements because their “initial” statements are often more accurate and have greater credibility than those made later, but be prepared to return to the same witnesses some time later when they are often able to add detail in key areas.

Other persons such as emergency response personnel, members of the public, persons who arrive at the scene shortly after the incident and anyone else who might be expected to provide material information should be identified, located and asked to provide statements. If circumstances prevent the investigation team from taking all the witness statements immediately, the names and contact details of witnesses should be recorded so that they may be contacted later.

Note; Access to the owners employees, (the ship’s crew) is usually a right enjoyed by the owners lawyers who will certainly make use of it, but the same lawyers will not usually have jurisdiction or a right to interview other persons which gives the investigator a major advantage in collecting all the evidence and developing a complete picture of the events.

Table 3.1 Types of witnesses who should be able to provide important preliminary statements.

Type of Witness	Relationship to the Accident
Principal Witnesses	Persons directly involved in the event or who suffered injury from it (for example):- Master, Pilots, Watchkeepers, Stevedores
Eyewitnesses	Participants Observers who saw the accident or the events immediately preceding, during or following it.
Emergency response personnel	Persons arriving at the scene shortly after the accident and involved in actions to save life, property and/or the environment
Other potential witnesses	Company shore management personnel Port Officials Members of the public Persons engaged in the operation of the ship such as shift workers on duty prior to the accident, repair personnel who worked on the ship/equipment prior to the accident. Equipment or vessel designers, naval architects, fire experts, other experts.

To ensure that the list of potential witnesses is as complete as possible and to identify any who may have left the scene it is useful to ask all witnesses (at every interview) to list any others who were in the vicinity or who were seen near the time.

It is also useful to ask witness to make a sketch of the accident setting out the positions of other persons and of events. Such sketches when collated can produce useful confirmation of the sequence of events and can suggest avenues of investigation which may not be clear from statements alone.

Note: There are a number of interview techniques, commonly used by other investigative bodies, such as “cognitive interviewing” which can be very useful in collecting the maximum amount of evidence from witnesses. Courses in these techniques are available and all investigators should, wherever possible, be conversant with these techniques

Managing the analysis

The lead investigator is responsible for ensuring that events and causal factors analysis and other analysis methods are begun as soon as initial facts are available. This helps to identify information gaps early, to drive the data collection process and identify questions for interviews. Accident investigation software is available and can sometimes be useful for identifying information gaps and for organising causal factors.

Note: Particularly in a major investigation an alternative and useful technique is to make use of a wall board with coloured adhesive notes to set out elements of the events and casual factors. All team members can observe progress, provide input and plan changes.

As the investigation and analysis proceeds the lead investigator needs to monitor and discuss progress to ensure that:-

- If there are several members in the team, they are all working collectively to produce a quality result;
- If analysis and evidence gathering tasks are assigned to separate groups, the groups or individuals are interacting regularly to improve co-ordination, strengthen the analytical process and maintain focus;
- Analyses are iterative (i.e. repeated so that each version produces results that stage by stage approximates more closely to the end result. Several iterations may be needed as new information becomes available;
- Analyses address all organisational concerns, management systems and line management oversight functions that may have contributed to the accident causes;
- Causal factors, conclusions and judgements are supported by evidence;
- Significant facts and analyses do not result in a “dead end”; rather they are linked to casual factors.

Format of the Report.

There are two aspects to final casualty reports, the actual report and the requirements to report to the International Maritime Organization.

The actual report.

