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What can we learn from the Costa Concordia? Critical Incident Management Systems (CIMS) are only as good as the human element(s) involved.

Captain Bill Doherty, Director of Maritime Relations, Nexus Consulting

When safety and security response systems rely on individuals to initiate situation reporting (SITREPs), unless properly trained, mentally prepared and appropriately supported, the weakest link in the system-chain will break and potentially comprise life and/or environment. In dealing with Critical Incidents, one of the first things we have learned by past incidents is that it is crucial to inform higher-level support systems immediately to ensure all aspects of a Critical Incident Management System (CIMS) are enacted in a timely and appropriate manner.

I'd like to take a quick look at the Costa Concordia grounding and subsequent mass casualty incident which is still unfolding off the coast of Italy a week after running aground and address just a few of the failed human elements which delayed the response to the grounding and caused almost 50 dead or missing passengers.

At this point, it looks like no lives were lost upon the grounding incident or the immediate minutes following the ship running aground. This is important, as it denotes that in this incident, every life lost was preventable and directly tied to the response/ rescue operation. To put it bluntly, passengers on the Costa Concordia died due to a failure of ship's Master and key company officials to follow specific elements of the International Safety Management (ISM) and the interface with local port-state authority.

The ISM system is an interface and procedural system established by the governing body for vessels on the high-sea, the International Maritime Organization (IMO), and is one based on ISO (International Organization for Standardization) standards which basically mandate that a company must "say what it will do, then do what it says" to be compliant with ISO certification. The IMO doesn't define what or how a company will establish its ISM procedures, but rather outlines the items which a company ISM must cover. The IMO leaves the details to the company to define how the company safety management program will be delivered.

The IMO mandates that for a ship to operate on the high-seas, the company must have a valid "Document of Compliance" which is issued by an organization recognized by the Administration (which is either the government of the country which the ship is registered and "flagged" in, or a recognized compliance body the government may have contracted to perform these task, most often maritime classification societies) which allows a ship within that company to be issued a mandatory "Safety Management Certificate". Under the ISM

Code of 2002¹, resolution A.443(XI) and resolution A.680(17) the IMO mandates companies identify a Designated Person Ashore (DPA) who is the point of contact for ship Captains and governing bodies when issues arise on ships. The company is further mandated to establish all resources and shore-based support to the DPA to support safety and pollution prevention.

These prevention and crisis response systems and procedures must be clearly defined and written in the company ISM policies and more importantly procedures, which are reviewed by the issuing authority of the "Safety Management Certificate" (in the case of the Costa Concordia, the SMC was issued in November 2011 by the classification society Registro Italiano Navale (RINA))². This all leads to the first question that must be asked of the incident – "Was the Costa Crociere DPA contacted?"

"Was DPA contacted?" – CIMS initiation

In transcripts recently released from Italian authorities, Costa Concordia Captain Francesco Schettino states he contacted Sr. Roberto Ferrarini, Marine Operations Director Costa Crociere S.p.A. As Costa Crociere and Carnival Corporation are refusing to comment, we are forced to infer some details.

Let's suppose Captain Schettino did contact Sr. Ferrarini and that Sr. Ferrarini is the DPA for the Costa Crociere. The next questions that need to be asked are "what did Captain Schettino and Sr. Ferrarini do next?" The answer should be "initiated and complied actions detailed in the ISM Emergency Procedures and complied with check list reporting and announcements," which most certainly should mandate a full-scope assessment of the incident, damage report, a casualty report, and higher-level, governmental contact. Certain contingency "Check-Lists" for such incidents would have been included in the ISM Procedures.

This should have been the first steps to initiate the higher-level support of the CIMS, however what we seem to be learning from media and passenger accounts, as well as those of the CEO of Carnival Corporation is that if this step was in fact taken, there was a serious breakdown in communicated messages.

That there was no immediate contact made with Italian Coast Guard, that there was no immediate assessment of damage/ casualties, and that the ISM was not followed would certainly support the Carnival Corporation accretion that Captain Schettino neither reported the incident nor fully disclosed the scope of incident.

Had Captain Schettino, as he contends, disclosed fully the incident and required damage, casualty and pollution reports, and still felt that Sr. Ferrarini and Costa Crociere were not supporting him, the Captain still had a number of options to preserve the safety of life at sea, namely:

- Schettino could have initiated the cruise ships Global Maritime Distress and Safety System (GMDSS) "Distress Signals" which would have sent an automatic distress call
- As the vessel was well within a mile of the coastline, Schettino could have contacted Italy Coast Guard, or any vessels within earshot to render assistance on VHF 16 (a close range radio).
- Schettino could have sent signaling flares or a number of other communication options he had at his disposal as ship captain.

