Gaming Sea-based Multinational HA/DR Operations at PACOM Amphibious Leaders Symposium 2016

Catherine K. Lea, Edsel D. McGrady, Douglas J. Jackson, Daniel Powell, Elizabeth A. Collins, and Nilanthi R. Samaranayake

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Dr. E.D. McGrady
Director, Integration and Gaming
Advanced Technology and Systems Analysis

Abstract

CNA designed and conducted a table-top exercise (TTX) at the U.S. Pacific Command (PACOM) Amphibious Leaders Symposium (PALS) in July 2016 that explored seabasing operations and interoperability during future contingency operations. Using a scenario that revolved around a massive natural disaster striking a fictitious country in the southern Indian Ocean, the TTX strengthened relationships and improved mutual understanding among participating militaries. Military leaders from the 22 Asian, Latin American, and North Atlantic Treaty Organization (NATO) countries participating in PALS formed coalitions, planned how they would operate within these coalitions to provide relief, and assembled their forces to conduct humanitarian assistance and disaster relief (HA/DR) operations. PALS participants contributed a broad range of sea-based capabilities and employed them in creative ways. This revealed areas of opportunity and friction that could benefit from discussion at future PALS, dialogue during bilateral military engagements, and inclusion in bilateral and multinational command-post and at-sea exercises.

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Executive summary

The PACOM Amphibious Leaders Symposium (PALS) annually brings together senior naval leaders of Pacific allied and partner navies and marine corps to strengthen relationships among them and improve mutual understanding. Military leaders from 22 Asian, Latin American, and NATO countries participated in PALS 16. U.S. Marine Corps Forces Pacific (MARFORPAC), acting as PACOM's executive agent, asked CNA to design and conduct a table-top exercise (TTX) for PALS 16 that would explore seabasing operations and interoperability during future regional contingency operations. This paper provides an overview of that TTX, "Operation Shattered Jewel," which took place on 12 July 2016 in San Diego, California.

TTX objectives

As part of the overall PALS agenda, the TTX provided participating allied and partner nations with an opportunity to discuss cooperative and coordinated actions. The purpose of these discussions was to create a shared understanding of each other's abilities to conduct sea-based operations in support of a crisis ashore. During PALS, participants also discussed their experiences in previous HA/DR operations and they observed a live U.S. seabasing demonstration. The TTX served to conceptually bridge participants' past HA/DR experiences to emerging seabasing concepts and technologies. Within this context, the TTX had four objectives:

1. Discuss seabasing in the context of a disaster where operations must be sea based.

2. Develop a shared understanding of how sea-based disaster relief operations might occur.

3. Identify and discuss sea-based interoperability issues and how the sea base would execute a disaster relief operation.

4. Provide a venue for collaboration, relationship building, and knowledge sharing.

Scenario

The CNA team created a scenario in which a massive natural disaster strikes a fictitious country in the southern Indian Ocean. Using a fictitious country ensured that military forces contributing to the HA/DR operation would not be bound in their response decisions by their governments' relationships with and policies toward a specific country. Players could simply make choices and allocate their forces based on the dictates of the operational situation.

The scenario began with a 9.2-magnitude earthquake striking in the Indian Ocean directly off the coast of the Republic of Topaz. Three hours later, a 7.5-magnitude aftershock produced a major displacement of water, which came ashore as a tsunami. As a result, most of Topaz lay in ruins. Complicating matters, its neighboring country, the Kingdom of Ruby, has a territorial dispute over Topaz's southern islands, collectively known as the Southern Development Area (SDA), where Ruby actively supports an insurgency. Due to its geography, Ruby was not affected by the earthquake and tsunami.

At the beginning of the TTX, the estimate was that some 2 million inhabitants of Topaz were in need of immediate support in terms of food, clean water, medical assets, and other relief supplies. However, the nearly complete destruction of key ports, airfields, and other transportation infrastructure within the archipelago hampered large-scale relief operations. Ruby demanded that it be allowed to conduct relief operations in the SDA, which Topaz refused. In response, Ruby closed its ports and airfields to relief operations. The Government of Topaz (GOT) established a temporary government center at an air base and military reserve station on a minimally damaged island. The GOT restricted the airfield to military and civil defense use.

Highlights from the TTX

Participants' play in the TTX revealed a number of insights into their approaches to seabasing, multinational coalition operations, and HA/DR. As part of TTX conduct, players formed coalitions, planned how they would operate within these coalitions to provide relief to Topaz, and assembled their forces to conduct relief operations.

Seabasing innovation

The types of seabasing assets possessed by a country mattered less than how countries employed the assets they had. Coalitions developed innovative ways to use their available equipment to provide relief to Topaz, including:

- Sectorizing an area of operations (AO), assigning each coalition member a sector in which to operate, and coordinating logistics and command, control, and communications (C3) through an afloat regional humanitarian coordination center (RHCC).

- Leasing commercial cargo vessels to transport forces to the AO.

Shore-based support to the sea base

A critical part of sustaining the sea base was maritime resupply from shore-based ports and airfields. Though we designed the scenario to require players to operate from a sea base, many of their initial planning efforts revolved around identifying shore-based support from nearby logistics hubs. These efforts highlighted how important it is for sea-based HA/DR operations to have maritime logistics support and transportation of supplies from donor countries to ports near the AO.

Impact of the threat environment

The uncertain threat from Ruby and from the insurgency within Topaz in the scenario revealed three implications for future sea-based operations:

- An uncertain threat environment may preclude some countries from participating in the operation.

- Countries that do participate may opt to conduct their operations in areas where they perceive the threat to be either the lowest or non-existent.

- Participating countries—even those operating as part of other coalitions— may rely on other capable militaries for their defense.

Crowded area of operations

PALS participants' decision to limit their forces' exposure to the threat led to a concentration of forces in the northern and central regions of the AO, away from the threat. This required additional coordination to ensure the safety of ships and aircraft operating in a constrained space.

Recognized requirement for interoperability

TTX play did not reveal major interoperability problems, but participants identified areas of concern and advocated for improved interoperability through future

exercises. Several players expressed confidence in the interoperability between their forces and those of other countries; however, the TTX did not stress them. Had the TTX lasted longer, it is likely that interoperability problems would have emerged.

Policy and doctrine limit operations

Several PALS participants were limited by either military doctrine or national policies in the contributions they made to the sea base. In the face of these limitations, players developed innovative alternatives so that their forces could contribute to the response operation.

HA/DR best practices

Participants recommended adopting best practices learned during previous HA/DR operations. These included strong communications among all involved parties and host-nation leadership of disaster relief operations. During future multinational HA/DR operations, PALS participating countries will likely advocate for these best practices to be part of any response operation.

Recommendations

Recommendations for future PALS

Since PALS gives participants the opportunity to discuss new ideas and concepts that are relevant to the emerging security environment in the PACOM AOR, we recommend that organizers structure future events to include interactive discussions and experimentation.

Promote innovation

Participants developed numerous solutions to sea-based multinational HA/DR operations, including combining multiple smaller forces to create a larger-capacity sea base and leasing commercial platforms to transport military forces to the AO. Future PALS events should create ways for participants to work with and enable a diverse set of seabasing options of all sizes and capability levels. For example, future PALS agendas could provide time for participants to present amphibious design concepts being considered by their country or to discuss capability shortfalls as a way of defining new platform requirements.

Develop complementary capabilities

PALS participants discussed how their capabilities could complement one another in order to increase the capacity of the sea base. Future PALS events should continue this dialogue by examining which participants' capabilities might complement others and how they might be used together in future missions.

Encourage joint operations

Encouraging joint participation in PALS by countries' land, air, and sea forces is a way to increase capability and capacity in future operations. For some PALS participants, though, joint operations are in a nascent stage. Future symposiums should encourage participants to consider and evaluate the benefits and contributions of their joint forces in contrast to current concepts of operations. One way to do this is to develop courses of action (COAs) for only navy and marine corps forces and others for joint forces, and then evaluate each during a TTX.

Recommendations for military-to-military engagement

The PALS TTX revealed areas of friction and areas of opportunity that could benefit from discussion at future bilateral military engagements. Such engagements as staff talks, dialogues, and counterpart visits allow for focused and frank discussion of these sometimes sensitive issues.

