BSAFE

INCIDENT CASE STUDY No.10

BRITANNIA COMMENTARY | AUGUST 2021

AS PART OF THE CASE STUDY MATERIAL, THE FOLLOWING COMMENTARY HAS BEEN PREPARED TO FURTHER CONSIDER SOME OF THE KEY ISSUES IN ORDER TO SUPPORT REFLECTIVE LEARNING.

The first two pages of this commentary discuss some of the contributory factors and lessons learned in more detail with particular reference to best practices. The final page graphically illustrates some of the barrier control measures that could have potentially mitigated against the risks associated with the hazards by making use of Britannia's interpretation of the Hierarchy of Barrier Controls triangle as a framework.

ENGINE ROOM FIRE

THE CAUSES OF THIS INCIDENT APPEAR TO BE CONNECTED WITH THE FAILURE OR ABSENCE OF SEVERAL RISK CONTROLS AND SAFETY BARRIERS. THERE IS ALSO AN INDICATION OF AN INEFFECTIVE SAFETY CULTURE WHICH RESULTED IN THE FIRE SPREADING RAPIDLY.

The contributing factors and lessons learned identified in this case study are discussed below.

WATCHKEEPING

FERNANDA was not certified for unattended machinery space operation. However, at the time of the incident, both engineering watch keepers were absent from the engine room. The 2/E had gone to an engine store on the upper deck to select fuel valves to be re-conditioned and did not hear the fire alarm, while the engineering watch rating was working in the electrical store, also on the upper deck.

Had the engine room been manned as required at the time of incident, it is likely that the fire may have been detected at an early stage, and timely firefighting could have been initiated which would have limited the damage.

SAFETY MANAGEMENT

The investigation did raise concerns about the manager's commitment to safety management. This was based on a review of the Shipboard Emergency Situations Manual which did not sufficiently comply with Section 8 of the International Safety Management (ISM) Code. In addition, it was found that the the procedures that were in place for communication with coastal States and authorities could be improved and concluded that there should be a review of the procedures for communicating emergencies on board to ensure prompt and adequate notification to all interested parties.

The renewal audit which was conducted in April 2010 identified two major non-conformities. These were later downgraded to non-conformances following immediate action by the manager to address the issues involved. The issuing body, the Russian Maritime Register of Shipping (RMRS), required an additional shipboard internal ISM audit to be conducted within one month, the results of which were required to be submitted to the RMRS Head Office. During the subsequent ISM Intermediate audit conducted by RMRS in April 2013 it was noted that the most recent technical audit conducted by the managers was not conducted within the specified period of 12 months and that the Master's reviews of the Safety Management System (SMS) were not efficient. Collectively these findings raised concerns about the manager's commitment to safety management.

Safety management or safety culture defines the ways in which safety is managed on board a vessel and is reflected in the shared attitudes, beliefs, perceptions and values of the crew in relation to safety. An effective safety culture leads to an organisation where the shared beliefs and behaviours from the top to the bottom result in all employees feeling responsible for their actions and work together to improve safety and performance. Owners, managers and Masters fulfil a key role in embedding and driving a strong onboard safety culture. The nature and number of the underlying causes points to the possibility that there had been a breakdown in both the safety management and culture on board, which led to the situation where there had been no collective will to admit and recognise the issues and rectify them.

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HOUSEKEEPING

During the investigation of the machinery space some examples of poor housekeeping were noted. Oils, oily rags, rubber boots and other garbage were found lying around the machinery spaces. A hose was fitted to the drain from the save-all around the oil purifiers to divert its contents into the engine room bilges. From past flag and port state inspections it was revealed that housekeeping issues had been a feature on *FERNANDA* for a number of years. Former reports cited *'Too much Lube and Fuel oil on the tank top in Engine room (Bilge) to be cleaned and pumped ashore'*, while at another inspection it was noted that *'Multiple cooling water and oil leakages noticed on various parts of the port and starboard side auxiliary diesel generators'.*

Housekeeping failures were also evident outside the machinery spaces such as the entrances to the lower tween deck and the cargo hold. Here, several gas cylinders were stowed and their contents could not be verified. In addition there were tyres for the forklifts and other garbage present. In the air conditioning room there were many cylinders of R-22 gas, electrical motors, cloth materials on the deck and a gasoline can storing fuel for the rescue boat's outboard engine.

