Maritime Dimensions of Disaster Management

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a Global Perspective on the Indian Ocean

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Abstract
More than half of the world's population lives within 200 km of a coastline, which implies that at least half of the disasters that strike humanity occur within relatively easy access from the sea. This is the area that military planners call the "littoral zone", in other words within easy reach of power projection from the sea. Maritime forces (naval, air, coast guard and civilian) can bring unique capabilities to relief and recovery operations. Too often, however, military and civilians fail to see each other as partners sharing a common goal. This is worse than silly - it is wasteful and reduces the overall effectiveness of a relief effort. Similarly, individual states, even those who are not traditional allies, have a national interest and moral obligation to plan together in advance to mitigate and respond to future disasters. Natural and human-caused disasters are an ongoing challenge in the Indian Ocean and the maritime professionals of the region have every reason to create opportunities to prepare for them.

Introduction

More than half of the world's people live within 200 kilometres of the sea and almost half of those live in urban centres. Eight of the world's ten most populous cities are seaports.(1) Coastal mega-cities (defined as those with eight million or more inhabitants), as well as smaller coastal cities (three to eight million people) are increasing in number and size and several of the fastest-growing (including Karachi) are no strangers to the effects of disasters such as devastating tropical storms. The 1999 *International Workshop on Coastal Megacities, Challenges of Growing Urbanisation of the World's Coastal Areas* held in Hangzhou, China, noted that the overall percentage of coastal population is increasing but that the trend is particularly noticeable in the developing world.(2) This implies that at very least half of the disasters that strike humanity, and probably more like two-thirds, will occur within relatively easy access from the sea. That percentage may be even higher because of additional hazards that do not threaten landlocked people such as tropical storms, storm surges, tsunamis and even the recently-recognized phenomenon of the spread of water-borne disease on ocean currents.

Maritime forces (naval, naval aviation, coast guard, other government agencies and civilian marine resources) have unique capabilities that can make invaluable contributions to disaster relief and recovery operations. While large army formations can be ponderous to deploy to other countries when troops need to be equipped and prepared while diplomatic clearances and host nation agreements are negotiated, warships can sail or divert course instantly, shift roles quickly and take station offshore without any diplomatic clearance required at all. Furthermore, modern amphibious naval forces have unique capabilities that allow them to project relief across the shore with the same efficiency as they can project combat capability. And just as naval forces are a significant resource, so too are the vast range of capabilities represented by coast guards and civilian marine industry.

One challenge to mobilizing all this versatile and wide-ranging capacity, however, is that in the quiet times before disaster strikes, military and civilian responders too often fail to work together as partners in planning and preparing for future emergencies. This is worse than silly; it is wasteful and reduces their overall effectiveness. Both sides need to break down the barriers and connect the respective professional "stovepipes" within which civil emergency managers and maritime security professionals perform their professional duties.

> **Note**: The term "emergency" rather than "disaster" management is most commonly used in that profession because it covers the entire spectrum of magnitude. An emergency is an abnormal situation that requires prompt, coordinated actions exceeding normal procedures. An emergency is not necessarily a disaster, especially if it is managed well. A disaster, however, is a situation that threatens to overwhelm response capability and is definitely an emergency, no matter how well managed. The aim is to manage potential emergencies so that they do not become disasters.

Stovepipes: The Emergency Management and Military Professions

In some places, especially in lesser-developed societies, the capability of civilian emergency management may be limited so, when disaster strikes, it is natural for civil authorities to turn to the military which is by nature trained and equipped to react to chaotic situations. Similarly, it is natural for military leaders to want to assume command of disaster response operations, if for no other reason than they are trained from their earliest professional years to take charge. Nonetheless, it is important for everyone involved in disaster response to remember that there is usually at least some resident civilian emergency management capacity, either indigenous or international, and that civilian authorities retain ultimate responsibility for the welfare of their communities long after the military relief forces have finished their work and gone home. It is therefore helpful to understand the differences between the two disciplines.