Advance interoperability

To allay concerns about interoperability, future bilateral military-to-military engagements should place it on their agendas. These discussions should include determining the type of interoperability both parties desire, for what circumstances, and in what mission areas. Moreover, prior to combined operations and exercises, the United States and partner countries should validate communications interoperability.

Understand policy and doctrine

The PALS TTX revealed differences in participants' national policies and military doctrine with regard to HA/DR operations. Future military-to-military engagements should seek to understand how national policy and military doctrine are likely to influence future operations and how to maximize collaboration within national priorities.

Determine acceptable threat level

Some of the countries that participated in the PALS TTX may not be granted permission by their national command authorities to participate in an actual HA/DR operation when a threat is present. During future bilateral military-to-military

engagements, the U.S. side should seek to understand the threat level that is acceptable for partner nations' participation in HA/DR operations.

Recommendations for preparing for multinational operations

In collaboration with partner military forces, the U.S. military should create ways to work with and enable a broad range of capabilities that contribute to multinational operations.

Create exercise regime to prepare for multinational operations

MARFORPAC and PACOM should build on PALS' progress by creating an exercise regime that tests the concepts exposed during the TTX with live forces and more participants from each military. Holding a PACOM co-sponsored HA/DR exercise at the Humanitarian Response Coordination Center (HRCC) in Changi, Singapore, would be one way to do this. Another option would be to incorporate the lessons learned from the TTX into existing multinational exercises on a rotating basis, with the results fed back into future PALS and other TTX events. The exercise regime should focus on security challenges that bring militaries together, including pandemic outbreaks, terrorism, and natural disasters. This would prepare the U.S. military and its allied and partner militaries to conduct multinational, sea-based operations in response to future complex emergencies in the PACOM AOR. Future training should include operations of multiple coalitions of forces, as the PALS TTX did. This would allow participating militaries to refine their procedures for the coordination of coalitions and deconfliction of operations.

Coordinate between coalitions

Most coordination during the PALS TTX occurred within coalitions rather than between them. Any future exercise regime should create mechanisms for political and operational coordination between coalitions. This is because circumstances and operational conditions may change during multinational operations, necessitating changes in military force composition.

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Glossary

AO	Area of Operations
AOR	Area of Responsibility
ASEAN	Association of Southeast Asian Nations
ASW	Anti-submarine Warfare
C2	Command and Control
C3	Command, Control, and Communications
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CFMCC	Combined Forces Maritime Component Commander
CNA	Center for Naval Analyses
COA	Course of Action
DDH	Helicopter Destroyer
EOC	Emergency Operations Center
FMFPAC	Fleet Marine Forces Pacific
FRANZ-TC	France, Australia, New Zealand, Tonga, and Canada
GOT	Government of Topaz
HA/DR	Humanitarian Assistance/Disaster Relief
HMNZS	Her Majesty's New Zealand Ship
ISR	Intelligence, Surveillance, and Reconnaissance
JMSDF	Japan Maritime Self-Defense Force
JSDF	Japan Self-Defense Forces
LCT	Landing Craft, Tank
LHD	Landing Helicopter Dock
LNO	Liaison Officer
LST	Landing Ship, Tank
MDA	Maritime Domain Awareness
MNCC	UN Multinational Coordination Center
MP	Military Police
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
NZDF	New Zealand Defence Forces
OCHA	UN Office for the Coordination of Humanitarian Assistance
PACOM	U.S. Pacific Command
PALS	Pacific Amphibious Leaders Symposium
RHCC	Regional HA/DR Coordination Center

RNZN	Royal New Zealand Navy
RO/RO	Roll-on/roll-off
SDA	Topaz Southern Development Area
SOF	Special Operations Forces
TDF	Topaz Defense Forces
TEMA	Topaz Emergency Management Agency
TTP	Tactics, Techniques, and Procedures
TTX	Table-Top Exercise
UN	United Nations
UNIFIL-MTF	UN Interim Force In Lebanon-Maritime Task Force
US	United States

Introduction

The PACOM Amphibious Leaders Symposium (PALS) annually brings together senior naval leaders of Pacific allied and partner navies and marine corps in order to strengthen their relationships and improve their mutual understanding of seabasing interoperability. As Fleet Marine Forces Pacific (FMFPAC), U.S. Marine Corps Forces Pacific (MARFORPAC) hosted PALS in July 2016. MARFORPAC asked CNA to design and conduct a table-top exercise (TTX) that explored seabasing operations and interoperability during future regional contingency operations.

The TTX allowed representatives of participating militaries to explore seabasing in a combined operational context. (See Appendix 1 for a list of participants.) Officers from allied and partner nations considered the numerous issues involved in operating from a sea base—such as sustaining and defending it—during a multinational humanitarian assistance/disaster relief (HA/DR) operation.

TTX objectives

The setting for the exercise was a fictitious nation—the Republic of Topaz—in the southeastern Indian Ocean west of Sumatra in the 2022 timeframe. We chose a notional geography because setting it in an actual country would have likely irritated any sensitivities that participating countries had with the "host country," thereby allowing political considerations vice operational cooperation to dominate TTX discussion.

We designed the exercise to help participating allied and partner nations discuss cooperative or coordinated actions and response, with the goal of creating a shared understanding of each other's abilities to conduct sea-based operations in support of a crisis ashore. In particular, it challenged participants to discuss how they can work together during operations from a sea base. The initial questions of interest included:

- What capabilities and capacities might PALS participants contribute to a coordinated sea-based HA/DR operation?
- How can PALS participants coordinate to move relief supplies on and off the sea base using surface and air connectors?

- How will the involved units of the many PALS-participating countries communicate with each other?

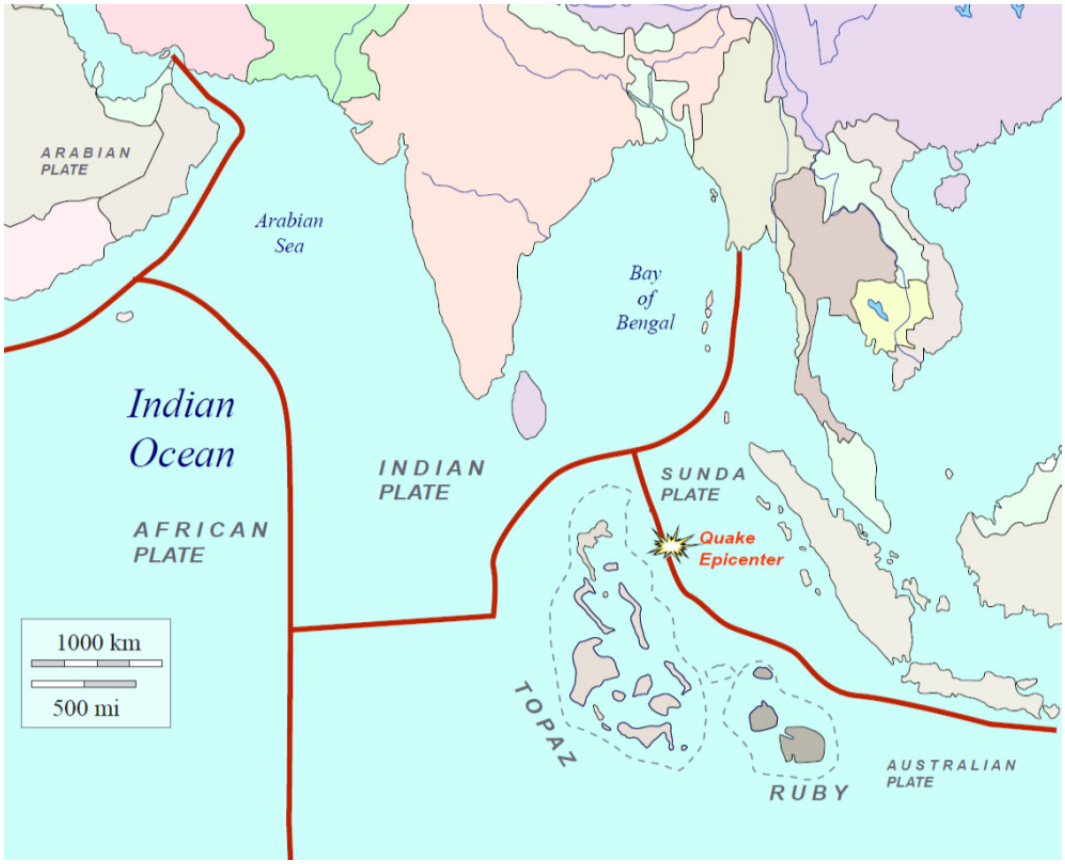
Scenario overview

The scenario included a description of Topaz's history, economy, and order of battle, as well as the relationship between Topaz and its fictitious neighbor—the Kingdom of Ruby. The level of detail in the scenario provided players with a common understanding of the situation, allowing them to apply solutions from their own experiences with similar HA/DR operations. In this scenario, the authoritarian Ruby was a regional rival of the democratic Topaz. Their rivalry centered on a territorial dispute over Topaz's three southern islands—Beech, Pine, and Yew, collectively known as the Southern Development Area (SDA)—where Ruby actively supported an insurgency.

