

AFTER ACTION REPORT

Limón Bay Exercise

March 28-30, 2006



National Response Team/Panama Canal Authority

Promulgated May 2006



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Executive Summary

The Limon Bay Exercise After Action Report (AAR) is intended to assist the Autoridad del Canal de Panamá (Panama Canal Authority) (ACP) and the National Response Team (NRT) improve preparedness and response capabilities in the Panama Canal (hereinafter referred to as “the Canal”). This exercise strengthened the relationship between the ACP and NRT and provided an opportunity to test the Memorandum of Agreement (MOA) signed between ACP and NRT in 2002.

The Limon Bay Exercise was a training, exercise, and evaluation evolution. The exercise focused on achieving three key objectives: evaluate the ability of ACP and NRT to jointly implement response actions in accordance with the Memorandum of Agreement; appraise ACP and NRT ability to identify and mitigate a hazardous materials incident; and assess their ability to undertake a thorough planning cycle using the Incident Command System (ICS) (as it forms the basis for the response structure in the ACP’s Contingency Plan).

Training sessions were provided on facets of the Incident Command System. Special topic briefings were presented by NRT representatives to provide additional information to the exercise participants on each member organization’s capabilities and response processes. The capstone notification and tabletop exercise (which included a scenario resulting in a 300 barrel oil spill, the formation of a dense vapor cloud resulting from the spillage of sulfuric acid, and the release of containers loaded with potentially explosive pesticide at the Atlantic entrance to the Canal) tested the objectives set by the exercise design team.

The Limon Bay Exercise also provided a venue for the ACP to demonstrate its exemplary qualified personnel, technical capability, and bolstered resource assets. The exercise met the objectives set forth prior to the exercise, revitalized and improved the NRT and ACP coordination, and reinforced the commitment by both organizations to continue their future coordination. Furthermore, the exercise cemented the appreciation for ICS and the Panama Canal Area Contingency Plan among all exercise participants.

Several areas for improvement were identified by exercise participants to facilitate future joint ACP/NRT responses. They include maintaining and enhancing the NRT-ACP working group; improving coordination processes between the two organizations and their partner and member organizations and increasing the number of NRT agencies that have implemented the Incident Specific Agreement funding process.

Several recommendations and opportunities for improvement were identified during the exercise, and are detailed in the Exercise Evaluation section of this Report. The suggested improvement actions offered in this report are recommendations. In some cases, the ACP or NRT may determine that particular tasks and activities are outside of their scope and capability at the present time or in the future. Similarly, alternative solutions may be identified that are more effective and efficient.

Exercise Overview

Dates and Location

Pre-exercise preparation of the Incident Briefing (ICS 201) was conducted by ACP personnel on March 23, 2006. This briefing was used as the starting point of the exercise held from March 28 to March 30, 2006, in Panama City, Republic of Panama. The training development and the notification exercise were conducted on Tuesday, March 28, 2006, at the ACP Training Center Building 702, Balboa. Facilitated exercise play, held on Wednesday, March 29, 2006, and the hotwash, held on Thursday, March 30, 2006, were also both conducted at the ACP Training Center Building 702, Balboa.

Participating Organizations

Multiple offices within ACP and multiple NRT member agencies as well as representatives from the U.S. Embassy participated in the exercise.

ACP Offices

- National Public Affairs (AECN)
- Environmental Management Division (ESM)
- Canal Protection Division (ESC)
- Maritime Training Branch (HRTM)
- Transit Operations Division (MRT)
- Oil Pollution and Aquatic Vegetation Control Branch (ESMV)
- Emergency and Contingency Management Division (MRE)

NRT Member Agencies

- U.S. Coast Guard (USCG)
 - Headquarters, Office of Incident Management and Response (G-RPP)
 - Headquarters, Office of Exercise Policy (G-RPE)
 - Gulf Strike Team (GST)
- U.S. Environmental Protection Agency (EPA)
 - Headquarters, Office of Emergency Management
 - Environmental Response Team (ERT)
- U.S. Department of Commerce (DOC)
 - National Oceanic and Atmospheric Administration (NOAA)

U.S. Embassy

- Counselor for Economic Affairs

As the federal point of contact for reporting oil and chemical spills in the United States, the National Response Center (NRC) remotely participated in the exercise, receiving incident notification from ACP representatives.

