

The Integrated efforts required to maintain the Safety and security processes for Passenger ships

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Abstract :

The world cruise ship industry is a lucrative and controversial activity that operates along nations' coasts and in international waters. According to a World Tourism. Organization (WTO) report the number of global cruise passengers over the past decade has increased at almost twice the pace of overall international tourist arrivals, resulting the cruise ship industry along the different coasts of the globe has been increasing in size and complexity over the past decade . The passenger ship is a ship which carry more than 12 passengers on an international voyage .The requirement for passenger ships is a high profile and presents unique safety and security challenges. Moreover, the number of incidents during the past two decades led to the importance of the improvements in safety and security requirements measures. The cruise industry's highest priority is to ensure the safety and security of every person on board from passengers to crewmembers. Thus Passenger ship's operations today are subject to a vast array of regulations that covering every aspect of any passenger ship.

The paper addresses a vision illustrates the efforts of all influence parties which must be co-operated in maintaining passenger ships safety and security standards (passenger ship, ship operators and authorities and administrations),also it includes a case study focusing on the paper goal and prove that all passenger vessel's disasters can be traced to a failure in any of the influence parties efforts.

Keywords : cruise industry, passenger ship safety, ship operators, Flag state

1-Introduction:

The cruise ship industry has been the fastest growing segment in the travel industry around the world, since 1980, the average annual growth rate in the number of cruise passengers worldwide has been 8.4%. In 2008, 12.6 million worldwide passengers were carried on the Cruise Lines. The Cruise Industry is truly global industry, and the word cruise flow are all time increasing regardless to the world economic crisis see fig(1), also the world provides the setting and the nations of the world that impacted upon in varying ways by passenger ships as transport media, employers, customers, business partners, and international visitors. Moreover, the Cruise Industry is currently growing at an average of 8.2% per year (Cruise Line Industry Association (CLIA), 2009),though the world economic crisis exists .passenger ships which the core of the cruise industry should subjected to effective systems and

programs that insure suitable levels of safety and security standards and measures on board passenger ships. The achievement of the mentioned goals require integrated efforts of parties management that considered the main elements of managing and maintaining safety and security of passenger ships and all persons on board it [1].

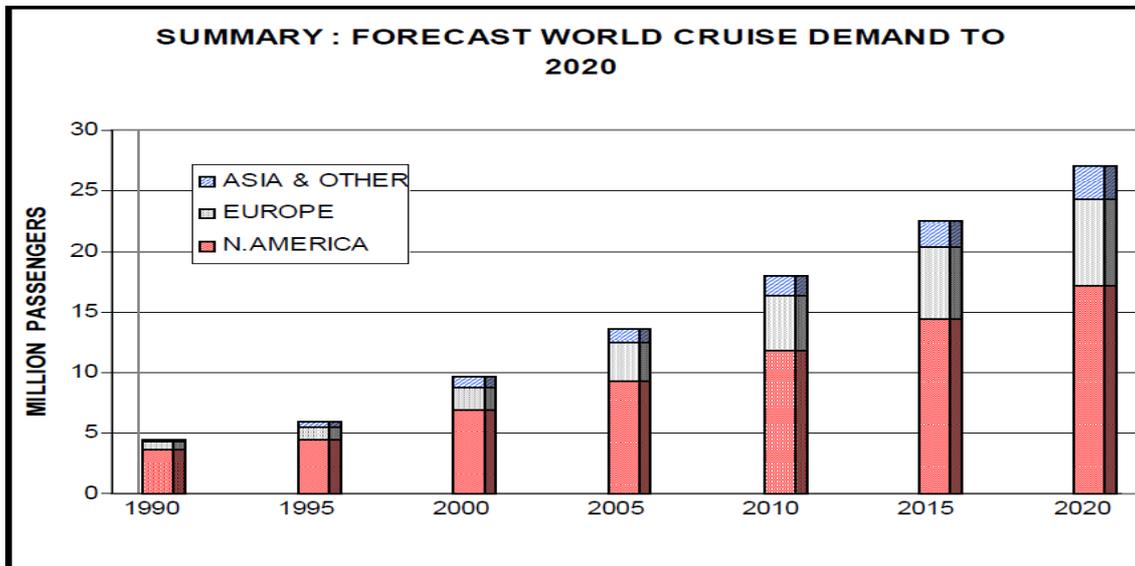


Fig (1) : The diagram illustrates the gradually increasing in the world cruise demand until reach the year 2020