The story begins

In the early morning hours of 14 July 2022, a 9.2-magnitude earthquake struck the Mid-Bay and Birch faults in the Indian Ocean directly off the coast of the Topaz Archipelago, which is about 1,500 nm from the southern tip of India. The earthquake resulted in significant earth movement and shaking. Three hours later, a 300-km section of the northeast side of the Topaz Trench collapsed due to a 7.5-magnitude aftershock along the northwest portion of the trench. This aftershock displaced approximately 400 million tons of rock and sediment and produced a major displacement of water. The tsunami finished what the earthquake had started: most of the country of Topaz lay in ruins. Due to its geography, the neighboring country of Ruby was not affected. Figure 1 shows the geography of the southern Indian Ocean region and the location of the earthquake.

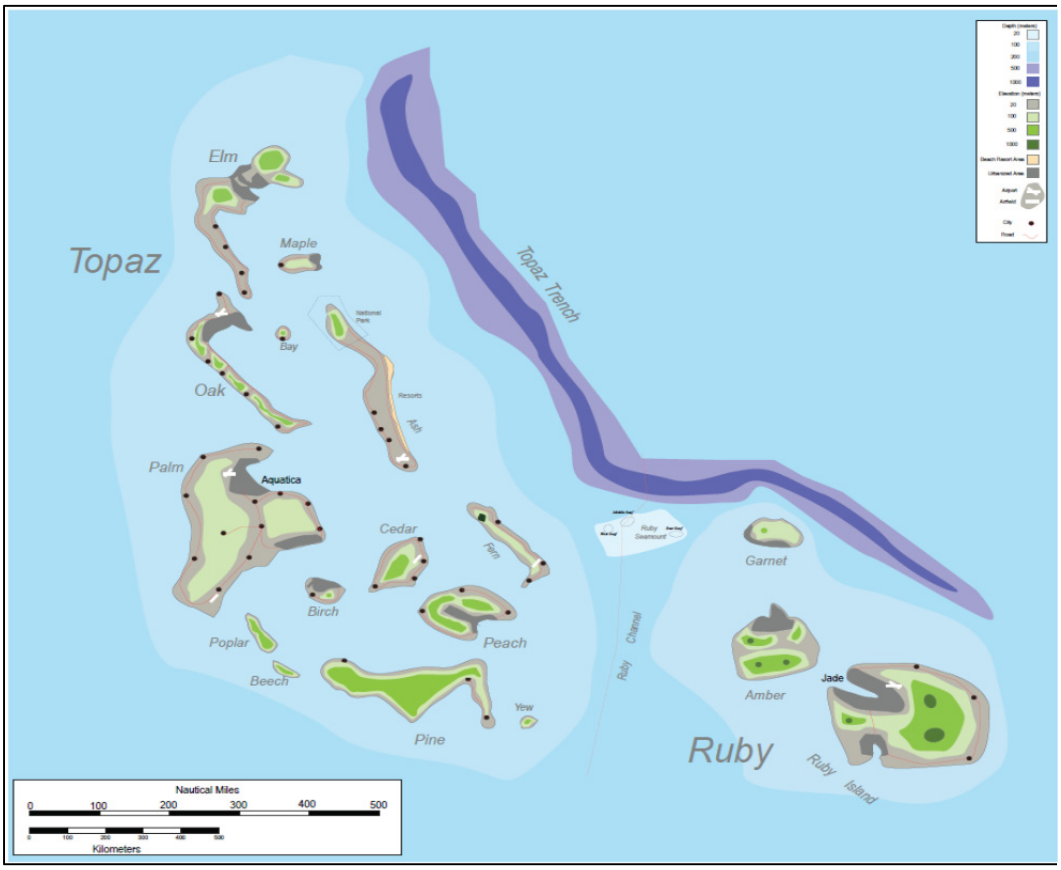
Figure 1. The southern Indian Ocean region, including the location of the earthquake



Topaz is a developed, liberal democracy that has good relations with all of its neighbors save one—its southern neighbor, Ruby. At the beginning of the TTX, much of the country lay in ruins because of the national practice of building infrastructure in low-lying areas. The estimate was that some 2 million inhabitants of Topaz were in need of immediate support for food, clean water, medical assets, and other relief supplies. However, the nearly complete destruction of key ports, airfields, and other transportation infrastructure within the archipelago hampered large-scale relief operations. Only a few small airfields remained usable, which put the entire population of 20 million at risk from exposure, disease, and perhaps starvation. Ruby demanded that it be allowed to conduct relief operations in the SDA, something Topaz refused. Consequently, Ruby closed its ports and airfields to relief supplies until Topaz relented. Intelligence estimates expressed uncertainty regarding the security situation between Topaz and Ruby over relief operations in the SDA—which

includes the islands of Beech, Pine, and Yew. Figure 2 shows the Gem Archipelago, including the Republic of Topaz and the Kingdom of Ruby.

Figure 2. The Gem Archipelago, including Topaz and Ruby



Ruby did not make any overt statements or take any direct actions against Topaz, because the King of Ruby wanted to be seen as helping his neighbor. At the same time, Ruby deployed a submarine in response to Topaz's deployment of two Eurofighter aircraft to patrol over the SDA and clandestinely moved special operations forces (SOF) into the SDA to monitor the situation and support insurgent-led relief operations there. Meanwhile, Topaz—which had had three SOF companies in the SDA, one on each island, when the disaster struck—moved a military police (MP) brigade, along with a SOF headquarters and three additional SOF companies, into the SDA to support disaster relief operations there.

The Topaz Emergency Management Agency (TEMA) activated its earthquake response plan. Shortly thereafter, Topaz Defense Forces (TDF) went on alert and began preparations for force movement and disaster support. TDF forces stationed on Palm

Island were scrambled to Peach Island. Likewise, ships in Aquatica Harbor put to sea with skeleton crews.