• **Different Primary Responsibilities**. The primary function and focus of a military force is, and should be, on combat readiness to defend national security against external threats. All secondary capabilities derive from that core. Civilian authorities, on the other hand, deal with issues of public safety; in other words peace, order, good governance and individual welfare.

• **Different Disaster Mandates**. Disaster response is a secondary role for armed forces, therefore their disaster mandate is to prepare, respond when called upon, but then revert to their primary role at the earliest opportunity. Few military commanders will want to allow essential combat skills to atrophy at the expense of transporting food parcels or reconstructing civilian infrastructure. For civilian emergency managers, however, the primary role is an unending and continuous cycle of mitigating the effects of potential hazards, preparing, responding to emergencies, recovering after the situation is under control, and then applying the lessons learned to the next round of mitigation and preparedness.

• **Different Time Frames**. Military relief operations are usually short-notice responses that aim for a successful conclusion as quickly as possible. Usually, however, response is the shortest of the four components of the emergency management cycle. Recovery, for example, may go on for months or even years after the military response phase has ended and mitigating

the effects of future disasters can involve prolonged efforts to implement legislative initiatives or major construction projects.

• **Different Cultures**. Military commanders may assume that their command culture is the norm and that their orders will necessarily be greeted with unquestioning compliance. It is easy to forget, however, that the civilian world rarely works that way and that collegial management is usually the civilian "command and control" paradigm – and for good reason. Civilian specialists from different disciplines have professional status that cannot be expected to fit easily into a military hierarchy. The medical chief of staff of a major hospital or a public medical officer of health, for example, is accustomed to the same degree of deference and respect enjoyed by a senior military commander or an important civilian government authority. In the event of mass casualties or disease outbreak, he or she may be the most qualified and appropriate overall "commander" for the entire emergency response.

• **Different Languages**. Sometimes different words and concepts mean different things in different professions. Navies, for example, refer to "littoral operations" as those occurring in the zone that ranges from the shallow waters offshore to whatever distance inland can be influenced by naval forces (typically the operating radius of naval aircraft). "Littoral" to many civilians, however, is simply a scientific term referring to the inter-tidal area between the low and high water mark. The military refers to an "operational" level of operations as being that above the tactical (front-line) and below the strategic (national) level, i.e., theatres of operations and the conduct of individual campaigns. Some emergency management organizations, particularly in the United Kingdom, however, describe front-line activities as "operational" and the intermediate level above it as "tactical". Fortunately this hierarchy is usually expressed as Gold (strategic), Silver ("tactical") and Bronze ("operational"), which may help to resolve confusion when working with military forces. Nonetheless, such differences can create confusion unless they are recognized and understood. For reasons of operational effectiveness it is essential to foster mutual understanding well before disasters occur.

• **Different Doctrine**. Military and civilian emergency management disciplines each have their own doctrines, procedures and techniques that are worth highlighting if the two are to work well together. Indeed, there are methodologies used by each which can be helpful to the other. Military planning concepts such "appreciations" or "estimates" and the "principles of war" can be adapted to civilian emergency management use. Similarly, there are civilian concepts that may be useful to the military when it comes to disaster preparedness and response. The emergency management community, for example, has developed a "command and control" methodology called the Incident Command System (ICS) that is becoming increasingly standard worldwide. Indeed, in the United States, the ICS is mandated for all organizations that expect to interact with federal emergency management authorities. That makes it the *de facto* standard for all United States agencies and therefore something that should be understood by anyone anticipating future emergency cooperation with the USA.(3) Emergency managers also use such planning concepts as "the all-hazards approach" and "hazard, risk and vulnerability analysis" that are invaluable disaster planning tools. Other areas in which the civilian emergency management community may have particular expertise include gender considerations during disaster, the significance of community-based resilience, etc.

This is not the place to detail the concepts just described but planners should be aware of them. What should be clear from this brief outline, however, is that despite their differences, both disciplines share a common interest, have much in common professionally and can learn much from each other if they work as a single team in emergency preparedness and planning.