2-The passenger ship demand in the Middle East region:-

Religious tourism is a relatively 'recession proof' sector that offers growth potential for Middle East cruise fleet during the economic slowdown. The World Tourism Organization estimates that more than 300 million people across the globe visit the world's key religious sites each year [1]. Moreover, it has also reported that religious tourist arrivals in the Middle East have increased at a much faster rate over the last five decades. The average annual increase in the Asia-Pacific region was some 13%, whilst 10% for the Middle East. In the midst of the current financial slowdown, countries would be wise to focus on religious tourism because it is more resilient than leisure tourism, resulted in dramatic increase of the need rate of passenger ship (the heart of cruise industry) particularly vessels working in the area of Red Sea between Saudi Arabia and other regions as it is a cheaper than other transportation facilities. According to recent Saudi report, the demand for passenger ships has increased in the area marked 30% growth in the first quarter of 2009 even after the disaster of EL SALAM 98. [2]



Fig (2) cruise lines in the middle east region

3-The concept of passenger ships Safety and security:

The maritime community at the beginning has introduced the culture of compliance by setting up rules, regulations, guidelines and codes relating to the construction of ships and the safety equipment to be carried onboard ships. It is not fortunate enough to reduce the accidents, as analysis shows that 80% of the accidents were caused by human error and 75% out of human related accidents caused by lack of or poor management [3]. To improve the safety standard on board passenger ships, recognized that the quality assurance as a good system for preventing the problems and quality management as the method by which it is carried out to achieve the goal. The International Safety Management (ISM) Code for ships 1998 was an important step in focusing on the "human element" as a side of shipping, the code providing an international standard for the safe management and operation of ships and for pollution prevention[4].

On the other hand, managing the security on board not only passenger ships, but all ships is very important in protecting ships against threats facing all vessels nowadays, passenger ships have the great priority particularly in the area of Gulf of Aden wherever the threats of piracy are centered[4]. Therefore the International Maritime Organization (IMO) take valuable steps in adopting the International Ship and Port Facility Security Code (ISPS Code) by a Resolution of the Conference of the Contracting Governments to the International Convention for the Safety of Life at Sea (SOLAS) 1974, held in London between 9-13 December 2002, and the same Conference adopted another Resolution also which included the necessary amendments to Chapters XI of SOLAS by which compliance

with the Code became mandatory on 1st July 2004. Moreover, Chapter XI of SOLAS was amended and re-identified as Chapter XI-1 and a new chapter XI-2 was adopted on special measures to enhance maritime security. The ISPS Code aims to provide a standardized, consistent framework for evaluating risk, enabling Governments to offset changes in threat with changes in vulnerability for ships and port facilities through the determination of appropriate security levels and corresponding security measures.

4-Why passenger Ships Safety and Security are essential :-

There are more than 11 million vacationers cruising around the world each year^[5]. In addition to the Middle East cruises that are a clear indication about the increasing of the demand for passenger ships not only around the world but in the middle east regions but also because of Religious tourism affairs(specifically the area of Red Sea). The highest priority of the cruise ships industry should be the cruise safety and security of people on board ships (passengers and crews).

5-The co-operated parties required for maintaining passenger ships safety and security :-

The preceding titles may monitored the importance of cruise industry and the increasing of passenger ships demand at recent circumstances all over the globe, as well as in the middle east particularly the area of the Red Sea (the short international voyages between Egypt and Saudi Arabia). In addition, the understanding of the concept of safety and security. The influence parties involved in maintaining the passenger ship safety and security fig(3), from a point of view, are the passenger ships (captains and crew), shipping companies or ship operators, and administrations and authorities (port authorities, flag state, port state control).

Those parties should be co-operated by integrated their management efforts and activities to facilitate the settlement of safety and security for passenger ships and manage the presses , the following diagram identifies how the mentioned parties may hold a stake in the implementation of safety and security measures on board any passenger vessel. Almost all passenger vessel disasters can be traced to a failure in one of the mentioned party's duties or the absence of the co-operation and communications between the influence parties .