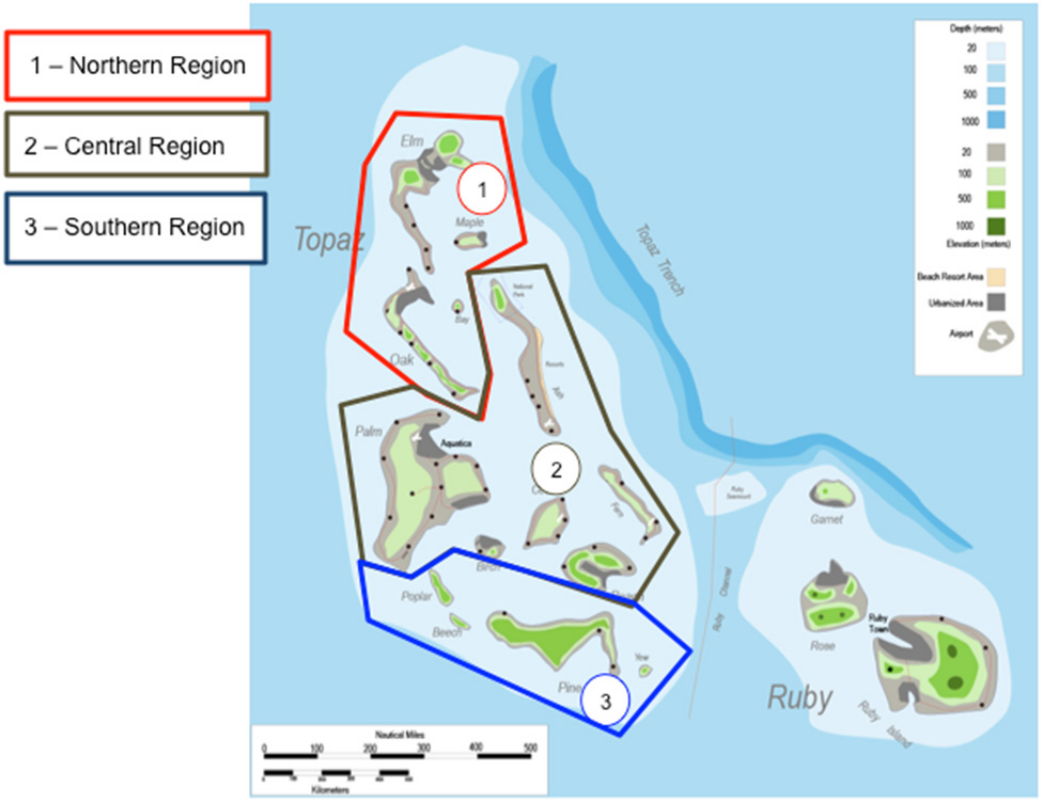
The Government of Topaz established a temporary government center at the air base and military reserve station on Peach Island when all remaining military and civil defense forces converged there in the aftermath of the tsunami. Communications and infrastructure on Peach Island were largely intact, although the government restricted the airfield to military and civil defense use only.

The international community responds

Topaz's primary request for aid was for ships, connectors, and rotary-wing aircraft to help deliver supplies to areas where port and air infrastructure was damaged. The UN Office for the Coordination of Humanitarian Assistance (OCHA) established a forward coordinating point at the TEMA emergency operations center (EOC) at Peach Island Air Station. TEMA and the UN multinational coordination center (MNCC) in Singapore divided the Topaz Archipelago into three geographical areas that corresponded to both their need and the nature of the disaster response:

- **Northern region:** This populous region was mostly affected by the tsunami, with secondary earthquake effects.
- **Central region**: This is the most populous region and was affected by both the earthquake and tsunami. In addition to urban areas that were affected, rural areas in this region, also populous, were geographically isolated because travel on roads and rail networks had been disrupted by the earthquake.
- **Southern region:** This region was not affected by the tsunami but was hard hit by both the earthquake and the continued aftershocks, along with rain and river flooding. Since this region includes the three islands collectively known as the SDA, it had a significant security risk associated with local insurgent groups. The exception was Poplar Island, where no active insurgency existed. Figure 3 shows the three TEMA regions.

Figure 3. TEMA regions



TTX moves

The TTX progressed through three moves that addressed different issues and presented players with new decision challenges.

Move 1: Coalition building

At the beginning of the TTX, the Government of Topaz (GOT) asked PALS participating countries for assistance, and those countries agreed to provide it. Each country's first task was to determine how it would participate in Topaz relief operations.

We designed the game with three broad coalition umbrellas for command and coordination in the response operation, with Japan operating independently. During move 1, players chose which coalition was most appropriate for them to join. Each coalition needed to coordinate logistics, movement of forces, and allocation of UN requirements for relief supplies ashore in Topaz.

To facilitate game play, MARFORPAC gave PALS participants initial assignments to coalitions at the beginning of the exercise. The initial teams were:

- **An Association of Southeast Asian Nations (ASEAN) task force:** ASEAN countries used their disaster response coordinating procedures to manage a combined force from their countries.
- **A United States-led Combined Forces Maritime Component Commander (CFMCC)** coalition of the willing. In this case countries joined the coalition with the United States in a coordinating role.
- **A UN-led coalition:** Countries responded as separate nations under the auspices of the UN.
- **A Japanese national response force:** The Japan Self-Defense Forces (JSDF) operated independently but in coordination with other coalitions in Operation Shattered Jewel.

Game control gave players the opportunity to change and re-organize the initial coalition structure. The two major changes from the initial MARFORPAC coalition structure were the addition of the FRANZ-TC[1] coalition and the Indonesia team's decision to operate independently. **Error! Reference source not found.** shows the coalitions and participants that players chose during the TTX.

[1] The FRANZ-TC coalition included France, Australia, New Zealand, Tonga, and Canada.

Table 1. TTX multinational coordination center

CFMCC	FRANZ-TC	ASEAN	Independent deployers	UN
U.S.	Australia	Malaysia	Indonesia	Bangladesh
Chile	Canada	Philippines	Japan	Maldives
Colombia	France	Singapore		Sri Lanka
Korea	New Zealand	Thailand		
Mexico	Tonga	Vietnam		
Peru				
Taiwan				

Move 2: Sea-based HA/DR planning

At the beginning of move 2, relief forces from each nation were enroute to the Gem Archipelago[2] to participate in Operation Shattered Jewel. Move 2 had three purposes: to enable coalitions to assess and organize their own capabilities and capacities; to coordinate relief operations with the other coalitions; and to provide relief to the Republic of Topaz.

Players worked with the coalition they selected to meet the Government of Topaz's relief requirements. Each coalition then assessed its ability to contribute to meeting Topaz's requirements. Finally, the coalitions coordinated their planning efforts to integrate capabilities from the sea base and deliver relief ashore where needed.

Move 3: HA/DR operations from the sea base

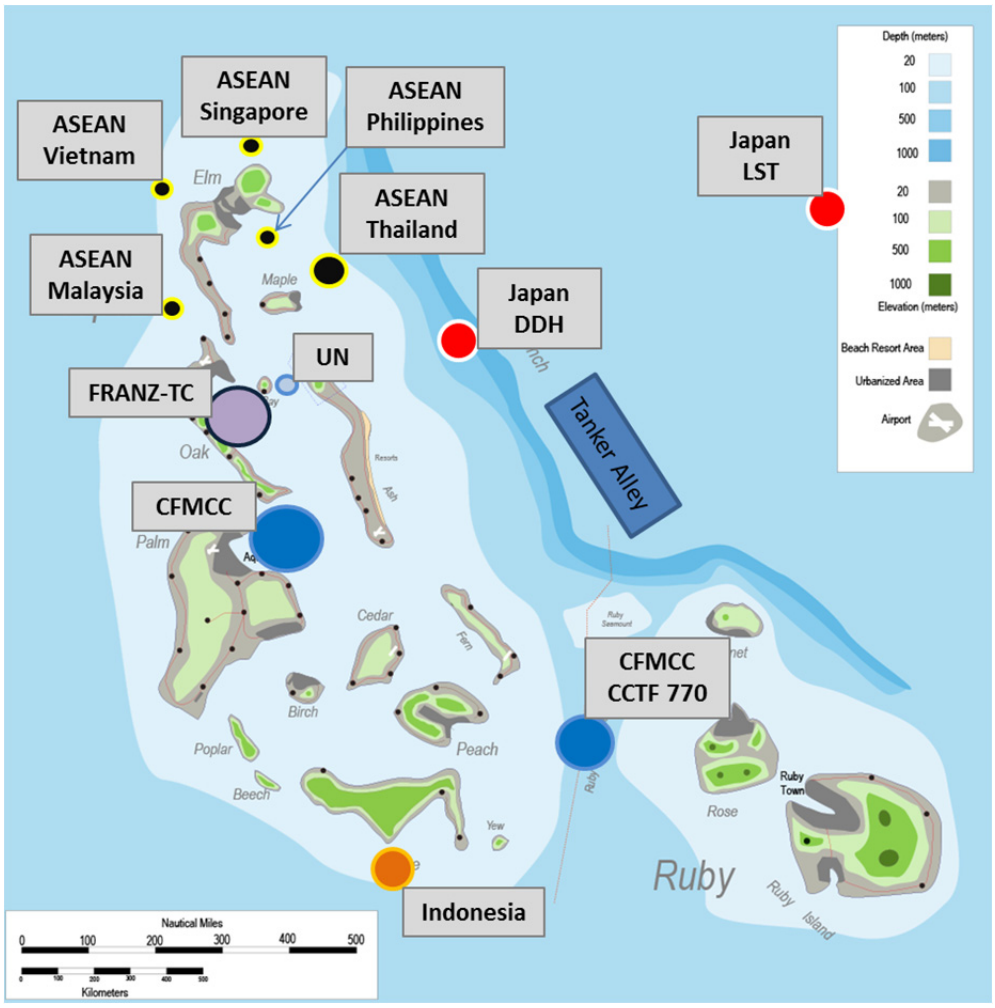
During move 3, players conducted the operations they had planned during move 2, from sea-based assets. In particular, they allocated their available forces to deliver relief to the Republic of Topaz in an uncertain threat environment. To do this, they apportioned forces to provide security to the sea base. An important consideration in

