- **frequency**
  The design of the inspection programme must ensure that all areas are inspected within a reasonable timescale. Some flag States stipulate how often each area must be inspected. For example, on UK registered ships the interval between inspection of each area must not be more than three months. Many shipping companies have similar regulations
- **what to inspect**
  Every inspection should cover:
  - working/living environment – for example, ease of entry and exit, marking of hazards, state of guards and handrails, lighting, ventilation and noise levels, safe stowage of tools and materials, general cleanliness and tidiness
  - working/living practices – for example, working within established procedures and regulations, use of PPE, levels of supervision, levels of training
  - examples of good practice – safety inspections can easily be seen as heavy handed 'policing' activities. Plan your inspections to 'catch people doing something right'
  - progress and action – improvement comes from building on the results of previous inspections. Use the last inspection report to help plan the next one
- **who to involve**
  Heads of Department and safety representatives should be consulted when planning safety inspections and involved in carrying them out.

Carrying out safety inspections
An effective safety inspection should be:

- **Systematic**
  The best way to achieve this is to use checklists. You will find a range of these in Section 2 – Tools for Improving Safety. Modify and add to these to suit the circumstances of your ship
- **consistent**
  Checklists help in achieving consistency, as does reviewing the results of previous inspections at the planning stage
- **positive**
  During the inspection, congratulate people for good practice and avoid blaming them for unsafe acts and conditions. Instead remind them of the consequences of these and the benefits, to them, of working safely.

Reporting the findings
Safety inspection reports should be:

- **Concise and standardised**
  Busy people tend not to read reports that are too long. A standard format makes it easy to compare one report with another and identify progress and improvement.
- **focused on action**
  The report must say who is going to take what action and by when
- **communicated**
  Written copies of the report should go to:
  - the Master and, through them, the company
  - the relevant Head of Department and safety representative
  - the safety committee.

The report should also be an item for discussion at the next safety committee meeting. In addition, there should be a method for reporting the findings to crew members in the area inspected.

Following up any actions taken
It is essential to make sure that the actions agreed are put into effect and that they achieve the results intended.

1.3.3 Permit to Work (PTW) Systems

The purpose of PTW systems
Some types of work cannot be carried out safely without a formal set of controls, understood by everyone involved and put into operation consistently and systematically every time the work is undertaken. The purpose of PTW systems is to provide these controls.

The type of work covered by PTW systems
These systems are particularly important for work that can only be done by suspending normal safety precautions, for example by removing guards from dangerous machinery.

On board ship, examples of the type of work covered will include:

- Entering enclosed spaces
- hot work/cold work
- working overside and aloft
- electrical maintenance (for non-professionals)
- pipeline breaking
- working on pressure vessels and in cargo tanks.

This list is not intended to cover everything on every ship. Only a proper risk assessment can define every type of work that must be covered by a PTW system.

Those who operate PTW systems

If it is to be effective, the system must clearly define who is to be involved in operating it.

To authorise a PTW an individual must:

- Have appropriate seniority. On most ships, permits can only be authorised by the Master, or by written delegation from them to a responsible officer (in certain Administrations, it is a requirement that the safety supervisor countersigns all PTWs)
- understand the nature of the work
- have the experience and ability to assess the risks involved.

Those who carry out the work must:

- **Be fully capable of doing the job involved.** This may seem obvious, but it is the foundation on which the safe and successful completion of the work is based. No system, however perfect, can ensure the safety of someone who is not entirely sure about what they are doing
- **understand, in detail, how the PTW system operates.** This can be a potential trap when work is to be carried out by contractor's staff or by new crew members. They may have experience of other PTW systems, but do they know precisely how yours operates?
- **work with the person authorising the permit.** It is essential for the person doing the work to contribute to the assessment of risks and the identification of precautions described on the permit. Remember, it will be their life at risk.

How PTW systems operate
While the details of individual systems will depend on a variety of circumstances, particularly the type of ship involved, every system should contain the following steps:

- **Assess the risks**
  Follow the process for systematic risk assessment described earlier in this section of the manual. In particular:
  - ask 'what if…' questions. For example, what if the work had to be suspended for some reason, what if there is an emergency, what if the job takes much longer than anticipated?
  - think about the context of the work being planned. For example, if the task involves hot work in a particular cargo space, could this create a hazard for whatever is in the next cargo space? Are there any other jobs being carried out under different PTWs that could be affected by this one?
  - do not be complacent. Just because this particular job has been done many times before, do not assume that the information on the previous permit is still valid. Perhaps the equipment used will be different this time. Perhaps the physical setting will have changed. Perhaps the person doing the job is planning to tackle it in a slightly different way. Perhaps on this occasion the work will involve a shift changeover. Always look at each job with a fresh eye
- **issue the permit**
  Once again, this is a two-way process. Both the person authorising the permit and the person accepting it must be 100% satisfied that the information it contains will enable the work to be carried out safely. (Be aware of any time limitation on the permit)
- **prepare the work**
  There will be situations when this will be the most time-consuming part of the job. It is essential not to rush preparation or cut corners. Typical preparatory work includes:
  - disconnecting electrical power supplies
  - prominently displaying the permit and warning signs
  - testing and putting on appropriate PPE
  - ensuring that rescue equipment and personnel are in place
  - fencing off work areas
  - ensuring that everyone involved in or affected by the work has been thoroughly briefed and that there are proper arrangements for supervision
- **carry out the work**
  If those doing the job are competent and the previous three steps have been carried out correctly, the work should go safely and smoothly. But watch out for the unexpected – a piece of equipment that fails, the need to fetch an additional tool, etc. If anything arises that has not been anticipated when completing the permit, stop and think. Sometimes it may be necessary to review the permit with the person who authorised it before proceeding
- **formally complete the process**
  Once the work has been satisfactorily completed, the final step is to return everything to normal and sign off the permit. This involves:
  - replacing any permanent precautions, such as guards on machines, which were removed to do the work
  - removing the warnings and temporary precautions, such as those used to fence off the work area

- ensuring that rescue equipment and PPE is checked after use and put back in the proper place
- formally handing the workplace back to those who normally work there
- signing off the permit and ensuring that it is properly filed. Do not forget to review how the work went and, in particular, whether any lessons could be learned for the next time that similar work must be carried out

The content of the permit

The PTW form should help communication between everyone involved. It should be designed by the company issuing the permit, taking into account individual site conditions and requirements. Separate permit forms may be required for different tasks, such as hot work and entry into confined spaces, so that enough emphasis can be given to the particular hazards present and the precautions required.

The essential elements of a PTW form are listed in the Figure 2. If your permit does not cover these elements it is unlikely to be fully achieving its purpose.