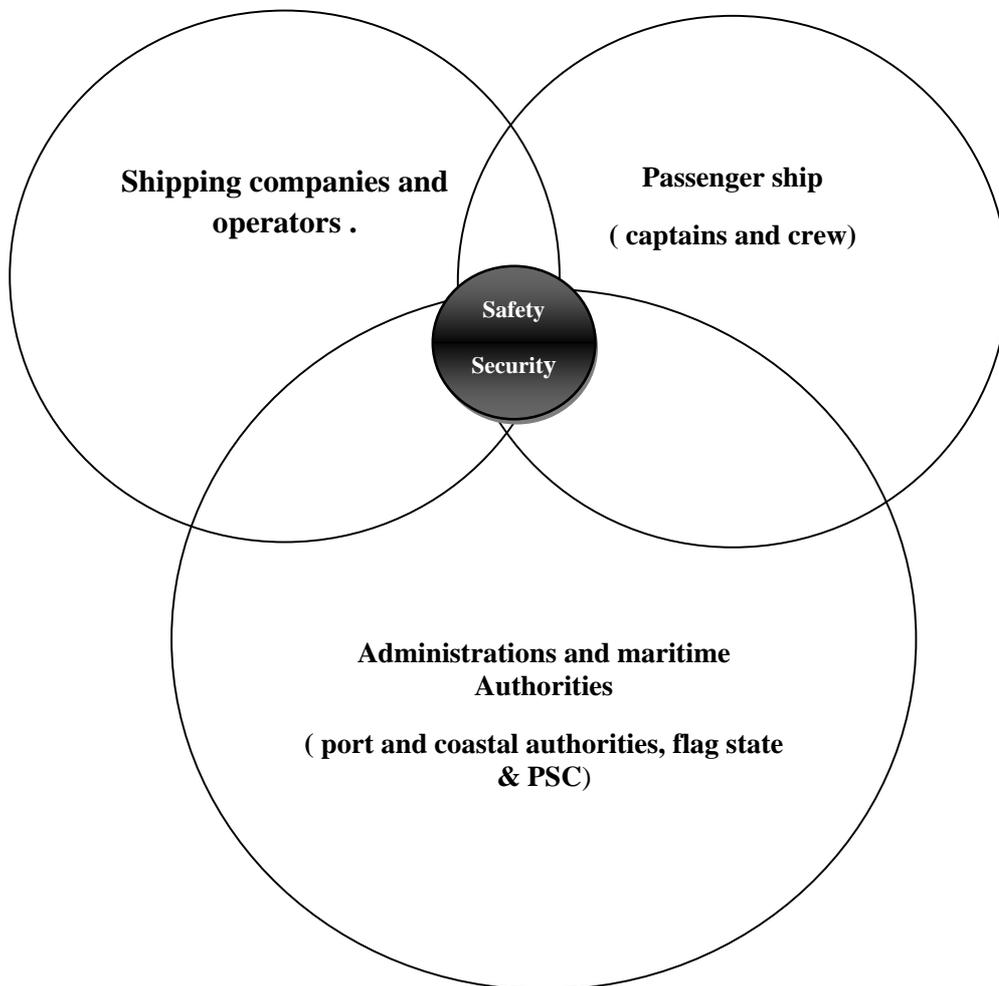


Fig (3)

The influence parties involved in maintaining the passenger ship safety and security

5.1-Shipping companies and operators :

The shipping companies, or ships operators or bareboat charters are responsible for ensuring, implementing, and maintaining safety and security policies for company and on board ships under their direct operation at all levels .In addition to safety and security plans which should be approved from the administration. Moreover, shipping companies Should ensure that all documents, safety and security guidelines, authorities, responsibilities are acquainted by all level of the organization both ship-based and shore-based. Interrelations of personnel who operate, perform, and verity works related to and affecting the safety and security are properly defined to all members of the organization.

To insure the safety and security standard on board passenger ships, shipping companies or ships operators should designate a Person or Persons (DP) and company/ships security officer. They are responsible for implementing controlling and assessing company/ships safety and security programs, also communication, reporting and co-ordination between the ships, shore and authorities and training programs that required to increase the safety and security standards of the all organization levels including the passenger ships.