Case Studies in the Indian Ocean

Maritime forces have a long history of disaster response. A few examples from the Indian Ocean experience will illustrate the range of capabilities and highlight some issues. They also suggest some responses to two objectives of this conference: to "identify areas of common interest" and to "make recommendations to minimize threats and promote opportunities".

Bangladesh 1991

On the night of 29/30 April 1991 a devastating tropical storm, Cyclone Marian, struck the coast of Bangladesh. The resulting 20-foot (six metre) storm surge penetrated as far as three miles (five kilometres) inland leaving approximately 140,000 dead. Estimates of the homeless range from 1.7 to 10 million, depending on the source. The Bangladesh Navy itself suffered considerable damage, including sunken ships that contributed to blocking the entrance to Chittagong harbour. In response to a request for assistance from the Bangladesh government, the government of the United States diverted a 15-ship US amphibious task force homebound from a long deployment to the Persian Gulf that arrived off Bangladesh by May 15th to commence Operation *Sea Angel*. The British government also diverted a ship from the Persian Gulf; the Royal Fleet Auxiliary (RFA) *Fort Grange*, equipped with four Sea King helicopters. Six flat-bottomed glass-reinforced plastic boats manned by a detachment of Royal Marines were also flown out from the UK to join the ship. *Fort Grange* arrived off Cox's Bazaar to commence Operation *Manna* on May 20th. For the next month, this considerable amphibious capability, working with the Bangladesh government, other US military and multinational resources from Pakistan, India, Thailand, Japan and China, formed the core of the relief effort, providing food, water, medical care and other support to stricken communities. Aside from providing useful lessons on the variety and utility of maritime capabilities, this case is also a reminder that political sensitivities must be considered when providing aid to someone else's nation. In this event, the newly established civilian government had been in office for only two months before the cyclone struck, after almost a decade of military rule. It was therefore a political imperative that the government be seen to be in charge of the relief effort. Consequently, foreign commanders were sensitive to the potential negative perception of foreign amphibious troops storming the beaches and were careful to coordinate all operations through the Bangladesh Military Supreme Command.(4)

Somalia, 1992-1993

The international reaction to the chaos in Somalia in 1992 provides other examples of response capabilities of seapower that may not be appreciated by non-mariner emergency managers. The airport at Mogadishu, for example, was incapable of coping with the constant stream of strategic airlift from around the world. This air traffic control problem was solved by stationing a US Navy cruiser offshore which, with its considerable air control capability, was able to manage air traffic for much of eastern African airspace. The Canadian operational support ship HMCS *Preserver* illustrates the variety of capabilities that even one vessel can bring to humanitarian operations. The ship was initially intended to deliver supplies and support to Canadian Army forces ashore but its mission quickly expanded. When the Canadian Airborne Regiment flew into Mogadishu with a photogenic flourish, the troops surged from the back ramp of their aircraft to be greeted by a cheerful group of Canadian sailors who had been on the ground for several days shuttling stores ashore for them by boat and helicopter. Before the troops deployed inland, the ship's operations centre served as the Canadian Joint Force Headquarters, free from the

chaos and dust ashore. *Preserver's* hospital and dental clinic cared for Non-Government Organization (NGO) as well as military people, while members of the medical and dental teams deployed ashore to serve the local population. Its workshops maintained civilian NGO equipment including radios, computers, generators, photocopiers and other vital equipment that suffered from dust, heat and rough use. Technicians flew ashore to restore generators and plumbing in local hospitals. Operations continued around the clock as *Preserver* weighed anchor each evening to provide underway replenishment of fuel, fresh water and supplies to ships of the Australian, French, Indian, Italian, Turkish and US navies. The ship also served as an airbase for three anti-submarine helicopters that had been modified quickly to carry night vision equipment and a machine gun. Surprisingly they turned out to be among the most versatile and capable helicopters in theatre, maintaining a gruelling operational tempo of ferrying supplies and people, providing "top cover" escort for vehicle convoys in lawless areas, conducting medical evacuations, doing reconnaissance and, on one occasion, chasing gunmen away from a Red Cross humanitarian supply vessel under attack. In addition to all this, virtually every member of the crew volunteered their off-duty time to work ashore on such projects a building a kitchen and accommodation for an orphanage.(5)