Though it may not have had a direct influence on the cause of this incident, good housekeeping is an important aspect of effective management of risks. Poor housekeeping may represent both a fire and health hazard and measures should be taken to ensure that all such materials are kept in a safe, approved stowage area, away from the machinery spaces, and that garbage such as oily rags, rubber boots and gloves etc. are removed to the garbage stowage area on a daily basis. Maintaining a high level of housekeeping is the responsibility of all crewmembers.

TRAINING AND EMERGENCY RESPONSE

Fire drills were conducted on board at monthly intervals in accordance with the vessel's SMS. However, the annual drill schedule only stated that a fire drill was to be conducted monthly and did not provide the Master with any guidance with respect to the nature of the drills to be conducted and the training objectives to be achieved.

The planning, conduct and critical assessment of drills is an essential management tool in ensuring that crews can respond adequately and safely to an emergency situation on board. In this case, not all of the fire dampers and engine room accesses were closed before the Halon system was activated. To improve the crew's ability to respond to an emergency situation it is necessary to rehearse it in a drill. For example, the drill might simply be a rehearsal for closing down all engine room fire dampers and accesses, to determine how long such an exercise might take, to learn how many engine room dampers and accesses there are on board and how many seafarers are needed to participate in this activity to accomplish it in a reasonable period of time. Therefore, a drill should be thoroughly prepared. It should be executed and timed and on completion it should be evaluated to determine if it could be improved.

The onboard emergency procedures should be ship-specific so to assist the crew in the best way. Such detailed drills may have highlighted the difficulties in accessing and closing the fire dampers at the top of both funnels being and therefore the arrangements could have been modified so that they could be closed from deck level. The drills might also have prompted the Master to send out a MAYDAY message. Furthermore, the drills would have shown how difficult it was to enter the steering gear room to access the emergency fire pump when wearing a breathing apparatus.

Finally, while the crew in this case were safely airlifted from the ship, consideration should also be given to the hazard exposure and the potential course of events if there had been no assistance available.