In today's highly competitive markets, shipping companies need efficient and cost effective ways of operation. Safe, secure, pollution-free and efficient operations are essential to good ships management. Therefore profits may increased by reducing accidents, stoppages and wastage [6].

5.2-Passenger ships (captains and crew) :

The safety and security processes have organized by those who directly affected by the implications of failure in conducting the both processes. Safety and security on board passenger ships have emphasized the need for the ships captains and crew to be responsible for the actions taken to improve the safety and security, rather than seeing them imposed from outside.

A good management is essential to improve the Both processes, and the cornerstone of a good management is commitment from the top, so passenger ship captain is responsible for manage the processes of safety and security on board ships in accordance with applicable national rules, international rules, regulations, codes, technical management and crew management.

Technical management is the element ensures that the ship maintained for optimum performance with minimum breakdowns and delays. Also maintaining the ship in accordance with applicable requirements, such as flag State legislation, international conventions and classification rules, and crew management involves employment the crew

of a ship contributes towards technical management in that they are responsible for ship maintenance, cargo operations and safe navigation. Passenger ship captain should attain the optimum standards of safety and security measures on board passenger ship by the periodical training of the crew to protect the persons lives when in distress, also Passenger ship captain report to the company through the Designate Person.

5.3-Administrations and maritime authorities :

Passenger ships and shipping companies activities that related to ship's operation should be carefully controlled and surveyed under the provisions of the international conventions and domestic laws. the core function of administrations and authorities is to promulgate laws and regulations, and taking all other steps which may necessary to give the applicable conventions full and complete effect. Furthermore, ensure effected safety and security systems on board passenger ships, and to ensure that passenger ships are fit for service and seafarers are qualified and fit for their duties. passenger ships are the responsibility of the Flag State which exercise a full control over ships entitled to fly the flag of its state[7].

On the other hand, foreign ships are the responsibility of port state control (PSC) that undertakes inspections to satisfy that the foreign ships visiting its ports meet the required international standards laid down in conventions, and to check on the actual condition of specific ships whose ability to meet those standards is in doubt and reporting to their flag states in case of discovering substandard. Port sate control is the long arm of the flag state authority of any ship in foreign ports. In that Port state control is an important component of the international marine safety and security systems.

Port authorities involve in ensuring not only well skilled pilots, effective and sufficient port facilities, and facilitated berths but also the definition of port's units that able to give a help in case of search and rescue (as SAR facilities) to passenger shipping companies which their ships selling nearer. Besides, sufficient training and Periodic exercises for such situations. It is imperative that port and coastal authorities and passenger vessel operators maintain an open dialogue to identify response resources in the areas where an individual passenger vessel is operating.

6-The phases of integrated efforts and co-operation of influence parties:-

6.1-Phase 1: Technical cooperation:

When the International Management Code for the Safe Operation of Ships and for Pollution Prevention {International Safety Management (ISM) Code} is in force all passenger ships and the companies must have appropriate ISM Certification, that is Document of Compliance (DOC) for companies and Safety Management Certificate (SMC) for ships. ISM Code is mandatory, without it the Companies cannot operate their ships. Ergo, companies should cooperate with captains of their fleets to implement the safety policies and plans for ships safety and technical operations which the convention obliged shipping companies to prepare. The cooperation carried out through the Designated Person or persons(DP). The successful planning for cooperative training for all levels of the companies organization resulted in increasing the safety standers, safety culture, and reach the international measures in safety. In addition, upgrade the ability of persons to communicate that reduce the loss of life, and property.

On the other hand, passenger ship is inherently secured because it is a controlled environment with limited access to ensure the security of its passengers and crew. In order to maintain this secure environment passenger ship operators have established strict ship security procedures that are, in part, outlined in internationally agreed-upon measures set forth by the International Maritime Organization (IMO). Most recently, worldwide security regulations known as the International Ship and Port Facility Security (ISPS) Code were implemented as amendments to the International Convention for the Safety of Life at Sea (SOLAS).