Mozambique and Madagascar, 2000

In the Spring of 2000 a series of tropical storms struck southern Africa with particularly devastating impact on Mozambique and Madagascar. Helicopters became a vital asset for distributing relief supplies to millions of affected people. Being able to base at least some of them at sea helped to reduce the strain on facilities ashore. Britain dispatched the Royal Fleet Auxiliary *Fort George* to northern Mozambique with five Sea King helicopters embarked. These joined with helicopters from South Africa, France, Germany, Spain and the United States to ferry humanitarian supplies.(6) France also diverted a naval task group consisting of the aircraft carrier *Jeanne d'Arc* and the frigate *Georges Legues*. Aside from the operational lessons learned about multinational helicopter operations in humanitarian response, this case also illustrates the sort of civil-military misunderstandings that can arise before effective cooperation is established. When *Fort George* came alongside in Beira, the crew experienced a brief dispute with Customs officials before relief supplies could be unloaded. Trivial perhaps, but illustrative of the kind of things that should be planned for ahead of time so that they do not interrupt humanitarian efforts when time is critical.(7)

Indian Ocean Tsunami, 2004

The most recent and dramatic of Indian Ocean case studies is the naval response to the tsunami that struck on 24 December 2004. There is a mass of material available on the internet and undoubtedly much analysis will be written by future researchers so, for purposes of this overview, a simple survey of the major contributors will suffice to indicate the range of capabilities and scope of experience available to those researching the lessons learned.(8)

•   **Pakistan** (Operation *MADAD*). PNS NASR and PNS Tariq were in the Maldives when the tsunami struck and were the first naval vessels on the scene, evacuating, sheltering and feeding 367 tourists of 19 different nationalities including the Cabinet Secretary to France's Minister for Co-operation and Development. Rear Admiral M. Asif Sandila, Commander 25th Destroyer Squadron, and Captain Muhammad Amjad, PNS *Tariq*, were subsequently decorated with the French Chevalier de l'Ordre National du Mérit).(9) Very quickly a task group based on PNS *Khaibar* sailed for Sri Lanka and Indonesia with relief stores, medical supplies and personnel.

•   **The United States** (Operation *UNIFIED ASSISTANCE*). In the words of Indonesia's Minister of Defence: "The U.S. Military... has been the backbone of the logistical operations providing assistance to all afflicted after the disaster".(10) On the maritime side of the US joint response, the enormous amphibious capability of the USS *Abraham Lincoln* Carrier Strike Group and the USS *Bonhomme Richard* Expeditionary Strike Group were the most immediate and visible maritime assets on scene, joined later by the hospital ship USNS *Mercy*. Other specialized and less obvious capabilities, however, included a crucial Forward Command Element from the 3ʳᵈ Marine Expeditionary Unit that established itself at the Thai airfield of Utapao to serve as the regional support centre and staging area. Other highly specialized capabilities included such units as a USN Environmental and Preventive Medicine Unit based in Hawaii, the role of which is "to provide expert and specialized consultation, advice, and recommendations in matters of preventive medicine and environmental health to commands afloat and ashore, to provide epidemiological, laboratory, and technical services to assist in the detection and elimination of direct or potential health hazards to personnel in the naval service and their families, and to provide training and indoctrination of personnel in the methods and techniques of preventive medicine".(11) In addition to the two Strike Groups and *Mercy*, the United States also deployed the considerable maritime logistics capability of six Military Sealift Command (MSC) ships from South Korea and Guam carrying supplies and equipment that included vital reverse osmosis water purification units. Fresh water is often an issue in disaster and it should be noted that ships are capable of making it themselves, often in quantity. In this case, five of these MSC vessels were capable of producing 25,000 gallons (94,630 litres) per day using the ships' own evaporators, and to pump it ashore from up to two miles (3.7 kilometres) away using specially designed floating hoses.(12) Few navies can hope to match the unparalleled size and collective variety of capabilities that US maritime forces can bring to bear on a humanitarian operation, but the lessons that its operations can teach are worth studying and, all politics aside, the potential for drawing upon its good will and humanitarian help in a time of disaster should never be underestimated.