[2] For the purposes of the game, the Gem Archipelago consists of the Republic of Topaz and the Kingdom of Ruby.

move 3 was the flow of supplies and personnel to and from the sea base as the local hub of operations. Players also determined how participating units would communicate with each other and with members of other coalitions. Finally, they provided for the sustainment of forces afloat and ashore through shared logistics resources.

As the circumstances in the scenario changed, PALS participants made changes to their operations as necessary. For example, when they received intelligence on the nature of the threat, some countries decided to operate in other areas of the game geography where the threat was lower. **Error! Reference source not found.**4 shows the laydown of multinational coalition forces during move 3.

Figure 4. Multinational coalition forces near Topaz during move 3



Highlights from the TTX

The dynamic play in the TTX revealed a number of insights into PALS participants' approach to seabasing, multinational coalition operations, and HA/DR. Players formed coalitions, planned how they would operate within these coalitions to provide relief to Topaz, and assembled in the vicinity of Topaz to conduct relief operations. They used multiple, innovative approaches to build and operate from a sea base, though they were challenged to sustain the sea base given the distance from resupply ports and the devastation in Topaz. Domestic legislation and politics, national authorities, and doctrine were constraints. As the TTX unfolded, it became clear that players had differing perspectives on the uncertain threat posed by Ruby's forces.

Seabasing innovation

The PALS TTX demonstrated that the type of seabasing assets possessed by a country mattered less than how countries employed the assets they had in support of multinational HA/DR operations. Coalitions developed innovative ways to use their available assets to provide relief to Topaz.

UN coalition members shared common experiences responding to HA/DR disasters, and they were willing to complement each other's capabilities in order to meet Topaz's requirements. Bangladesh persuaded Sri Lanka and the Maldives to join it in establishing command and control (C2) within a coalition under UN auspices.[3] This arrangement was based on its experience supporting sea-based operations in the UN Interim Force in Lebanon Maritime Task Force (UNIFIL-MTF). The UN coalition addressed its capacity shortfalls by leasing commercial cargo vessels to transport its surface connectors to the AO. Additionally, it selected a narrow mission of delivering relief supplies to Bay Island. This mission was aligned with its capabilities and

[3] South Asian players noted that the presence of an Indian player in PALS 16 would likely have altered this dynamic. Had an Indian player been present, some South Asian militaries would have been likely to follow India's lead in determining whether to establish a combined C2 coalition structure.

minimized its reliance on other coalitions. The UN coalition did, however, avail itself of "outer circle" force protection by Australian ships operating in the vicinity. Also, it did use Sri Lanka's niche capabilities in small boat operations for close-in force protection of coalition forces. Additionally, Maldives Marines provided at-sea protection to UN coalition forces and ground force protection on Bay Island.

Members of the ASEAN coalition contributed relatively small, though capable, forces to the operation. Coalition members sectorized the AO and assigned each coalition member an area in which to operate. One advantage of this arrangement was that it avoided interoperability issues, at least in the near term, by keeping military forces in national groupings. Coalition members coordinated on logistics and command, control, and communications (C3). The coalition expected that, through coordination with the regional humanitarian coordination center (RHCC), members with excess capacity would help backfill requirements unmet by members with less capacity. However, coordination through the RHCC was not stressed by game play. Taken together, the ASEAN coalition established a large sea base, though they operated it in a federated fashion. This included each country replenishing its own forces, though coalition members agreed to coordinate on logistics when necessary.

Despite participants' limitations and challenges, the innovative seabasing solutions developed during the PALS 16 TTX demonstrate a broad range of concepts for a multi-national sea base. These concepts would benefit from further experimentation and testing during live exercises in order to fully evaluate their merits for responding to a natural disaster from a sea base.

Shore-based support to the sea base

Without shore-based support to sustain it, a sea base will not be able to operate for very long. During the TTX, players' planning and operational efforts justifiably focused more on the logistics of sustainment and supply of the sea base than on the mechanics of delivery of relief ashore. A critical part of sustainment of the sea base was resupply from shore-based ports and airfields. This was a notable development, since the TTX scenario was designed to force players to operate from a sea base. Despite this, many of the players' planning efforts revolved around identifying shore-based support to the sea base. These efforts highlighted how important it is for sea-based HA/DR operations to have maritime logistics support and transportation of supplies from donor countries to ports near the area of operations (AO).

Several players approached Australia to request use of the airfields in the Cocos Islands, due to their proximity to Topaz and Ruby. Australia and the members of its FRANZ-TC coalition also planned to use the Cocos Islands airfield to establish an air bridge as an alternative to sustainment flights from more distant Perth. However, the

Australian players decided that the capacity of the airfield was too limited to meet their operational requirements for relief cargo, let alone sustainment for other coalitions. As a result, the FRANZ-TC coalition reserved the airfield for its own use and offered alternative means to meet the sustainment demands of other coalitions. Initially, FRANZ-TC considered using LHDs as shuttle ships between Perth and the sea base. Ultimately Japan's decision to use its DDH and LST as shuttle ships to resupply the coalitions operating in the northern region caused FRANZ-TC to keep its LHDs in the vicinity of Topaz to deliver relief ashore.

The desire for safe and effective sea-based operations was an additional motivation for TTX players to seek shore-based support. U.S. players requested access to the one remaining operational airfield on Topaz at Peach Island Air Station. Although the scenario limited use of the airfield exclusively to GOT and TEMA aircraft, the CFMCC requested access for anti-submarine warfare (ASW) flights to monitor the maritime space and activities by Ruby there. Game adjudicators granted only CFMCC P-8 and E-2 aircraft access to the air station.

The need to decrease the time required to deliver relief supplies ashore was also a motivation for some TTX players in identifying shore-based support to the sea base. For example, Thai players offered Phuket as a closer and therefore more suitable port facility and airfield for the ASEAN coalition's operations than Utapao, which had been used in previous real-world HA/DR operations.

Operating independently, Japan sought to leverage its strong relations with Ruby to request access to its ports and airfields to support relief operations. Had Japan been able to operate with support from Ruby's ports and airfields, it would have drastically reduced the time necessary to deliver relief supplies to Topaz. Relations between Topaz and Ruby, however, were so frayed that Ruby denied the request. Japan's creative approach demonstrated not only its preference for shore-based support to its sea-based forces, but also its willingness to risk planning its relief operations in different ways from other members of the multinational coalition. Indeed, Japan was the only player in the TTX that requested access to Ruby's ports and airfields. In the TTX, this risk did not pay off; however, this move may portend greater JSDF willingness to operate in innovative ways within the larger framework of the international community.

An advantage unique to sea-based operations is that the mobility of the sea base affords it flexibility in both avoiding and responding to sea- and shore-based threats. Some TTX participants do not have the capabilities to respond to the uncertain threat present in the TTX without outside assistance. Generally, TTX participants were less concerned about the threat posed by the insurgents in Topaz's SDA than about the maritime threat posed by Ruby, including the unlocated submarine. Because most players did not possess ASW capabilities, many relied on coordination with the CFMCC coalition for protection from the submarine threat. The CFMCC itself

depended on shore-based aviation assets, including P-8s and E-2s, to provide a tactical picture for ASW and maritime domain awareness (MDA) more generally.