Concept and Design

On April 1, 2002, the ACP and the United States Department of State, EPA, and USCG, signed an MOA regarding assistance in certain environmental pollution incidents in the

Canal. A key facet of this agreement directs the signatory parties to conduct an annual tabletop exercise to “ensure continuity of communications, planning, and operations.”

In 2003 and 2004, two notification exercises were held between NRT agencies and the ACP. The first full tabletop exercise, Balboa Reach Impact Exercise, was held in Panama City, Republic of Panama in March, 2005. In November 2005, NRT and ACP representatives began planning for a second tabletop exercise. The scenario and objectives for the Limon Bay Exercise were conceived during the first conference call and the foundation was built upon in subsequent monthly conference calls between the parties. In February a date was set and final details were formalized. The exercise was structured with the intent of strengthening the relationship between the ACP and NRT, which was developed during the previous three exercises.

The first day of the exercise sought to ensure NRT member familiarity with Canal operations. NRT members toured and were briefed on operations of the Canal Incident Management Center and Marine Transit Control (MTC). NRT members gained an appreciation for the range of ACP response capabilities and the features of the Area Contingency Plan. Day One concluded with a notification exercise in which the Panama Canal Area Contingency Plan was implemented. The NRC was notified in accordance with the Plan.

Members of the USCG GST facilitated exercise play on Day Two, which included development of incident objectives and response strategy, tactical assignments and an Incident Action Plan (IAP). The scenario was designed to promote awareness of the Canal Contingency Plan for both NRT and ACP participants. Exercise play on the second day was complemented by training sessions on EPA’s hazardous materials response capabilities and NOAA’s response tools, including plume trajectory modeling. These training sessions aimed to promote awareness on NRT member-agency capabilities and to reinforce the benefits of ICS for large scale response and recovery.

A hotwash was held on Day Three to discuss exercise successes and areas for potential improvement. Following the hotwash, ACP planning staff and NRT representatives reviewed and brainstormed potential improvements to the NRT/ACP Quick Response Guide.

Purpose and Scope

The purpose of the Limon Bay Exercise was to strengthen coordination between the NRT and ACP. The Panama Canal Area Contingency Plan dictates that the ACP use ICS, and the U.S. National Response Plan (NRP) requires the NRT to use ICS. Therefore, NRT-ACP coordination is most successful when the two organizations follow the ICS system.

The exercise facilitated training and preparation for a Tier 3 incident in which NRT resources and technical assistance would be brought into the Canal Area. Such training and pre-incident coordination will assist the emergency planning and preparedness needs of the Canal, its customers and stakeholders, and the NRT.

Limon Bay Exercise

The exercise was also designed to evaluate the ability of the NRT to successfully activate, deploy and integrate a Technical Assistance Team (TAT) into the ACP response system. It was important to discuss and exercise activation of the ACP-NRT MOA, and thus, NRC notification. Contacting the NRT early enough during the response will enable the NRT to provide effective support, and the ACP to make efficient use of NRT resources for a major response.

The tabletop exercise did not involve deployment of actual resources. However, NRT personnel did participate in the exercise in-country, with deployment of NRT TAT personnel and staging of resource mobilization coordinated via the primary notification conference call with ACP. Completion of a full planning cycle was facilitated during exercise play and participants practiced developing an IAP.

Exercise Goals and Objectives

The major objectives were developed and agreed upon by the NRT-ACP design team and key ACP authorities.

Objectives

The major objectives of the exercise were as follows:

1. Evaluate the ability of the ACP and the NRT in implementing response actions in accordance with the Memorandum of Agreement. The factors which will help determine the degree of success:
 - Notification process is clear and specific; and
 - Integration of the TAT into the ACP's structure.
2. Evaluate ACP/NRT ability to identify and mitigate a hazmat incident. The factors to be evaluated will follow the best response model formula:
 - Proper identification of hazardous material;
 - Proper identification of population at risk and ability to conduct appropriate notifications;
 - Proper identification of environment at risk;
 - Ability to secure source or hazard and decontaminate vessel;
 - Ability to evacuate and treat contaminated crew;
 - Ability to quickly recover operations; and
 - Public information and internal communication management.
3. Undertake a thorough planning cycle, which produces a written incident action plan in accordance with the response structure, considers future operational periods, and maintains proper activity logs.