Passenger ship companies should have their own security policies as well. In order to apply their policies effectively the cooperation between the companies and passenger ships should arise. For a company operating ships, a Company Security Officer (CSO) has to be appointed by the company. CSO has to ensure that a ship security assessment is carried out and a Ship Security Plan (SSP) is developed, submitted for approval, and thereafter implemented and maintained, CSO is responsible for liaison in cooperation with port facility security officers and the ship security officer.

Furthermore, each ship is to have a Ship Security Officer (SSO) accountable to the Master, and responsible for the security of the ship, including implementation and maintenance of the ship security plan, and for liaison in cooperation with of the company security officer and port facility security officers if required. Ship security officer and company security officer should cooperate their efforts to insure that Ship Security Plane (SSP) is to be developed for each ship to implement measures on board the ship . Ship security officer and

company security officer are responsible for the Ship Security Plane, that approved by the maritime administration in order to issue International Ship Security Certificate (ISSC). The cooperation of the third influence parties, Administrations and Authorities, the umbrella that the other two parties working under it.

6.2-Phase 2: Search and Rescue cooperation:

The search and rescue (SAR) co-operation between the mentioned influence parties enable the early and efficient establishment of contact, between the passenger ships, operators and the SAR services, that controlled by certain authorities. In addition to, supplying the SAR services with easily accessible and up-to-date information about the ship. Communications and emergency response systems also provide the passenger ship and her operators with easily accessible information about SAR and other emergency services available in the ship's area of operation and to assist in decision-making and contingency planning.

Under SOLAS regulation V/7.3, passenger ships are required to have on board a plan for co-operation between search and rescue services and passenger ship. The plan shall be developed jointly between the ship, the company and the search and rescue (SAR) services and be approved by the flag State. The plan is not only of use when a passenger ship is herself the subject of an emergency. It will also be useful when passenger ships takes on the role of On-Scene Coordinator (OSC). Therefore, the SAR co-operation plan includes provisions for periodic exercises to be undertaken by the passenger ships and the search and rescue services concerned.

It is worth mentioning that, safety and security processes on board ships are opposition in the procedures for application, according to the both codes articles. Subsequently, achieving both goals require periodical exercises on board passenger ships for ships crew under the supervision of the top management level (captain and DP) to deal with the opposites procedures in case of emergency.

7-The relevant lessons learned :-

Disasters have been exacerbated by a failure in one of preceding influence parties duties and cooperation that means the failing in link between the mentioned parties properly or a lack of adequate resources available in one of the parties efforts causes a disaster. The following circuses illustrates lessons when there are a failure in cooperation.

7.1-Sinking of the passenger ship Al Salam Boccaccio 98 in the Red Sea reflected the failure in training and cooperation:

On 3rd February 2006, RO-RO passenger ship Al Salam 98 sunk in the red sea while on its way from Saudi Arabia to the Egyptian port of Safaga. Shortly after the ship's departure, an electrical fire broke out which the crew extinguished with water hoses. According to the investigations, the ferry's drains were blocked, causing an accumulation of water which led to the ferry capsizing. The Egyptian special parliamentary commission investigation found that the ferry's drains had not been inspected by the Maritime Safety Board, and that the fire extinguisher, which could have been used instead of water to put out the electrical fire, was not working. Other safety failings included lifejackets and life rafts that were unfit for use and a shortage of available winches to lower safety rafts. The 36-year-old vessel was routinely overloaded with passengers and despite being originally licensed in Italy to carry 1187 people, was permitted to carry up to 2890 and passengers by the authorities. As a result of this accident, there were 1031 lives lost, of which 387 persons, including 24 crew members, were rescued and 710 are missing and presumed dead[8].