The Code sets out (Paragraph 14) a basic report layout. This layout is logical and helps develop a structured report. Circumstances may dictate a variation on format, but whenever possible the final report generated by the investigation team should contain:

1. ***a summary***
This part outlines the basic facts of the casualty stating whether any deaths, injuries or pollution have occurred as a result. It may contain the main conclusions in a summary form.
2. ***factual details.***
This part includes the identity of the ship, flag, owners, managers Classification society as well as the relevant basic ship details:- type size power crew etc.
3. ***factual; narrative***
This section sets out in plain terms the established facts of the casualty. It is necessary here to clearly separate established fact from conclusions and presumptions. The section needs to be written with care and confined purely to facts which are established with certainty. There will inevitably be gaps but the investigator should avoid trying to fill gaps in this section, that can be done in the analysis section. Any reader should be able to establish from this section exactly what events are established as occurring with certainty in their chronological order.
4. ***analysis and comment***
In this section the investigator is free to take the facts from Section 3, and analyse them, adding in expert analysis and drawing together different facts to reach supported conclusions on the causes behind the casualty. The basic arguments behind each conclusion need to be set out in this section and each conclusion needs to draw on facts and demonstrate its basis. It is always possible that the investigator is certain of some elements but the investigation is unable to find sufficient facts to firmly prove those elements.

It is permissible in this section to state this and expressions like “on the balance

of probabilities the following is concluded as the reason for ..” can be used when there is no alternative and provided that there is sound evidence and technical analysis pointing towards reaching this conclusion.

The section should end with a set of conclusions derived from the analysis, and noting where the conclusions are reached by argument without firm evidence.

5. *analysis of casual elements*

a section, or sections, analysing and commenting on causal elements, both mechanical and human. Similar comments apply to this section as with the preceding section.

6. *Recommendations.*

A set of recommendations addressed to flag state, Class, Owner, Crew, etc. as appropriate and derived from the analysis conclusions where the analysis and conclusions suggest any changes that could prevent a recurrence.

Reports to IMO.

There is an obligation arising from Regulation I/21 of SOLAS for flag states to report casualties to the International Maritime Organization. Regulation I/21 of SOLAS says:-

“Each Administration undertakes to conduct an investigation of any casualty occurring to any of its ships.....” and

“Each contracting Government undertakes to supply the Organization with pertinent information concerning the findings of such investigations.”

Similar provisions are included in Articles 8 & 12 of the MARPOL Convention.

Submission of reports to IMO under Regulation 1/21 of SOLAS is not required if the flag state judges that the investigation has not demonstrated a need for change in existing international regulations. Indeed IMO member states are obliged to demonstrate a compelling need for a change in any regulation before an item may be placed on the agenda of an IMO committee. However, it is also true that there is a general perception now that all casualties should be reported regardless of the strict interpretation of Regulation 1/21.

IMO Circulars MSC/Circ.827 / MEPC/Circ.333 of December 1997 set out Harmonised reporting procedures developed by the International Maritime Organization for flag states to fulfil their obligations under the Conventions. The Circulars provide standard reporting

formats in which the basic details can be inserted for submission to IMO and also set out an agreed time frame for the submission of various reports.

Table 3.1 Information to be submitted to IMO.

Information to be submitted	In the case of Very Serious casualties:	In the case of Serious Casualties:	In the case of Less Serious Casualties:	In the case of Marine Incidents:
Annex 1 of the IMO report form This is a basic summary in which the key information is provided by ticking the relevant boxes	within 6 months after the casualty	within 6 months after the casualty	may be provided if there are important lessons to be learned	may be provided if there are important lessons to be learned
Annexes 2 & 3 of the IMO report form Annex 2 is similar to Annex 1 but requires more detail. Annex 3 is a summary sheet which requires some summary input on findings and recommendations	at the end of the investigation	at the end of the investigation	may be provided if there are important lessons to be learned	may be provided if there are important lessons to be learned
Full investigation report	at the end of the investigation in all cases	may be provided if there are important lessons to be learned	may be provided if there are important lessons to be learned	may be provided if there are important lessons to be learned

In addition there are other Annexes to the IMO reporting format which should be submitted in addition to the Annexes 1, 2 & 3 where applicable. These are:

Annex 4, for information from casualties involving dangerous goods or marine pollutants in packaged form on board ship or in port areas

Annex 5, for information from casualties involving stability or ship damage, these need to be completed in the case of steel seagoing ships of 25 metres in length or more for all breaches of the hull causing flooding of any compartment above the double bottom.