•   **India**. The Indian Navy response was noteworthy not only because it was that nation's largest ever peacetime military operation (and fastest peacetime mobilization of resources), but also because it was conducted while some elements of the armed forces themselves had been affected. In one particularly sad case, a naval pilot stationed in the Andaman Islands managed to get his helicopter airborne ahead of the oncoming water only to watch helplessly as his base, his home and his family were swept away. As with the Bangladesh case, it is a reminder that naval emergency planning needs to take into account that naval personnel and equipment may end up being recipients of help rather than responders. Furthermore, there is a responsibility to look after the families of one's own people so that they are able to concentrate fully on their response duties. India mounted five separate relief operations: Operations *MADAD* covering the east and west coasts of peninsular India, *CASTOR* the Maldives, *RAINBOW* Sri Lanka, *SEA WAVE* the Andaman and Nicobar Islands and *GAMBHIR* Indonesia. These five operations engaged more than 200,000 military personnel and almost 35 warships and yet it is interesting to observe that the scale of India's response was barely noticed by the international media. The first relief vessel into Trincomalee was an Indian naval vessel and ultimately nine ships (including survey ships that had been retrofitted as hospital ships in the space of 14 hours) were deployed to Sri Lanka. Nonetheless, as one observer noted, the world's press gave significant coverage to the arrival of a US ship in Sri Lanka even though Indian Navy ships had been on station and providing relief for the preceding two weeks. International planners need to take regional capabilities into account and the experience of India is well worth studying.(13)

• **Australia (and New Zealand)** (Operation *SUMATRA ASSIST*). The amphibious assault ship HMAS *Kanimbla* formed the naval component of Combined Joint Task Force 629 consisting of approximately 1,100 Australian, New Zealand and British personnel. *Kanimbla* arrived on 13 January carrying an Australian Army Engineer Detachment and 780 tonnes of stores, along with the transport capability of embarked helicopters and landing craft. A comment by the commander of the Task Force about the "second wave tsunami" of volunteers, aid organizations and military forces that flooded into the area helps to illustrate another significant benefit of maritime assets in disaster relief. "Many organizations came without logistic support" he wrote, "and some were more of a burden than a boon".(14) After a disaster, resources ashore are inevitably strained, so the ability to base relief personnel afloat relieves that pressure considerably. Scarce resources can thus be devoted fully to those for whom they are intended. This is certainly a lesson that the Canadian Navy has noted after its own experiences ranging from Somalia to the joint Canadian Navy and Coast Guard task group that deployed to New Orleans after Hurricane Katrina in 2005.

• **France** (Operation *BÉRYX*). The helicopter carrier FS *Jeanne d'Arc* and frigate *Georges Legues* were conducting officer training in the Indian Ocean when the tsunami struck and were fitted out quickly in Djibouti for disaster relief. *Jeanne d'Arc* carried four naval plus two army helicopters, medical facilities (including 13 medical officers who had just completed their medical training), an Army engineer field troop (platoon) and supplies including five tonnes of medical supplies, 80,000 litres of water and 6,000 combat rations. *Georges Legues* was configured to provide additional accommodation as required. In addition, FS *Dupleix* was dispatched from the Gulf of Oman to the Maldives.(15)

• **Germany**. The supply and hospital ship FGS *Berlin* steamed to Bandar Aceh, arriving with two helicopters, relief supplies, an onboard operating theatre that complemented the work of a German Army field hospital ashore, and a team from the German Technical Assistance Service (GTZ) providing a mobile treatment plant to provide drinking water.