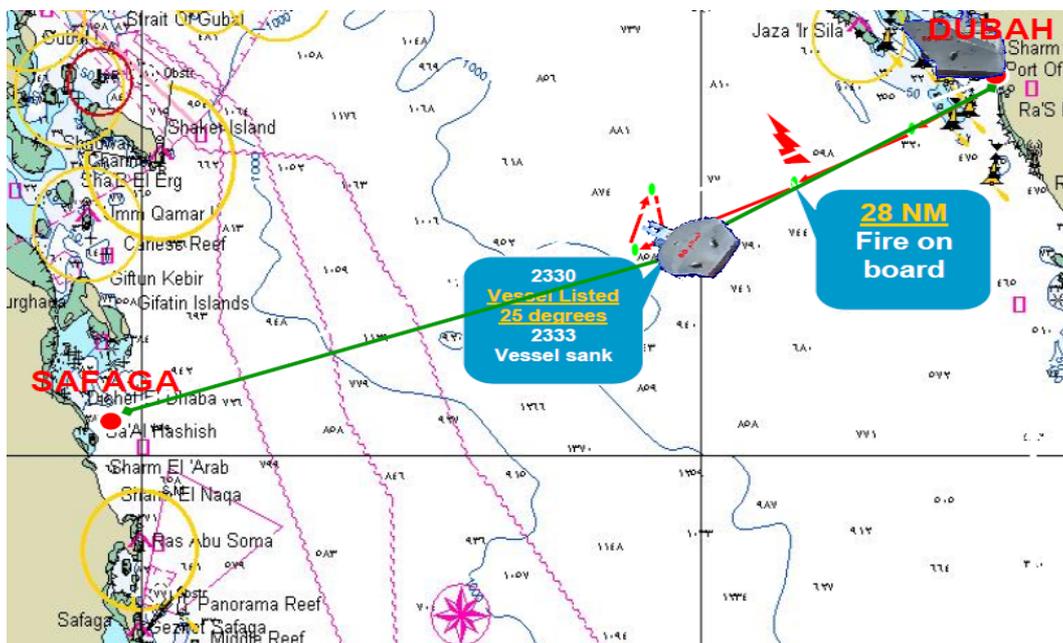


Fig (4)

However, initial indications from surviving crew and passengers indicate that the sinking may have in part been caused by accumulation of water on the car deck as a result of fire-fighting efforts. It has also been reported that the fire and subsequent accumulation of water

may have taken several hours, providing ample time for distress communications to be issued from the ship. In addition, the ship was outfitted with unfit lifesaving appliances for all aboard, yet it appears a timely and organized evacuation was not, or could not be, conducted. It is clear that there was a severe breakdown in reporting and communication, especially with regard to timely notification of SAR authorities or other ships in the area. The first solid notification of the ship's distress appears to have come from the ship's EPIRB after the ship had sunk. There have been charges brought against the ship's owners indicating that they may have been contacted by the vessel during the initial phases of the distress (a typical practice usually promulgated by the ship's Safety Management Policy-SMS) but failed to notify any other SAR authorities.

7.2-Fire aboard the cruise ship Calypso, off the coast of Southeast England Illustrates the importance of effective drilling and cooperated efforts:

On 6th May 2006 at 0347 fire broke out the engine room of Cypriot flag passenger ship CALYPSO, The Calypso suffered an engine room fire while on passage from Tilbury to St. Peter Port Guernsey,(50° 28.7N 000° 07.8E), with 708 passengers and crew on board. Initial action by the watchkeeping engineer officer was effective in eventually extinguishing the fire although the vessel lost all but emergency electrical power and was left drifting in the south-west lane of the Dover Straits Traffic Separation Scheme (TSS), 16 miles south of Beachy Head. The vessel's starboard main engine had been very seriously damaged and she was towed to the port of Southampton by the Maritime and Coastguard Agency's (MCA) emergency towing vessel Anglian Monarch The crew took immediate and positive action to begin combating the blaze and to insure passenger safety. In addition, prompt communication was made to the local SAR authorities[9].

The Accident Investigation showed :

- watchkeeping third engineer reacted promptly once he saw the flames from his position in the engine control room.
- The master arrived on the bridge shortly after receiving the call from the OOW, and dealt with this emergency in accordance with good practice and in a calm and considered manner
- The staff captain acted as mobile co-ordinator throughout the accident in accordance with the muster list. He was active in many areas and contributed to the successful outcome.
- The chief engineer responded quickly when called.
- The vessel holds a valid copy of the Document Of Compliance issued to the 'company' for the relevant ship type (ie passenger ships).
- The 'company's' SMS is on board the vessel and incorporates the functional requirements required by the Code.