Goals

The goals of the exercise with respect to ACP and NRT coordination were to:

1. Ensure that effective communications between ACP and NRT can be established in a timely manner;
2. Ensure effective methods for information request and follow up once the notification process has started; and
3. Integrate the NRT response personnel into the ACP ICS structure once the TAT and response personnel arrive at the Canal Area.

Exercise Proceedings

Overview

The three day exercise was structured to include training sessions and briefings, provided by both ACP and NRT, prior to, during, and after the actual exercise play. Day One of the exercise encompassed briefings on the following key topics:

- Operation of the Canal;
- Panama Canal Incident Management; and
- NRC Notification Process.

The exercise began with a notification exercise, held on Day One following the educational sessions. Facilitated exercise play continued throughout Day Two and addressed access to the Panama Canal Area Contingency Plan, completion of ICS forms, and the overall planning cycle. The table top exercise was augmented with the following special topic briefings were also presented:

- U.S. Environmental Protection Agency Hazardous Materials Response Capabilities; and
- National Oceanic and Atmospheric Administration Response Tools.

Special Topic Briefings

U.S. Environmental Protection Agency Hazardous Materials Response Capabilities

This training included background information on the Environmental Protection Agency's (EPA's) Hazardous Materials Response Capabilities, including EPA's On-Scene Coordinators, technological assets and capabilities, and special response teams such as: the Environmental Response Team (ERT), the Radiological Emergency Response Team (RERT) and the National Decontamination Team (NDT). Any of EPA's resources can be accessed via the NRC.

- **On-Scene Coordinators (OSC)** – the federal official responsible for monitoring or directing responses to all oil spills and hazardous substance releases reported to the US federal government. The OSC is an agent of either EPA or the USCG depending on where the incident occurs. In general, the OSC has the following key responsibilities during and after a response to a hazardous substance release or an oil spill: (1) assessment; (2) monitoring; (3) response assistance; and (4) evaluation. EPA OSCs are trained to respond in Level A Personal Protective Equipment (PPE) and operate under the ICS.
- **Technological Assets and Capabilities** - specific capabilities include air monitoring; modeling; analytical, biological and ecological assessment; health and safety; and oil spill response. Readily deployable equipment caches encompass equipment including

Level A suits, Self Contained Breathing Apparatus (SCBAs), a portable weather station, radiation instrumentation, chemical agent detectors, and vapor analyzers, etc.

- **Environmental Response Team (ERT)** – established in 1978, ERT is EPA’s “special response team” with over 45 scientists, engineers, and experts in environmental emergencies who provide on-scene assistance in managing environmental disasters. ERT also has laboratory capability, equipment storage, maintenance, and calibration ability, in addition to mobile labs. ERT has traveled internationally to places including Kuwait and Iraq to support the U.S. Department of State. Over 20 training programs, some of which are available in Spanish, have been developed and are offered by ERT both internally and externally. Members of EPA’s ERT could easily integrate into an Environmental Unit in ACP’s Planning Section. More information is available at <http://www.ert.org/> or <http://www.epaosc.org>.
- **Radiological Emergency Response Team (RERT)** - responds to emergencies involving releases of radioactive materials. These readily deployable field teams have mobile labs, as well as reach-back to stationary labs within the US, equipped for radio-analytical services, including gamma spectroscopy, alpha/beta analyses, and liquid scintillation analyses.
- **National Decontamination Team (NDT)** – EPA’s newest emergency response resource. NDT is capable of decontaminating a variety of structures and surfaces including buildings and heating ventilation air condition (HVAC) systems.

National Oceanic and Atmospheric Administration Response Tools

This training included background information on the National Oceanic and Atmospheric Administration’s (NOAA) Office of Response and Remediation (OR&R), the primary NOAA office that responds to oil spills and hazardous material releases. OR&R provides scientific support for spills, technical assistance for hazardous material releases and works to restore damaged coastal resources. Recent notable NOAA responses include the M/V SELENDANG AYU Spill, the M/V JESSICA – Galapagos Island Spill, the T/V PRESTIGE Oil Spill off Spain, and Hurricane Katrina.