That none of these distress notifications seem to have been initiated. Coupled with the reporting that Captain Schettino was finally found some 20 minutes after the incident in a lifeboat, along with the majority of senior

¹ http://www5.imo.org/SharePoint/mainframe.asp?topic_id=287

² On January 18, 2012, Gianni Scerni, President of RINA resigned

licensed deck officers, certainly lends that there was not a timely initiation of the CIMS and the human element of CIMS caused a delay which resulted in deaths. So what can be done to mitigate the Global Maritime Distress and Safety System human factor as well as centralization of the system being consolidated on the ship bridge and finally allow immediate initiation of distress signals if required by passengers?

“What can passengers do?”

Thus far, all distress calls are commutated by either the officers of the ship or the DPA on shore. Aside from a cell phone (which appears to have been the initiating factor in the Italian Coast Guard response – and most likely saved numerous lives on the Costa Concordia - calls from passengers to families worrying about their own safety, resulting in calls to the Italian Coast Guard) there are no methods for passengers to initiate a distress call external from the ship. There are systems on-ship which allow passengers to contact the officers on watch in the ships bridge to inform them of a fire, or a man-overboard or a crime on ship, but these systems are on-ship only.

These systems need to be linked into the ships external communication systems so that when a passenger “sees something” they can “say something.” This system will need a redundancy false alarm component. A system which could work could be tying the on-ship warning system into the on-ship distress satellite system. The initiation of the passenger distress system (PDS) could send a message to company DPA, as well as governmental entities poised to respond, much like the GMDSS.

A five-minute window could be afforded to the ship from the governmental response entity to the ship to allow for assessment of possible false alarm, and if no positive confirmation from the ship that the PDS is false or manageable on ship, governmental entities can initiate their appropriate response systems.

"When did the Italian Coast Guard realize this wasn't a simple electrical issue but rather mass-casualty incident with dead and dying - Or have they?"

Clearly, whether intentionally or unintentionally, there was a breakdown in the communication of what the true status of the Costa Concordia was and were the incident was heading quickly. At some point, and from accounts it seems to be about 20 minutes after the ship ran around, the Italian Coast Guard start to realize they now have a listing vessel with more than 4200 passengers and crew and a half-million gallons fuel 1000m from the coast of Giglio. The Italian Coast Guard was well behind the curve with night setting in and limited resources to effect the situation.

From the reports, it does not appear that an "all-hands" "may-day" call went out to any and all vessels to support the rescue operation. It certainly appears the Italian Coast Guard had very limited response vessels and staffing to be able to handle the floating city, so what can be done when littoral response systems reach or start to reach critical mass?

The need for a public-private unified command is necessary to maximize and expedite, to the greatest extent, any rescue and response efforts to save as many lives and protect the environment from potential destruction. Time is always of the essence in a vessel disaster, be it grounding, collision, fire of any other catastrophe. Manpower and equipment mobilization take time, money and coordination. Authority to commit these much needed assets as quickly in sufficient numbers requires a unified response.

The unified command allows agencies with different authorities and responsible parties to work together

effectively. The unified command structure has been established and proven successful in major environmental disasters such as last year's Deepwater Horizon disaster in the US Gulf.

Assembly, coordinating and disbursing assists be the machinery, manpower and finances involves the collaboration of many entities including the responsible parties, such as the steamship companies, responding parties governmental agencies, rescue and salvage contactors, and financial authorities on hand to insure no rescue efforts are hampered by lack of any recourses needed to save lives.

Company Onus

Pre-departure musters, training and familiarization must be mandatory. At the moment, these pre-departure programs outlined in company policies under the ISM program, which is to say a company defines when and where they will conducts these passenger familiarization programs, and the company must follow its' own policy or risk losing the Safety Management Certificate (SMC) needed for ship operations. Most cruise lines require this prior to a ship pulling away from the port, but in the Costa Concordia, this seems to not have been conducted, as Costa Crociere seems to verify that the procedure was such musters and drills must take place within 24 hours of ships departing from port.

The ship is usually asked by the port authority prior to being issued "clearance" to depart port if all safety and security measures have been followed – however, what the port authority is really saying is "have you complied with YOUR specific ship safety and security procedures that YOU defined in YOUR ISM?"

Port authorities need to create higher level accountability of ship captains for passenger safety and provide an actionable form which can be included in the ships pre-departure documents requiring a captain to affirmatively denote that such trainings have been conducted prior to departure.