• **Japan**. Japan was one of the largest donors of aid and its naval contribution consisted of two task groups. The first, consisting of the destroyers, JDS *Kirishima* and *Takanami* and the supply ship JDS *Hamana*, had been at sea off Malaysia and were deployed to Phuket in Thailand to conduct immediate relief and search and rescue operations in coordination with the Thai Navy. The main body of the disaster relief effort was carried from Japan to Sumatra in a second task group consisting of the amphibious ship *Kunisaki*, the destroyer *Kurama* and the supply ship *Tokiwa*. The embarked Chinook helicopters and air cushion landing craft illustrate the invaluable utility of amphibious transport resources in a situation where ports are either destroyed or non-existent.(16)

• **Malaysia**. On 6 January the support ship KD *Mahawangsa* with embarked Sea King helicopters arrived off Bandar Aceh with 550 tonnes of supplies. The ship returned to Malaysia to replenish and returned to Aceh later in the month in company with KD *Sri Indera Sakti* escorted by KD *Musytari* carrying 796 tents, 10 Malaysian Red Crescent vehicles, 832 tons of food and a ton of equipment.(17) Malaysia also dispatched the hydrographic vessel *Perentau* to conduct surveys in key areas of the Malacca Strait to ensure that the earthquake had not posed hazards to navigation in that shallow strategic waterway.

• **Singapore** (Operation *FLYING EAGLE*). The landing ship RSS *Endurance* sailed from Singapore for Meulaboh in Sumatra on New Years Day, filled to capacity with relief supplies and equipment. She was joined the following week by her sister ship *Persistence*, which had just begun a refit and had to be hastily re-readied for sea. Later another ship of the same class, RSS

Endeavour carried more supplies and a contingent of civilian Red Cross volunteers, a good example of military and civilian responders working as a single team.(18)

• **Spain**. The 13,900 ton logistic ship (LDP) *Galicia*, which had been designed with disaster response capability in mind, deployed as the naval contribution to a Spanish joint relief effort that centred on 250 military engineers ashore in Aceh.

• **United Kingdom** (Operation *GARRON*). The naval component of the British joint response consisted of the frigate HMS *Chatham* and the Royal Fleet Auxiliary *Diligence*. Both were dispatched to Sri Lanka, with the RFA tanker *Bayleaf* working out of Dubai to keep them supplied. One of their initial priorities was to assist with the repair of damaged fishing vessels so that the local coastal communities could become self-sufficient again as quickly as possible. The Royal Navy also dispatched the hydrographic survey ship HMS *Scott* to chart the epicentre zone.

Some Lessons Learned

These four Indian Ocean cases studies could be expanded into a thick book but the preceding summaries should be sufficient to highlight some lessons of value to both civilian emergency management professionals and naval planners.

For Civilian Emergency Managers...

• **Transport Capabilities**. Where ports are either incapacitated or non-existent, maritime forces, and especially amphibious forces, have a variety of methods to get large amounts of people, equipment and supplies ashore or to move them around. The capabilities of helicopters, landing craft and air cushion vehicles operated by highly trained and disciplined crews are an invaluable resource with which emergency managers in coastal communities should be familiar.

• **Sea-Basing**. Maritime forces offer the significant advantage of reducing the "footprint" of relief agencies at the scene of a disaster. When everything from food to water is in short supply and the spread of disease may be becoming a threat, the ability to accommodate, feed and care for relief workers and their equipment away from the immediate scene of action reduces the burden on infrastructure ashore. It also allows relief workers to be sustained with comfort and support without generating perceptions of double standards among those affected. There may also be an advantage to establishing command and control headquarters afloat if the ship has an adequate operations centre and a good communications fit. This allows command and control to be exercised clear of the potentially chaotic surroundings ashore that could distract from the essential business of information gathering, analysis and decision-making.