- **Scientific Support Coordinator (SSC)** – scientific and technical advisors in coastal and marine areas of the NOAA, who serve as members of the Federal On-Scene Coordinator’s staff. Their capabilities include contingency planning, surface/ subsurface trajectory forecasting and hindcasting, resource risk analysis, and liaison to other scientists and technical experts. NOAA’s SSCs often serve as Environmental Unit (EU) Leaders in the ICS and could easily integrate into ACP’s Planning Section.
- **General NOAA Oil Modeling Environment (GNOME)** – the oil spill trajectory model used by HAZMAT responders during an oil spill to: predict how wind, currents, and other processes might move and spread oil spilled on the water; learn how predicted oil trajectories are affected by inexactness ("uncertainty") in current

and wind observations and forecasts; and see how spilled oil is predicted to change chemically and physically ("weather") during the time that it remains on the water surface. GNOME is a forecasting tool.

- **Computer-Aided Management of Emergency Operations (CAMEO)** – a chemical database containing response recommendations for over 6,000 chemicals. CAMEO also contains 80,000 chemical synonyms and identification numbers, which can be used to identify unknown substances during an incident. Once a chemical is identified, CAMEO provides firefighting and spill response recommendations, physical properties, health hazards, and first aid guidance. CAMEO is currently being updated to include a Weapons of Mass Destruction (WMD) module.
- **Area Locations of Hazardous Atmospheres (ALOHA)** – an air dispersion model that predicts the downwind dispersion of a chemical cloud; ALOHA has recently acquired the ability to model the hazards associated with fires and explosions.
- **Response Link** – NOAA's secure portal for communicating non-public information pertaining to a response between various response agencies including the US Coast Guard and members of the ICS. The Response Link website, which is updated daily, provides responders with access to information including rotation schedules, a means to locate staff, and access to situation reports and incident photos.

Scenario

On March 28th, 2006 a chemical tanker, the Motor Tanker (M/T) PH EXPRESS, scheduled as tomorrow's S02T (Canal queue designator) is taking fuel by a self-propelled barge, the CHUPAMPA, in the inner west explosive anchorage at Limon Bay, Cristobal, located at the Atlantic entrance of the Panama Canal. It has been approximately two hours since the fueling operation began. It is now 1300 on a partly cloudy afternoon. Relative humidity is at approximately 92%. The wind is rambling around the northern quadrants at low speeds.

M/T PH EXPRESS, a Panamanian registered vessel, is 414.86 feet in length with a 68.60 foot beam, single skin, double bottom, carrying 10517 metric tons of sulfuric acid UN 1830. Barge CHUPAMPA is 200 feet in length with a 39.96 foot beam, carrying approximately 10000 barrels of Intermediate Fuel Oil (IFO) 380 and 2000 barrels of Marine Gas Oil (MGO).

As part of normal operations of repositioning tomorrow's morning south-bound vessels from the outer to the inner anchorage at Cristobal, Motor Vessel (M/V) GRAINCO cruises towards the inner anchorage. She is a bulk carrier vessel, with a container carrying capacity of 176 above deck. She is 493.83 feet in length with an 85.40 foot beam and carries 8000 metric tons of seed cake in bulk in addition to containers on deck.

As the vessel passes the breakwater, the harbor pilot gets on board and proceeds to anchor the vessel in the west side 1W; suddenly an alarm is heard at the bridge and the vessel suffers a blackout. The chief engineer, under the master's instruction, attempts to fix the problem but there is no communication with forecastle station (due to the blackout and worn out batteries in the walkie-talkie). M/V GRAINCO takes a strong shear to port. The crew is unable to stop the M/V GRAINCO, now cruising at 6 knots. It is now 1330. A few minutes later, M/V GRAINCO collides against the starboard side of M/T PH EXPRESS. The impact causes the fueling hose to break loose on the port side of the vessel, spilling 300 barrels of IFO 380.