Impact of the threat environment

Even though the TTX scenario was an HA/DR mission, it included an uncertain threat from a regional rival of the disaster-affected country and from an insurgency within the country. The at-sea threat posed by Ruby's unlocated submarine caused much greater concern among TTX participants than the insurgency, which was limited to Topaz's southern region. Over the course of game play, it became apparent that several TTX participants did not sufficiently appreciate the effect that the uncertain threat would have on their operations. The TTX revealed three implications of an uncertain threat for a future sea-based multinational HA/DR operation:

- An uncertain threat environment may preclude some countries from participating in the operation.
- Countries that do participate may opt to conduct their operations in areas where they perceive the threat to be either the lowest or non-existent.
- Participating countries—even those operating as part of coalitions—may rely on other capable militaries for their defense.

Participation

The game revealed that even low-level, uncertain threats can limit participation of some coalition members—including highly capable ones. Most players were willing to tolerate the uncertain threat posed by the Ruby-aligned insurgents in Topaz. However, some participants expressed concern about the unlocated Ruby submarine. This became especially clear in move 3, when several players noted that a fuller understanding of the threat environment would have affected the assets they chose to bring, at a minimum, and might even have prevented their national governments from authorizing their participation.

The Canadian players stated during move 1 that their national policy is to conduct HA/DR operations only in benign environments. Had the threat environment changed after Canadian forces arrived in the AO, the commander on scene would have been responsible for determining whether a threat to his forces was present. During PALS, the Canadian players provided three ships to the FRANZ-TC coalition, which operated in the northern region—the farthest region from Ruby and the insurgency in the SDA. In a real-world scenario, however, the presence of even an uncertain threat might preclude participation by Canadian forces.

Limiting exposure to the threat

The presence of land- and sea-based threats was a major deciding factor in where coalitions chose to operate. Most of the coalitions in the TTX chose to conduct operations where the need was greatest and the threat was lowest. FRANZ-TC operated in the northern region, where the threat was perceived to be lowest, and it planned to coordinate ASW with the CFMCC. The ASEAN coalition likewise operated in the northern region. Because Japan's policy prevents it from arming its ground forces, it had to abandon plans to deliver aid in Topaz's southern region in favor of shuttling cargo to and from the sea base in the northern region. The shuttle ship mission provided the sea base with resupply from capable assets while Japan minimized the risk to its forces. The CFMCC coalition operated in the central region. In the PALS TTX, the greatest need for relief supplies, in fact, was in the northern and central regions, away from the insurgency in the southern region.

This preference for conducting HA/DR operations in a benign environment led to a concentration of sea-based assets in the northern and central regions. Even though this distribution of forces concentrated them where the demand for relief supplies was greatest, it also resulted in less coverage of the southern region by international forces. Only Indonesia chose to operate in the southern region to deliver relief supplies to the disaster-affected populations there. Had game play continued longer, this might have created problems from a disaster relief standpoint.

Reliance on the CFMCC

Players with greater ASW capabilities, particularly the U.S.-led CFMCC, were more willing to operate in the uncertain threat environment. Other players indicated that had they been more aware of the threat, they either would have planned their force package differently, to include greater ASW capabilities, or would have relied on coordination with the CFMCC for protection. This reveals that some coalitions' planning efforts did not properly prepare them to operate in an AO with a potentially hostile submarine present. This demonstrates that more capable forces may be called upon to defend other forces operating in the vicinity—even those operating as part of another coalition structure.

Crowded area of operations

As discussed previously, PALS participants' decision to limit the forces' exposure to the uncertain threat environment led to a concentration of forces in the northern and central regions of the AO. Consequently, players recognized the need to ensure the safety of ships and aircraft from different countries operating in a constrained space.

The ASEAN coalition, for example, assigned its afloat RHCC to coordinate ship movements and air traffic within its coalition, which was operating in a small area close to the FRANZ-TC and UN coalitions. In response to the crowded AO and the uncertain threat, the CFMCC coalition advocated for greater operational coordination between coalitions and cooperation on ASW rather than relying on either ad hoc communication or coordination through the MNCC in distant Singapore.

While the other coalitions were willing to collaborate with the CFMCC, the TTX did not last long enough to address the C2 issues that would have arisen in a similar real-world operation. Despite the sheer number of forces in the AO, coalitions had limited deconfliction of operations as well as limited coordination of ASW, air traffic control, frequency management, ISR (intelligence, surveillance, and reconnaissance), and rules of engagement. Further game play might have elicited greater discussion of these issues by players while they attempted to carry out their planned operations. Australia and New Zealand players argued for stronger C2 on these issues of concern. Yet players from multiple coalitions noted the central role that politics plays in creating and maintaining C2 in such a large and diverse coalition of military forces. This factor argues for early discussion of the necessary level and purpose of C2 in future multinational contingency response operations.

Interoperability: recognized need, partial solutions

During the TTX, each coalition planned operations, taking into account its component forces' level of interoperability. The CFMCC and FRANZ-TC coalitions enjoyed high levels of interoperability and therefore conducted integrated operations to the extent possible. UN coalition forces shared commercial platforms to transport their forces to the AO and conducted integrated operations once there. The ASEAN coalition minimized its need for interoperability by sectorizing its AO so that its forces were effectively operating independently. Japan and Indonesia operated independently, which minimized their need for interoperability. However, Japan had a high degree of interoperability, especially with the CFMCC and FRANZ-TC, and was able to cross-deck relief supplies between its ships and CFMCC ships using surface connectors. While these solutions were effective in the TTX, had game play continued longer, interoperability issues likely would have emerged.

Although game play did not reveal any interoperability problems, players identified areas of concern and advocated for improving interoperability through exercises and experimentation. An extensive track record of combined exercises and compatible equipment gave several players confidence in the interoperability between their platforms and those of other countries. Some ASEAN and South Asian countries had

track records of operational cooperation with neighboring countries and therefore were comfortable with the level of interoperability between their platforms. These countries believed that their platforms, surface connectors, and aerial connectors would likely complement each other's capabilities in instances where one country could not meet the relief requirements in its AO. Other PALS participants, however, identified interoperability as a great challenge that should be addressed through all possible military-to-military fora.

Policy and doctrine limited operations

During the TTX, several PALS participants could only make limited contributions to the sea base, due to either their military doctrine or their national policies. Players developed innovative solutions for how they could contribute despite these limitations. The limitations, nevertheless, have implications for future multilateral coalition operations.

The PALS TTX showed that participating countries' doctrinal force-employment practices limited the contributions they were willing to make to multinational coalition operations, even when those contributions were operationally beneficial. Military doctrine, in the sense of how countries use their seabasing forces, limited the types of ships PALS participants contributed during the TTX. RO/RO ships, for example, could have delivered large quantities of relief supplies to Topaz, but they were not included by the countries that have them. This was because RO/ROs are commercial, vice military, vessels, and the countries that have them do not nationalize them under military command except in the case of a national emergency, which the scenario in the PALS TTX was not. On the other hand, the lack of port facilities in Topaz might have made it impossible for RO/RO ships to deliver relief supplies unless they offloaded their cargo at sea. Players, however, did not discuss the compatibility of air and surface connectors with RO/RO ships since their doctrine did not permit the use of those ships.

Several players noted that their national governments restrict the commitment of their military forces in overseas HA/DR operations to permissive threat environments. Japanese national policy, for instance, does not permit its self-defense forces to deploy to overseas HA/DR missions with weapons. This was problematic in the PALS TTX scenario because there was an active insurgency on some of the islands in Topaz where the JSDF initially planned to deliver relief supplies. JSDF players came up with the novel solution of delivering relief supplies alongside Indonesian forces, which could provide force protection to the JSDF. Japan abandoned this solution for yet another national policy reason: the JSDF are prohibited from transporting armed foreign military forces aboard their ships and aircraft. Ultimately JSDF players chose the mission of shuttling relief supplies from resupply

ports to the sea base, thus removing their forces geographically from the uncertain threat posed by Ruby's forces. Canadian players similarly stated that their national government does not permit overseas HA/DR operations unless the environment is benign, as determined by its commander in the AO. At the end of the game, Singaporean players also commented that they likely would be unable to participate in a similar scenario if their national government viewed the operation as defense rather than HA/DR.