• **Logistics**. The range of capabilities that ships can deliver is limited only by the imagination. Warships can make not only fresh drinking water but also electrical power. A modern destroyer, for example, can generate enough electricity to power a small town if the appropriate electrical connections can be made. Most warships have at least some workshop and repair capability that can be made available to military and civilian responders equally. Most also have at least a modest medical capability. Specialized ships may carry entire surgical wards or dental clinics, civilian passenger vessels or ferries can provide accommodation, some nations have tankers specialized to carry fresh water – the list is open-ended.

•   **People**. By the nature of the work that they do and the environment in which they live, sailors tend to react to unexpected events, and especially to events in which people need humanitarian help, by producing apparent miracles of fast response and innovative solutions. Even a cursory survey of command assessments following any maritime humanitarian operation from almost any nation will inevitably produce similar praise for the problem-solving initiative and technical adaptability of the crews. The flexibility of marine platforms and the adaptability of sailors are priceless emergency management assets.

For Maritime Planners...

•   **Partnership**. Traditionally the word "joint" refers to operations involving two or more military services. In disaster response, however, it needs to include everyone devoted to the same mission – whether military or civilian. Canada's joint task group deployed to New Orleans after Hurricane Katrina in 2005, for example, included a (civilian) Canadian Coast Guard buoy tender as well as naval vessels and it was a Singapore naval vessel that deployed Red Cross volunteers and equipment to Sumatra in 2004. It should also be remembered that the affected community is not simply a passive recipient of assistance but also a vital partner in response and recovery. The resilience of coastal communities is often underestimated so contingency plans should include local assets as part of the potential "joint" framework of operations.

•   **Preparation**. Disaster response is invariably a multinational and multidisciplinary partnership so disaster preparedness and planning should be approached in the same spirit. Aside from enhancing preparedness, advance planning and consultation together can result in mutual understanding and a cross-pollination of ideas. Preparatory partnership can also remove bureaucratic obstacles that could otherwise cause delay when time becomes critical. Preparation should also involve planning for being affected by a disaster as well as for helping others. Cyclone Marian in 1991 devastated the Bangladesh Navy, a serious earthquake in Turkey caused extensive damage and casualties at the naval base and fleet headquarters in Golcük in 1999, and the 2004 tsunami in the Indian Ocean affected the response capabilities of several navies. Emergency management methodology applies to naval planning too. Finally, another consistent lesson from past disaster response is the importance of training, especially drawing on recent previous experience so that old lessons are not constantly being re-learned.

•   **Personal Relationships**. In the words of a famous military maxim: "No plan survives first contact with the enemy", or, in this case, with disaster. Command, control, and above all communications are inevitably fluid and uncertain in the early stages of an emergency, at the very time they are needed the most. Disasters do not wait for Memoranda of Understanding to be signed, Standard Operating Procedures to be written or newly designed arrangements to be exercised. Nonetheless, the history of emergency response is full of examples where things got done because people knew each other personally. Even where no formal arrangements exist, a telephone call to a colleague who can mobilize his or her organization from within can make all the difference between response and inertia. While formal arrangements are important, personal contact is the most powerful command and control tool available to a disaster response team. Every opportunity should be sought to meet, talk and work together - directly if possible but informally through common links if necessary. There is no substitute.

•   **Clarity of Role**. Civil authorities and civil emergency management organizations will have been in an affected community long before the disaster occurs and will continue to be there long after the maritime relief forces have gone home. Commanders of maritime forces need to be sensitive to their role of supporting, not superseding these local (and sometimes international) organizations. Besides, as the 1991 Bangladesh example and others illustrate,

sovereignty, political perceptions and sometimes simply national honour deserve to be respected.

Applicability to the Conference Theme

The organizers of this conference invited the participants to identify common areas of interest and make recommendations on ways to minimize threats and promote opportunities. One factor that must surely dominate emergency planning in this part of the world is demographics. Disasters rarely confine themselves neatly within national boundaries so, in this interconnected modern society, it is only prudent to take a wider regional perspective. In this region, for example, a conservative estimate of the combined populations of Karachi and Mumbai equates approximately to the entire population of Canada, the second largest country in the world.(19) According to a 2000 study by the Population Institute those numbers can be expected to double by the year 2020.(20) This suggests that there will be a corresponding increase in the risk to vulnerable populations. A few brief examples will illustrate ways in which the north-eastern Arabian Sea is a place in which cooperation could improve the chances that the inhabitants of its coasts and mariners on its waters can enjoy a higher degree of security against future disasters.