Cargo tanks 4 and 5 on M/T PH EXPRESS have been ruptured with an irregular shaped breach approximately 10 feet long by 1/2 feet wide (in its wider part) along side the vessel just below waterline. The breach affected tank 5 more severely. Also, the deck of M/T PH EXPRESS was deformed. Sulfuric acid is spilling at a rate of 5,000 gallons per minute. A dense white cloud from the reaction of the acid with water is engulfing the vessel. No visible leaks have been detected in tank 3, but its liquid level appears to be decreasing.

All tanks on M/T PH EXPRESS were completely full and it is estimated that all the sulfuric acid above the breach line will be spilled in a few hours from tank 4, but more slowly from tank 5.

Three containers from the M/V GRAINCO have fallen and sunk in the vicinity of the accident. Two of the containers are loaded with pesticide, solid, toxic, n.o.s., packing group II, 6.1. The other one is loaded with padlocks. It is suspected that water has started to leak into the M/V GRAINCO cargo hold. This fact concerns the master who states that the cargo, if wet, may ignite spontaneously.

At this moment there is no report of any injuries or missing personnel from either vessel. However, the first tug on scene had to return to harbor because its crew was affected by inhalation of acid vapors and required medical assistance.

Pre-exercise Development of the Incident Briefing (ICS form 201)

On April 23, 2006, ACP designers of the Limon Bay Exercise met with ACP participants to present the exercise scenario and to develop an Incident Briefing for the exercise. The group met for over three hours, taking the first few steps of the "Planning P" and providing the starting point for the joint ACP/NRT exercise.

Notification Exercise

The notification exercise was conducted in the afternoon of Day One of the exercise. To simulate a notification to the NRC and conference call with the NRT Executive Director and members of the TAT, NRT member agency representatives moved to a separate room within the training complex, while ACP participants discussed their initial response actions, personnel and resources needs, and resources at risk within the Canal Area.

Personnel participating included representatives from the Emergency and Contingency Management Division, Oil Pollution and Aquatic Vegetation Branch, Transit Operations Division, and Canal Protection Division. Key actions identified by exercise participants to be taken by ACP included:

- **Establishing ICS**
- **Deploying:**
 - An assessment team (4 person team dressed in Level B PPE sent via Tug Boat, to M/T PH Express; 2 responders board vessel to assess);
 - A survey team to confirm status of CO2 system on M/V Grainco; and
 - The Naval Architect to Cristobal.
- **Vessel Movement**— separate and anchor all vessels.
- **Protect Personnel:**
 - Evacuate crew of M/T PH Express;
 - Provide medical treatment to sick/injured personnel;
 - Have crew remove vessel manuals/plans/Central Processing Unit (CPU) during said evacuation;
 - Prepare for evacuation of MV Grainco; and
 - Establish half mile safety perimeter.
- **Other Actions**
 - Halt all vessel traffic in the Canal;
 - Establish contact with all involved ships;
 - Contact outside authorities, both within Panama and internationally;
 - Contact Canal stakeholders;
 - Dispatch local police to control public at key areas, including the Bridge of the Americas and the Causeway;
 - Publish a press release; and
 - Contact contractors to provide assistance.

ACP made the decision that assistance would be needed from an NRT TAT; therefore, an NRC incident notification form was submitted via the internet, and ACP received a phone call from the NRC approximately five minutes later confirming receipt of the form and notification of the NRT Executive Director.

Once assembled the NRT TAT, which convened in another room within the training complex to simulate that the Team had yet to depart for Panama, telephoned the Canal to discuss the incident and provide technical advice and resource assistance, including protection of environmentally sensitive areas on the coastline, and considered the need for dispersants and other equipment.

Logistics

- TAT noted they would provide a list of equipment they planned to bring to Panama and a cost estimate for the Incident Specific Agreement (ISA), as the electronic transfer of funds must be agreed to and completed prior to deployment of U.S. Government personnel.

- The Advance Team, composed of representatives from GST, NOAA and EPA noted they would depart immediately to provide technical assistance.
- ACP promised to work with the U.S. Embassy in Panama to expedite country clearances and to facilitate arrival of people and equipment, including accommodations.

Facilitated Exercise Play

Day Two began with an Incident Briefing (See Appendix B) and Initial Unified Command/Incident Commander Objectives meeting. Players were briefed on the current status of the incident and all actions that had taken place up to the present time.