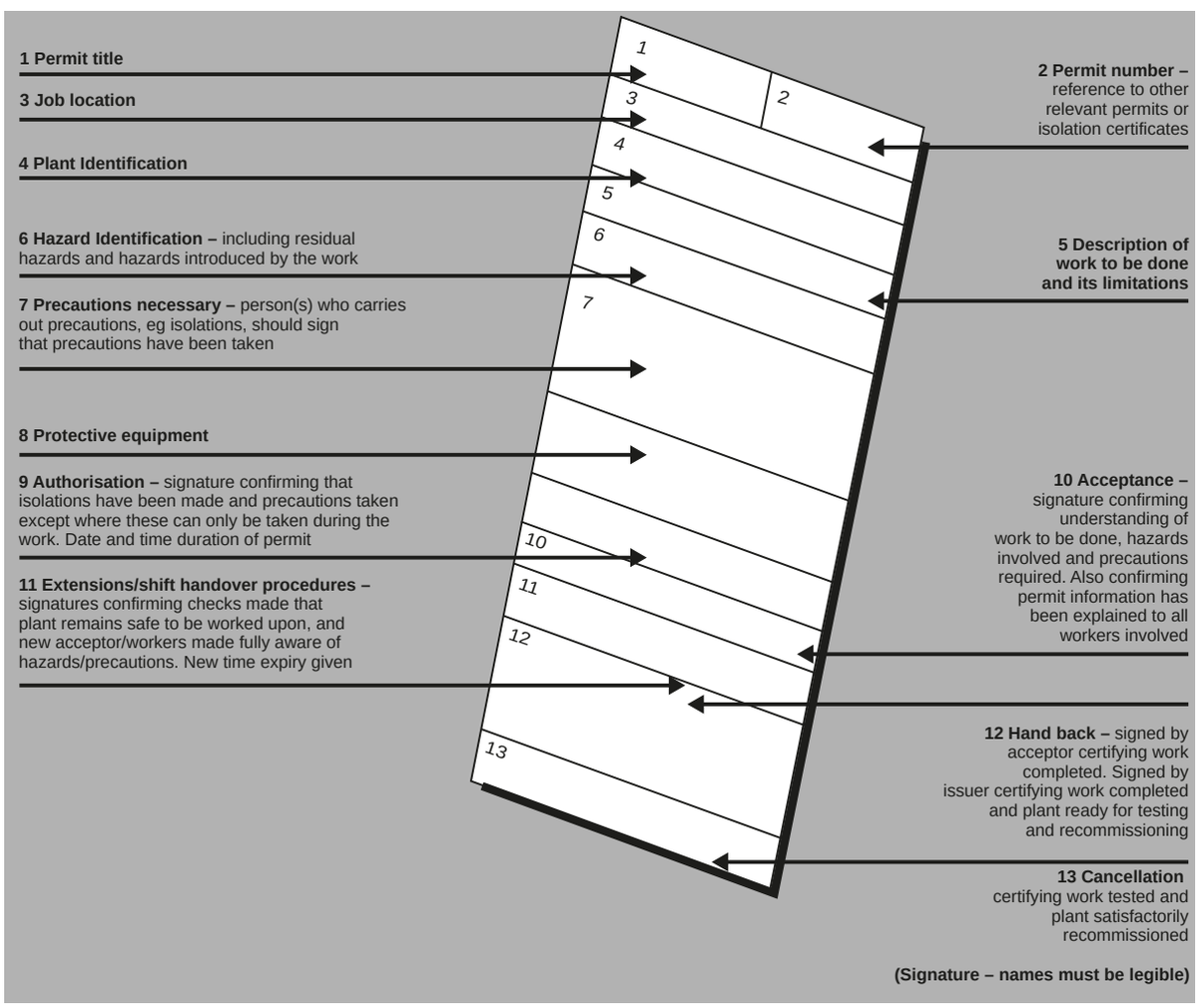

Figure 2 – Permit to work

(Note that limiting the duration of the permit is often a particularly important safety precaution. Some Administrations' guidelines will specify, for example, 'not more than 12 hours for work in confined spaces/tanks'. Check your own national regulations for requirements of this type).

1.3.4 Drills

Everyone hopes that a combination of systematic risk assessment, regular safety inspections and safe working practices (including PTW systems) will keep the ship and its crew safe. However, emergencies can still happen and the crew must be prepared to deal with them effectively. That is why drills are an essential part of a ship's safety system.

Types of drill
Under Chapter III of the SOLAS Convention, ships are legally required to carry out regular drills, including fire and abandon ship drills. The Convention details what these must cover and how often they must be carried out. Since every ship engaged on an international voyage must have a copy of SOLAS on board, these details are not reproduced here. In addition, some national Administrations have even more detailed regulations and recommendations covering fire and abandon ship drills.

Note: There is a common misinterpretation of the SOLAS regulations related to abandon ship drills. It is not the case that lifeboat launching shall be carried out with all the assigned ratings, ie all crew, on board. Instead, SOLAS Chapter III, Regulation 19, 3.3.3 specifies that only it be 'manoeuvred in the water by its assigned operating crew'. This means it is only necessary, as a minimum, to launch and manoeuvre with the lifeboat's operating crew as detailed on the muster list.

Other types of drill include:

- Man overboard
- rescue from an enclosed space
- rescue of an injured crew member
- emergency steering
- excessive list
- emergencies arising from the carriage of dangerous goods.

There should be a logical, planned programme for carrying out all of the necessary drills, statutory and non-statutory. This programme should also take into account training for emergencies.

Training and drills
It is important to recognise that there is a difference between training and drills. All crew members must learn how to tackle emergencies. Once they have been trained, they must demonstrate that they can tackle the emergency properly.

Other differences between training and drills include:

The person in charge of a training session…	The person in charge of a drill…
• Will be a ship's officer, who… • acts as a *'trainer',* explaining how to deal with the emergency and providing help, information and advice to those taking part.	• Will be the responsible ship's officer acting as an observer, defining the ground rules for the drill and then watching to see how well it is being carried out • a Port State Control Officer, who may only act as an observer.
A training session may be run…	**A drill will always be run…**
• In a series of stages, with a pause for discussion and instruction between each stage. Sometimes the trainer will ask those taking part to carry out an activity slowly before working up to the required speed.	• At normal pace and without interruption (unless continuing would be dangerous for those taking part or other crew members).
When training goes badly…	**When training goes badly…**
• We identify what went wrong and apply the lessons to help us improve.	• The ship may be detained if the drill has been part of a Port State Inspection.

How to run an effective drill
There are four stages: preparation, briefing, observation and debriefing.

Preparation

- Information you require
  - » Review the notes from the previous drill.
- decisions you must take
  - » what type of drill to run
  - » when to do it. Emergencies sometimes happen at night. Some drills should test the crew's ability to carry out emergency procedures during the hours of darkness
  - » who to involve. It is important (and mandatory in the case of fire and abandon ship drills) for all crew members to take part
  - » where to hold it. Fire drills, for example, will often be held in obvious places such as the galley, but do not ignore the less obvious ones. Fire teams must be able to tackle fires wherever they start
  - » how to make the drill realistic. Ways of doing this include removing the team leader in the middle of the drill to see how the rest of the team cope, not allowing those taking part to use normal entrances, staircases and so on or ensuring that, over a period of time, the programme of drills involves the use of all the ship's safety equipment
- safety precautions you must take
  - » do a risk assessment of each drill. Make sure that equipment is properly maintained and operates correctly. Do not add too much realism to drills of any type. Be particularly careful of methods, such as the use of smoke machines or masks, that restrict visibility