•	**Environmental Disaster**. In July 2003, an oil tanker called *Tasman Spirit* grounded off Karachi releasing 15,000 tonnes of crude oil along a 14 kilometre stretch of the shore and, in the process Karachi coast, fouling beaches and sending oil fumes across the city. The disaster overwhelmed the capability immediately available in Karachi and the nation.

•	**Technological Disaster**. In July 2005, during a storm that flooded Mumbai with its highest rainfall in the past 100 years, a vessel affected by the storm collided with the Bombay High oil rig with its crew of 385, resulting in a massive fire. An estimated 22 people died on the rig while approximately 200 died ashore as a result of the floods. Personnel of the Indian Navy and Coast Guard found themselves responding to the offshore disaster at the very time that their base and their families were being affected by the storm.

•	**Earthquake**. Four seismic zones intersect where in the past century Karachi has grown from a small town to a future mega-city. Even a cursory hazard, risk and vulnerability assessment will show that the city faces the prospect of future disaster.(21) When that happens, local Navy, Maritime Security Agency and other government resources are as likely to be among the affected as being in a position to respond. On the other side of the international boundary, a recent study by the Indian Institute of Technology has concluded that construction standards in Mumbai are such that an earthquake measuring six on the MSK intensity scale could kill approximately 15,000 people and injure 35,000 in Mumbai if it occurred at around midnight when most people would be in their homes.(22) The two great port cities of this region have much in common.

•	**Other Future Nightmares**. In November 1994, off the Somalia coast, the passenger ship *Achille Lauro* caught fire with 1,090 passengers and crew on board. After abandoning ship, two passengers died and eight were injured during the transfer from life rafts onto the tanker "Hawaiian King". Two US warships, USS *Gettysburg* and USS *Halyburton*, were 350 miles away and were also diverted to assist. This case of a passenger vessel in the Indian Ocean brings out several points of interest. First, a ship carrying a large number of passengers represents a significant risk that should be factored into naval emergency planning. Experiences such as the *Estonia* which sank in the Baltic Sea in the same year with a loss of 852 lives and *Superferry 14*

which fell victim to a bomb ten years later costing 116 lives are both instructive case studies. Second, when such incidents occur, naval vessels may be among the first on scene and, because of their command and control capability, may well be expected to serve as on-scene commander. Large numbers of people may soon overwhelm the limited capacity of many warships therefore multinational cooperation with neighbouring navies or coast guards might be warranted. The existence of pre-arranged standard operation procedures or, better yet, prior experience of exercising together, could become a life-saver. Finally, as a point of interest, the *Achille Lauro*'s initial distress call was not received by any Rescue Coordination Centre in the Indian Ocean but in Norway and so, following standard international protocol, the rescue was initially being managed from half a world away. It illustrates what a small and interdependent planet we live on.

Conclusion

More than half of the world's population lives within what military planners call the "littoral zone", in other words within easy reach of power projection from the sea. To most navies that would mean a helicopter's flying radius, but to the enormous capability of the US Navy, it can mean up to 1,000 kilometres inland. Afghanistan is a landlocked country, but much of the military force inserted to oust the Taliban was launched from the Arabian Sea. These same capabilities for war are equally useable for the peaceful business of relief and development, and the skills, resources and technical assets that are represented by naval forces can be what military planners call a "force multiplier" to a relief operation. Too often in humanitarian operations, military and civilians fail to see each other as allies and partners sharing a common goal – to help others. This is worse than silly, it is wasteful and reduces the overall effectiveness of the effort. Both sides need to connect the stovepipes. Understanding the capabilities and methods of the other "partners in peace" is a good place to start.

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