Following the Incident Brief, the Incident Commander worked with the ICS section chiefs to establish the organizational structure, determine the operational period, and identify priorities. The IC established a 24 hour operational period for the Incident Action Plan.

Priorities for the Operational Period

The following priorities were identified during the Incident Commander Objectives Meeting:

- Minimize risks and control hazards to public and responders;
- Reopen Canal vessel traffic at the earliest opportunity;
- Commence salvage assessment and operations for marine casualty;
- Minimize additional discharge of oil and sulfuric acid;
- Conduct dispersant application operations;
- Engage stakeholders and public through proactive use of Liaison/Information Officers; Specific stakeholders include:
 - Ports
 - National Security Center
 - Yacht clubs and marinas
 - Smithsonian Tropical Research institute
 - Tourism operators
 - Panama Maritime Authority (AMP)
- Minimize environmental damage. Prioritize protection strategies for resources at risk;
- Effectively track evolving situation and resources;
- Establish effective communications plan that will ensure establishment of a common operation picture, effective transfer and management of incident information and documentation of all actions;
- Establish organizational staffing chart documenting all agencies in the ICS; and
- Effectively integrate NRT personnel and equipment into ACP ICS.

During the Command and General Staff meeting, the Safety Officer and the Planning, Operations, and Logistics section chiefs each provided a report-out on their objectives, ongoing and future activities, and task assignments. This included such items as requiring

use of personal protective equipment by all responders, tasking the local police to maintain security around the perimeter of the incident; and integrating the NRT TAT into the Environmental Unit in the Incident Command. Additionally, the TAT reported that the NRT Executive Director would be working with the State Department in Washington, D.C. and the American Embassy in Panama to facilitate resource flow and country clearance approvals.

Following the Command and General Staff meeting, a Tactics meeting was held, during which completion of the operational planning worksheet (ICS form 215) was facilitated through discussion of the strategy and tactics for the next operational period. The form denoted the necessary resources for each tactical objective, which are listed below by objective:

Tactical Objectives

- *Protection of Human Life and Health*
Goal: Evacuate vessel personnel and establish and maintain security perimeter
- *Spill Containment and Vessel Stability*
Goal: Assess damage to all vessels
- *Public Communication of Information*
Goal: Communicate critical information to public
- *Salvage*
Goal: Have Naval Architect develop salvage and lightering plan
- *Open Canal*
Goal: Keep Canal open or open within 48 hours if forced to close the Canal

Following the tactics meeting and completion of the operational planning worksheet, a planning meeting was held to refine and review the incident objectives, strategies, and tactics; and to identify resource needs during the next operational period. The Operations Section Chief provided a situation briefing, detailing decisions made during the tactical meeting. Following the Tactics meeting, the written IAP would be prepared by the ICS Section Chiefs and officers and then be approved and signed off by the Incident Commander.

Hotwash

A hotwash was conducted to identify the exercise successes and recommendations for improvement. The hotwash allowed all participants to share feedback on the positive aspects of the exercise and those aspects where corrective action is needed to enhance response operations.

Exercise Evaluation

Evaluation Process

The exercise was designed to provide participants with an opportunity to assess current capabilities to perform the critical tasks required to respond to a major (Tier 3) emergency in the Canal Area. By assessing of those capabilities, participants identified strengths, weaknesses, and future training needs.

Evaluators were present at the exercise location to observe and record exercise events, including player actions. Members of the evaluation team, from both NRT and ACP, completed exercise evaluation forms based on specific criteria established for each of the three key exercise objectives. Following completion of the facilitated exercise play, a hotwash was conducted to capture observations and opinions from players and identify issues and gaps in the response. In addition, all participants were provided with exercise evaluation forms to record their observations of the exercise. Post hotwash, evaluators held a meeting to discuss and collaborate on their personal observations and recommendations. The results of the hotwash discussion and evaluation forms are documented below, focusing on the strengths and recommendations resulting from the exercise.

In keeping with the no-fault nature of this exercise, the evaluation in this report examines the plans, procedures, and response systems used. Evaluator observations focus primarily on overall unit actions and the interaction between response units rather than on individual players.

Lessons learned from the exercise will improve coordination between the ACP and NRT, in addition to all parties' preparedness and planning efforts, and will lead to further discussion and training relevant to recognized capabilities and identification of issues.