- The ship's staff are familiar with the SMS and how it is to be implemented on board.
- The SMS is written in the working language(s) of the crew.
- The company has a planned internal audit schedule
- It appears that, although the owners had implemented an ISM compliant SMS on board The Calypso to satisfy regulatory requirements, it was not applied in a way which generated an effective safety culture within the company's staff ashore and afloat.
- RCC for this accident, did not find any details of any SAR data providers on the international index and were thus unable to establish contact with the owners.

The incidents highlighted above, The Calypso, have shown that prompt and effective action by ship's crews have prevented a dangerous incident from developing further, potentially resulting in loss of life, the loss of the vessel and the consequent pollution.

7.3 - The responding of authorities :

In this case, a newly developed external SAR resource in the UK called a Maritime Incident Response Group (MIRG) was deployed for the first time to the ship via helicopter. The MIRG consists of a specialized fire service response to fires, chemical hazards and on-board rescue at sea, made up of fire fighters from several local authority fire and rescue services as well as paramedics. The primary aim of the MIRG is to remove the need to evacuate the ship^[10].

Traditionally, the United States Coast Guard and other similar entities have provided teams to assist made up of crewmembers from the responding rescue vessels. However, the employment of a team trained and assembled for the specific purpose of deploying to and combating an emergency. The scope of traditional teams who were basically training to combat emergencies on their own ships first or in their own regions, and then to use that knowledge in the assistance of others^[10].

7.4 - The lessons learned from accidents :

The accident of Elsalam 98 indicate a great failure in the cooperation of company with ship captain and crew, and company with authority resulted in the delay in SAR response. In addition to the company implementation of ISM and the absence of DP responsibilities.

- Shipping company safety and security policies should be clear and well understood by the all levels of the organization system on board ships and company members.
- The implementation of the ISM Code onboard should consider addressing normal daily safe working practices with different circumstances.
- The implementation of ISM system should clearly identify, in a concise manner.

- Companies and ships should cooperate for well training for all crew members in the goal of safety and security and effective communications 24 hours a day specially passenger ships joined to short international voyages .
- Importance of reviewing the parameters of communications between the master , his crew members and operators during emergency procedures and drilling.
- The Increase of the preparedness in order to avoid misunderstanding of orders, as well discussing the effects of the actions to be taken during real emergency situations.
- The importance of reviewing the role of the human element in emergency situation response and crisis management behavior and report to the periodically to company .
- The importance of the authorities close supervision not only on the shipping companies operation but upon flag state and port state members.
- The shipping company's organization ability to immediate respond at any time to hazards, accidents and emergency situations concerning their vessels in the operation areas, in cooperation with SAR authorities.

8- Conclusion :

The cruise industry, driven by customer demands, started to explore remote places. This will create new challenges for coastal communities that have not experienced numbers of passenger ships in their waters yet. It was clear that the demand for passenger ships increasing by time, that revived challenges required more reliable and more trusted passenger ship operators (well organized shipping companies ie. ships meet the requirement of the international regulations).

In order to fully and successfully accomplish the objective of safety and security processes on board passenger ships, Cooperation between operators, their passenger ships and the authorities in technical operation, drilling programs, evaluation (internal audits) of safety and security systems for all levels of the organization, and the integration of efforts have to be effective. Furthermore, joint SAR exercises that should include the cooperation of shore-based responders in order to facilitate joint efforts in a real accident. Indeed the lessons learned from the events of explained accidents as a case study are the clear prove.

Recommendations:

1- Activate the joint emergency training between passenger ships and their operators particularly the night time drilling, under the control and supervision of the authorities.

2- Activate the continuing evaluation of port state and flag state control members by the authorities, in order to eliminate the sub-standard members that affecting the control on passenger ships performance.

3- For passenger ships joined in short international voyages, control and SAR stations supported with high speed SAR units, persons specialized in fire service response to fires, chemical hazards, and on-board rescue at sea should be developed. The assumed control SAR stations, established, financed and operated by the cooperated passenger shipping companies which their cruise ships working in the area, and supervised by the authorities. The assumed stations aim to follow up and communicate with passenger ships through sailing time until the destination point for giving an immediate response in case of emergency.

It is worth mentioning that, the area of Red Sea between Egypt and Saudi Arabia require such stations and control points because there were several similar accidents happened in the area on the last two decades.

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