Annex 6, for information from casualties involving fires.

Annex 7, for information from casualties where the GMDSS system is used for alerts.

Annex 8, for information from casualties where fatigue is a contributory factor

Annex 9, for information from casualties where there have been accidental spillages of harmful substances of 50 tonne or more.

Managing Report Writing.

Many investigating teams have found the writing of the final report to be the most difficult part of the investigation, often requiring several iterations. Report quality is crucial, because the final report is the official record of the investigation and no matter how high the quality of the investigation the whole effort is lost if the final report fails to adequately communicate a clear set of facts, supporting evidence and firm conclusions supported by the facts and evidence.

The lead investigator, or sole investigator should;

- Develop a report outline as soon as possible, using the Code model and if several authors are involved he should strive to ensure that there are no overlaps in assignments so that content is not duplicated.

- Begin drafting (in outline form) the accident chronology, background information and facts as soon as possible.
- Continuously review the progress to identify where sections should be added or amalgamated.
- If supervising a team effort, pair strong and weak writers together to avoid delays and maintain quality.
- If necessary use a technical report writer to evaluate grammar, format, consistency, technical content and links between sections and facts so that the report ends up technically correct, clear, concise, logical and consistent in style and approach.

Release of Information to Interested Parties.

In many investigations there will be a number of interested parties who will press for information as the investigation process goes on. Amongst the interested parties may be:

(1) Relatives of anyone lost in the casualty:

Bereaved relatives will obviously have a keen interest in the progress of the investigation for a variety of reasons, they may wish to pursue legal claims, they may wish only to know they are not forgotten. Given that an investigation may take several months it is only right that these persons be kept fully informed.

Indeed they have a moral right to know what has happened to their relatives and what is being done to find out why it happened. The most effective way is to arrange occasional briefings for them where the lead investigator, or another senior figure from the flag state, can privately advise them of progress, estimates of completion dates, and where possible and appropriate key facts that have been established. These briefings need to be handled with care. Bereaved relatives can be understandably sensitive and if they feel that information is being withheld they will often approach the press with the result that media speculation can distort the whole process. On the other hand the same result occurs if they are given incomplete, or partial facts without explanation which can lead them to an erroneous conclusion.

It seems to be generally the case that, if the investigators are open and clear in briefing relatives on progress with explanations of the facts so far known with guidance on the direction of the investigation, relatives will feel that they are a part of the process and will assist rather than hinder the process.

(2) *Shipowners and lawyers*

In many cases there will be litigation of some kind following a casualty. The owners and their representatives will want a copy of the report as soon as possible so that it can be defended or argued against as necessary in court. To avoid repetitious letters from lawyers demanding publication dates or interim details, it is usually effective to identify quickly the main parties and send a simple briefing letter to them at regular intervals simply stating the amount of progress and the expected completion date with an assurance that they will receive a copy of the report on publication. These regular update notes often serve to prevent regular demands on the investigators.

(3) *Owners.*

In other cases, the owner may well have a direct interest in finding out exactly what happened so that he can take steps to avoid the same problem on other sister ships for example. Often in such cases there is no litigation involved and the owner will have no interest other than finding out the cause and fixing it. In these cases it is often best to provide the owner with as much information as is available when it is available and certainly as soon as tentative conclusions emerge. The end purpose of the investigation is to prevent a recurrence and this may well be best served by working closely with an owner to identify the cause and prevent it from happening again.

(4) *Press and other Media.*

In any casualty which has drawn the attention of the media, there will be demands in the early days for information so that the writers and broadcasters have some data to put in their reports. Within days this usually recedes as the casualty loses "front page" appeal but most media people will keep a forward note on the subject and will bring it up again after an interval with demands for final answers. In a case where the media are likely to be interested in a final report it is often useful to provide them with the same regular briefing notes as suggested in (2). This tends to pre-empt ill informed speculation and criticism.