Though national policy is beyond the scope of the PALS TTX, it does bear upon countries' willingness to commit their forces to multinational coalition operations. This issue may be very complicated in the future, especially in areas with active insurgencies and ineffective governing authorities where conditions on the ground can change quickly.

Despite divergences in national policy and military doctrine, logistics was an area where players were readily able to contribute to coalition operations. This preference was reflected in Japan's decision to conduct a shuttle ship mission to the northern region in support of other coalitions' sea bases there.[4] The shuttle ship mission also had the advantage of obviating the need for JSDF to go ashore, thereby mitigating risk to their unarmed forces.

Intangible factors such as national policy and military doctrine prevented some countries participating in the PALS TTX from contributing assets and conducting operations that they otherwise had the capability to do. Understanding countries' national policies on overseas HA/DR operations and their military doctrine on HA/DR is critical to effective planning and execution of future multinational contingency operations. These intangible limits determine the extent of a country's contribution as much as its actual military capabilities. It is important to note that players recognized the limitations in their national policy and military doctrine at various stages of the TTX as the extent of the threat environment became clearer to them. Similarly in a real-world scenario, these issues could affect HA/DR operations that are already underway.

[4] The JSDF originally planned to deliver relief supplies to the southern region, where the threat was greatest. This was based upon their strong relationship with the fictitious country of Ruby.

HA/DR best practices

During the TTX, participants recommended best practices from previous HA/DR operations that they had either led or participated in, or that had been conducted in their respective countries. The structure of the TTX did not always allow these best practices to be employed by players. However, these practices—in particular, strong communications and a host country lead—were advocated by multiple players and are therefore likely to be their preferences in future multinational HA/DR operations.

Strong communications

Strong communications not only among multinational coalition members but also with the broader community of responders will be necessary in a future contingency operation of this size and type. TTX participants remarked on the absence of groups—such as non-governmental organizations (NGOs), host nation civilian authorities, and their own embassies in Topaz—that would be present in an actual HA/DR operation. They stressed the need for communication with not only the other militaries present, but also with these other groups that would be present in an HA/DR operation. Multiple players, for example, emphasized the importance of the United Nations in negotiating with Ruby in order to decrease the threat that its forces posed to the multinational coalition forces. Were the UN to convince Ruby to completely withdraw its forces from the vicinity of Topaz, for example, players' concerns about operating in an environment with a threat would be moot. Players also noted the importance of LNOs being assigned to other coalitions, to the MNCC in Singapore, and to the Government of Topaz on Peach Island. In fact, the ASEAN coalition deployed a mobile coordination cell to Peach Island to coordinate the coalition's operations with the GOT. Players also highlighted the importance of leveraging the resources and knowledge in their own embassies in Topaz to coordinate much of the relief effort. Given the necessity of strong communication channels, players advocated cultural competency as a necessary prerequisite for understanding both other coalition partners and Topaz.

Host country lead

HA/DR operations must support the host nation's government and disaster management authorities. These host nation authorities set priorities for relief operations and define the desired end state for them. Establishing an end state allows participants in a multinational response operation to know when the response will conclude and what will make it successful. Several countries noted the importance of the host country either being in charge or being seen to be in charge of the delivery of relief supplies to disaster-affected populations. Philippine players

recommended that, prior to natural disasters, countries' disaster management authorities be trained to synchronize the response efforts from other countries. Sri Lankan players noted that getting the relief supplies from the shore to the point of delivery is the most difficult part of HA/DR operations: the personnel who distribute the supplies must speak the local language and be able to navigate degraded infrastructure, and such personnel may be hard to find. This argues for creating cultural competencies within sea-based forces of neighboring countries and for establishing relationships between disaster management authorities and sea-based forces.

Recommendations

Natural disasters occur at regular intervals in the PACOM AOR, and military forces are frequently called upon to render aid to affected populations there. While sea-based HA/DR operations are rare, they do occur.[5] In such cases, the military forces that respond to the disaster will, at the very least, be operating in proximity to one another whether or not they choose to form or join coalitions. Operating in a coalition structure allows participants to pool resources to provide for their own needs and thus remain on station longer to provide relief for the disaster-affected country.

In this section, we present recommendations based on our observations of TTX play. We divide these recommendations into three categories: recommendations for PALS, recommendations for bilateral military-to-military engagements, and recommendations for multilateral HA/DR operations. Recommendations in this final category apply specifically to sea-based HA/DR operations, although they can be applied more broadly to all HA/DR operations conducted by military forces.

Recommendations for future PALS

Future PALS events will provide participants with the opportunity to discuss new ideas and concepts that are relevant to the emerging security environment in the PACOM AOR. Accordingly, we recommend that PALS organizers structure events to allow interactive discussions and experimentation. This would provide a venue to exchange new ideas and examine developing concepts to determine whether they merit inclusion in future exercises, military-to-military exchanges, and real-world operations.

[5] During Tropical Cyclone Winston relief operations in Fiji in February 2015, for example, the New Zealand Defense Forces (NZDF) conducted sea-based relief operations from HMNZS *Canterbury*. See "Canterbury Tales Re-told: RNZN Multirole Vessel Delivers," *Jane's International Defense Review,* 8 August 2016.

Promote innovation

Participants developed numerous solutions to problems that arose in the sea-based multinational HA/DR operations in the TTX. The UN coalition countries demonstrated their experience in coordinating HA/DR responses, innovative problem-solving, and a willingness to complement each other's capabilities to achieve coalition goals. All of these attributes were force multipliers that enhanced the overall capability of their forces and platforms when working together. Although the UN coalition's seabasing contribution was relatively smaller than that of some other coalitions participating in PALS, its members adapted their capabilities to Topaz's relief requirements and developed the novel solution of contracting commercial ships to transport their military assets to the AO. Likewise, the ASEAN coalition's multiple smaller forces taken together created greater capacity by operating in proximity to one another and coordinating their operations.

Taking these two examples from the PALS 16 TTX as guidance, future PALS events should create ways for participants to work with and enable a diverse set of seabasing options of all sizes and capability levels. For example, future PALS agendas could provide time for participants to present amphibious design concepts being considered by their country or to discuss capability shortfalls as a way of defining new platform requirements.

Develop complementary capabilities

PALS provides an opportunity for participants to discover and discuss the benefits of their areas of complementary capabilities. Japan's efforts to work with Indonesian ground forces for force protection—though eventually abandoned—showed how participating militaries can complement and reinforce each other's capabilities in operations. Singapore's deployable RHCC capability similarly complemented Thailand's afloat C3 capabilities, which enabled coordinated ASEAN coalition operations. Military forces with complementary capabilities working together increased the efficiency of the sea base. Future PALS events should provide participants with the opportunity to examine which of their capabilities may complement those of other participants and how they might use them together in future missions.

Encourage joint operations

Like examining complementary capabilities, encouraging joint participation in PALS by countries' land, air, and sea forces is a way to increase capability and capacity in future operations. For some PALS participants, joint operations are in a nascent stage. Bangladesh, for example, sent a Bangladesh Army engineering team and LCTs

to the Topaz AO, but did not consider whether Bangladesh Air Force helicopters could usefully contribute to the sea base. Similarly, Maldives Marine Corps participants did not consider whether Maldives Coast Guard surface connectors could be embarked on the UN coalition's commercial cargo ship to be brought to the AO. While not all joint operations could usefully contribute to a sea base, PALS provides a venue where the topic can be considered within country delegations and multinational coalitions. Future symposiums should consider and evaluate the benefits and contributions of participating countries' joint forces in multinational operations. One way to do this is to develop courses of action (COAs) for only navy and marine corps forces and others for joint forces, and then evaluate each during a TTX.