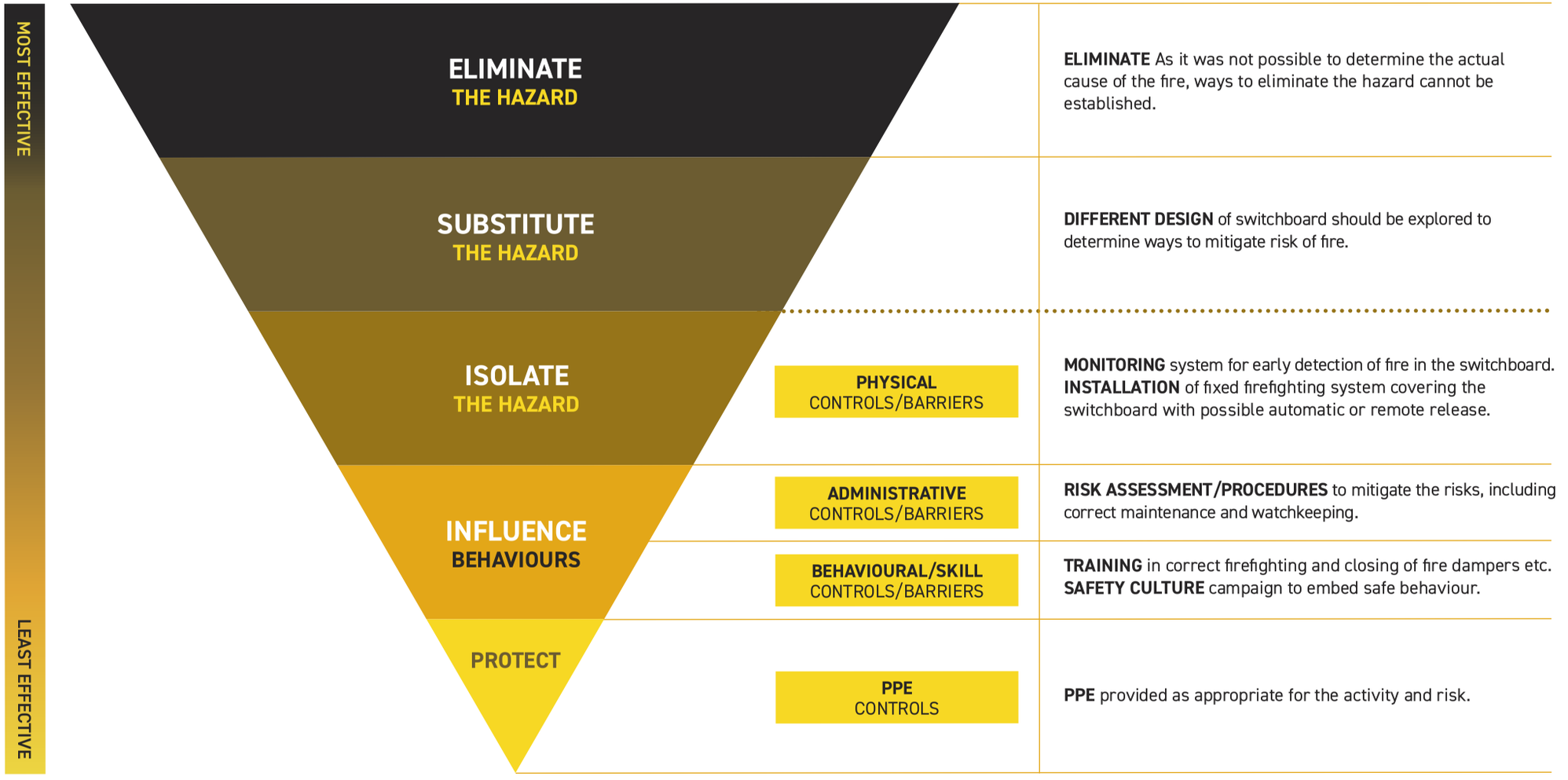
SEE NEXT PAGE FOR HIERARCHY OF BARRIER CONTROLS DIAGRAM

THIS CASE STUDY IS DRAWN FROM THE INVESTIGATION REPORT PUBLISHED BY THE COMMONWEALTH OF DOMINICA MARITIME ADMINISTRATION AT:
http://rns.is/pdfs/fernanda_final_report.pdf

BSAFE CASE STUDY

ENGINE ROOM FIRE

HIERARCHY OF BARRIER CONTROLS



EXAMPLES OF POSSIBLE RISK MITIGATION CONTROL MEASURES RELATED TO THE CASE STUDY

ELIMINATE As it was not possible to determine the actual cause of the fire, ways to eliminate the hazard cannot be established.

DIFFERENT DESIGN of switchboard should be explored to determine ways to mitigate risk of fire.

MONITORING system for early detection of fire in the switchboard.
INSTALLATION of fixed firefighting system covering the switchboard with possible automatic or remote release.

RISK ASSESSMENT/PROCEDURES to mitigate the risks, including correct maintenance and watchkeeping.

TRAINING in correct firefighting and closing of fire dampers etc.
SAFETY CULTURE campaign to embed safe behaviour.

PPE provided as appropriate for the activity and risk.

The suggested barriers/controls above are provided to help generate reflective discussions, and should not be considered as conclusive/definitive or comprehensive for the provided case study.
The risk and control measures relating to any similar scenario or activity must always be appropriately assessed based on the specific onboard arrangement and circumstances.