"Where was Captain Schettino – was he drunk?"

One major question which hasn't been answered is "why wasn't Schettino tested for alcohol?" The answer seems to be "he couldn't (conveniently) be found." In the United States, the United States Coast Guard mandates the following:³

"Post accident: A person (not necessarily a crewmember) who is directly involved in a serious marine incident must be tested for drugs and alcohol. Post-accident testing applies to all serious marine incidents involving commercial vessels regardless of flag of origin. More specifically, this includes crewmembers aboard foreign flag vessels who are directly involved in serious marine incidents occurring in U.S. waters.

Definition of a Serious Marine Incident

A serious marine incident, as defined by 46 CFR 4.03-2, includes but is not limited to the following events:

- (3) A marine casualty or accident as defined in 46 CFR 4.03-1 which is required by 46 CFR 4.05-1 to be reported to the Coast Guard and which results in any of the following:
 - a. One or more deaths,

³ <http://www.uscg.mil/D8/prevention/typeoftesting.asp>

- b. An injury to any person (including passengers), which requires medical treatment beyond first aid, and, in the case of a person employed on board a commercial vessel, which renders the person unable to perform routine vessel duties;”

There is no logical explanation for Captain Schettino not to be on the scene (aboard) of the incident until all passengers and crew were, saved or accounted for and everything humanly possible was done to save them. Captain Schettino’s behavior, in the time immediately following the grounding right up until he escaped in a lifeboat, could only be called irrational and bizarre. There is certainly the possibility that the captain was traumatized, as there is equally the possibility that the captain was drunk. Either way, he needed to make himself available for assessment. Captain Schettino's recorded conversation with the Italian Coast Guard notes how incoherent the captain was. This alone should have been grounds for mandatory testing compounded by the serious incident and ultimate losses of lives.

There needs to be a criminal statute for the universal arrest and prosecution for masters who leave the scene of a mass casualty incident. Just as piracy is a crime which has universal jurisdiction, so too should a law which requires a master remain at the scene of an incident, and in this case of the Costa Concordia a crime scene - quite potentially the crime of murder.

Summary of areas needed to be improved upon

There are a number of areas within the cruise line operations which need to be assessed, improved and properly monitored. The greatest factor within these operations is accounting for the human variable. With that, we propose the following for consideration and implementation:

- Development and implantation of a passenger distress signal system (PDS).
- Affirmative ports authority documents which require a captain to verify musters and evacuation training has been conducted prior to a ship leaving port.
- Expand the mandatory alcohol/ drug testing procedure for post-incidents to put the onus on the master to be available for testing. If a master does not present themselves immediately to authorities, the master will lose their license until reviewed.
- Greater checks and balances between the IMO, classification societies and flag-states for safety, security and environmental compliance.
- Stricter compliance and audit of International Safety Management policies and procedures, focusing on training, documentation, drills and oversight.
- Mandatory psychological screening of senior personnel including all deck and engine officers and critical hotel staff on cruise ships.
- Background checks of all licensed officers and key hotel/staff personnel and establishes standards for refusal to employ those found with certain offenses.
- Scheduled competency testing and recertification of key personnel, from external agencies, in ISM, IMO, Flag State regulations procedures, and competencies; particularly regarding safety and lifesaving.

- Universal criminal statutes for masters who leave a serious incident.
- Greater interface with general public when assets are not available to governmental response entities with greater utilization of the unified command to ensure a coordinated utilization of assets and assessment of needs for to ensure rescue operations don't turn into recovery operations.



Captain Bill Doherty is a 1967 graduate of the Massachusetts Maritime Academy, a licensed US Coast Guard Master-Unlimited tonnage, and qualified First Class Pilot, Prince William Sound, Valdez, Alaska. Captain Doherty has served on numerous US Navy warships and was the Head of Maritime Affairs for the Chief of Naval Operations during Operations Desert Storm. Over the course of his career, he has commanded tankers, containerships, research vessels, high-speed ferries, and was an instructor at his alma mater. Before retirement, his latest position was as Safety Manager for Norwegian Cruise Lines. Captain Doherty now serves as the director of maritime relations for Nexus Consulting.

About Nexus Consulting Group of Alexandria, LLC

Established in 2005, Nexus Consulting is a US veteran-owned and operated private safety and security company that places unprecedented focus on compliance while actively protecting passengers, crews, equipment and cargo from maritime threats. Internationally, Nexus Consulting is taking the lead in maritime security utilizing the Nexus Solution. Nexus also offers marine safety and security consulting services to private shipping fleets, cargo vessels and cruise lines.

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