Military-to-military engagement recommendations

The TTX revealed areas of friction and areas of opportunity that could benefit from discussion at future bilateral military engagements. Bilateral military engagements, such as staff talks, dialogues, and counterpart visits allow for focused and frank discussion of these sometimes sensitive issues. Moreover, a bilateral venue allows both countries the time and space to plan for and take concrete actions toward mutually agreed upon goals. Including the issues revealed during PALS on the agendas of bilateral military interactions can increase mutual understanding and improve future interactions.

Advance interoperability

Although the PALS TTX did not expose major interoperability problems, interoperability was an area of discussion and concern for PALS players. To allay concerns about interoperability, future bilateral military-to-military engagements should include it on their agendas. These discussions should determine what type of interoperability both parties desire and for what circumstances. For instance, do the militaries want to be able to conduct integrated operations or to operate in proximity to one another in an area of operations? Also, the militaries should decide the mission areas in which they want to be interoperable, since that will dictate the equipment, C2, and TTP that will need to be interoperable.

The PALS TTX did not address more complex interoperability issues such as C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) and technical interoperability. These issues should be included in both bilateral engagements and future at-sea exercises. In both venues, U.S. and partner militaries will have the opportunity to validate communications

interoperability, identify the remaining substantive interoperability challenges their militaries face, and determine how they can best address them.

Understand policy and doctrine

PALS participating countries have differences in their national policies and military doctrine for HA/DR operations. Specifically, national governments have different policies on committing military forces to HA/DR operations with a threat present. There may, however, be other areas of divergence in national policies in HA/DR. Future military-to-military engagements should seek to understand how national policy and military doctrine are likely to influence future HA/DR operations and how collaboration will be best achieved given policy and doctrinal limitations. Improved understanding will enable both countries to identify opportunities to work together during future regional crises.

Determine acceptable threat level

It is possible that in future multinational HA/DR operations, responding military forces could be threatened by a wide range of actors, from criminals to terrorists to armed insurgents. Therefore, the United States and its partner countries should discuss their respective views on the acceptable threat level for military participation in HA/DR operations during future bilateral military-to-military engagements. Moreover, any threat present in an HA/DR operation will require the substantial coordination of participating militaries. Further discussions should focus on how this coordination will be done so as to ensure the delivery of relief to those who need it most while not subjecting responding forces to excessive risk.

Recommendations to prepare for HA/DR operations

In collaboration with partner military forces, the United States should prepare for future multinational HA/DR operations by building on the lessons learned during the PALS 16 TTX, multinational exercises, and previous HA/DR operations. Key to this preparation is creating ways to work with and enable a broad range of capabilities that contribute to multinational operations.

Create exercise regime to prepare for multinational operations

MARFORPAC and PACOM should build on PALS' progress by creating an exercise regime that tests the issues identified during the TTX with live forces and more participants from each country's military. For example, future exercises could examine such issues as the amount of shore-based support necessary for sea-based operations or the level of equipment and communications interoperability required to respond to contingencies. A PACOM co-sponsored HA/DR exercise at the Humanitarian Response Coordination Center (HRCC) in Changi, Singapore, would be one way to do this. Another option would be to incorporate the lessons learned from the TTX into existing multinational exercises on a rotating basis with the results fed back into future PALS and other TTX events. The exercise regime should focus on security challenges that bring militaries together, including pandemic outbreaks, terrorism, and natural disasters. This would prepare the United States and its allied and partner militaries to conduct multinational, sea-based operations in response to future complex emergencies in the PACOM AOR. Moreover, it would improve U.S. relations with allied and partner militaries.

Coordinate between coalitions

More coordination occurred within coalitions than between them during the TTX. Future exercises should stress the coordination mechanisms for political and operational coordination that participants put in place. Conditions within the host country may change rapidly during HA/DR operations, thus necessitating political reappraisal by participating military forces. Coordination mechanisms that can adjust to changes in force composition, location, and contributions should be in place at the outset of an operation, to allow for changes as circumstances change. The United States and partner militaries should develop these types of coordination mechanisms during future command post, field training, and at-sea exercises.

Future training events should include multiple coalitions of military forces so that participating militaries can refine their procedures for deconfliction and coordination between coalitions. This can be accomplished first in command post events and later in at-sea environments. Namely, the afloat RHCC used by the ASEAN coalition would be a promising concept to test in future exercises with Southeast Asian navies. Cross-decking relief supplies from JMSDF DDHs and LSTs to U.S. and other countries' seabasing assets should also be included in future at-sea exercises.

Appendix 1: PALS 16 TTX participants

PALS participants included navy, marine corps, and army leaders from 22 Asian, Latin American and NATO countries. Some of them had led the type of sea-based HA/DR operation that the TTX scenario posited. In addition, many PALS participants had long-standing relationships with the other militaries at PALS. The combination of their long, distinguished service records, extensive, relevant operational experience, and deep relationships resulted in highly sophisticated discussions during the TTX. Below is a by-country listing of PALS participants, including billet titles. For the sake of brevity, we do not list the aides, translators, and action officers within each country's delegation, although their contributions were central to the effectiveness of the PALS TTX.

Australia

Commander, Australian Fleet

Commander, Third Brigade

Bangladesh

Commodore Naval Aviation

Canada

Commander, 5th Canadian Mechanized Brigade-Group

Chile

Commandant of the Marine Corps

Colombia

Commandant of the Marine Corps

France

Commander, French Armed Forces New Caledonia

Head of International Affairs Office, Joint Headquarters New Caledonia

Indonesia

Commandant of the Marine Corps

Assistant Chief of the Indonesian Navy for Operations

Assistant for Planning to Indonesian Marine Corps Commander

Staff Officer for International Cooperation

Japan

Commanding General, Japan Ground Self-Defense Forces Research and Development

Deputy Chief of Staff for Administration, Western Army

Director General J5, Joint Staff Office

Commander, Mine Warfare Fleet

Commanding Officer, Mine Warfare Support Center

Amphibious Operations, Mine Warfare Fleet

Amphibious Staff, Joint Staff Office

Malaysia

Deputy Chief of Navy

Maldives

Commandant of the Marine Corps

Mexico

Marine Corps Coordinator of the Mexican Secretariat of the Navy

New Zealand

Commander Joint Forces

Commanding Officer, HMNZS *Canterbury*

Peru

Commandant of the Marine Corps

Battalion Commander, Peruvian Marine Corps

Philippines

Commandant, Philippine Marine Corps

Deputy Commander, Philippine Fleet

Republic of Korea

Chief of Staff, ROK Marine Corps, North Western Island Defense Command

Commodore, Amphibious Squadron 53

Chief of Logistics Management Branch, ROK Marine Corps Headquarters

Chief of Doctrine Development Branch, ROK Marine Corps Headquarters

Force Structure Chief, ROK Marine Corps Headquarters

Singapore

Chief of Staff, General Staff, Army

Deputy Chief Guards Officer, Army

Commanding Officer, 191 Squadron

Sri Lanka

Commander of the Navy

Secretary to the Commander of the Navy

Taiwan

Chief of Staff, Taiwan Marine Corps

Assistant Deputy Chief of the General Staff (J6)

Executive Officer, Fleet Dock Landing Ship 193

National Defense University Instructor

Thailand

Chief of Staff, Royal Thai Fleet

Commandant, Royal Thai Marine Corps

Tonga

Component Commander, Air Wing

Commanding Officer, VOEA *Savea*

Vietnam

Deputy Chief of Staff for Naval Infantry and Naval Special Operations

Vice Director, Naval Operations Division, Ministry of National Defense

United States

Commanding General, MARFORPAC

Commanding General, I MEF

Commanding General, III MEF

Commander, Seventh Fleet

Commanding General, Third Marine Division

Director, Amphibious Requirements, Office of the Chief of Naval Operations

Commander, Naval Surface Force Atlantic

Commander, Expeditionary Strike Group Seven

Commanding General, Fourth Marine Division

Director, MCCDC Seabasing Integration Division

Fleet Marine Officer, Third Fleet

Fleet Marine Officer, Seventh Fleet

Chief of Staff, Military Sealift Command

Commander, Military Sealift Command Pacific

Commander, Naval Beach Group One

Commander, Expeditionary Warfare Training Group Pacific

Commodore, Military Sealift Command Pacific

Commodore, Maritime Prepositioning Ships Squadron Three

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