Exercise Strengths

ACP and NRT Coordination

The preparation and monthly coordination before the exercise, in addition to the execution of the Limon Bay Exercise, facilitated the vitality of the coordination and communications processes between ACP and NRT stakeholders. The energy and commitment channeled into this partnership ensured the implementation of a successful exercise. ACP and NRT participants were reminded of the significance of collaboration to protect the Canal, including: its value to international trade and commerce; interest in ensuring its safe unencumbered operation; the need to safeguard against environmental degradation therein; and the importance of the health and safety of citizens in the Republic of Panama.

Recognition of the Technical Capabilities of ACP and NRT

Through special topic briefings and execution of actual exercise play, a heightened sense of the capabilities and resources at the command of ACP and NRT responders was

realized. Environmental expertise and rigorous security wherewithal within the ACP, in addition to the robust and professional leadership exhibited in command of the incident, highlighted the extent of professional management and technical capacity at all levels of operations. Furthermore, the briefings provided by EPA and NOAA on their respective capabilities and equipment resources, expanded upon the awareness of and appreciation for each other's qualifications and capabilities. As ACP dependence on U.S. material response resources lessens, the NRT will remain a source of technical expertise and advice, regardless of whether the ACP-NRT Agreement is activated.

Demonstrated Increase in Understanding and Acceptance of the ICS Planning Process

Facilitation of the exercise using ICS was very valuable for the players, demonstrating the step-by-step process of response, with a particular structure for moving from one task to the next. ICS was a very useful method for the organization of ideas, focusing of actions, distribution of tasks, and integration of responders under one common objective. Using this type of system provided a clear picture of what needed to be executed within the ICS structure and each section specifically, and what needed to be projected for future operational period planning.

Enhanced Appreciation for the Dynamic Panama Canal Area Contingency Plan

The recently completed Contingency Plan is very user-friendly and contains accessible resources including point-of-contact information, lists of equipment, forms, checklists, and appropriate response actions for certain scenarios, among other things. Exercise participants developed an appreciation for the capabilities of and information contained within the Contingency Plan.

Teambuilding Fostered

All participants involved in the exercise, from players to observers and evaluators, maintained a sense of solidarity throughout the exercise. Participants worked together as a team in a constructive and encouraging way to best respond to the scenario. This exercise in teambuilding will serve as a strong foundation for ACP and NRT coordination and collaboration in future actual responses.

Commitment to Continue ACP/NRT Coordination

At the conclusion of the exercise and hotwash, both the Executive Director of the NRT Chair and the Maritime Operations Director of the Canal renewed their commitment to ACP/NRT coordination, recognizing the obvious value-added that is facilitated by this partnership. Specifically, the NRT pledged to renew the ACP/NRT committee coordination and support, to consistently foster development of this international relationship, and to bolster the liaison role that the committee plays in organizing preparedness and response support through NRT member agencies. The NRT also assured fulfillment of their agreement to advise and make available to the ACP training programs available from U.S. agencies in planning for and responding to oil spills, hazardous substances releases and other types of incident response.

Recommendations

1.0 Media Relations and Risk Communication

Observation

Emergency closure of the Canal will result in significant financial ramifications both for the Canal and for stakeholders who conduct business that relies on passage through the Canal. Events necessitating emergency closure of the Canal may pose potential threats to human health, natural resources and the environment. During a disaster, it is essential that the Canal be able to conduct risk communications with its stakeholders and the public to mitigate Canal closure. This is a reoccurring observation from the 2005 NRT/ACP exercise.

Recommendations

Positive media relations must be established prior to an emergency. During a disaster, such pre-existing relationships with the media will enable to Canal to effectively and efficiently communicate potential risks to the public, necessary actions for all parties to take, and on-going efforts of the Canal to mitigate damage from the emergency.

Potential Action Items

ACP may conduct a public education campaign both to establish media relations and share current Canal efforts towards emergency preparedness and potential future operations. Past attempts to contract Vince Covello failed. As a result, alternative crisis communications training should be sought.

2.0 Finance

Observation

Financial costs and availability of funds to purchase, transport, and operate equipment will dictate what resources are requested during a disaster. It is essential to discuss financial limitations prior to a disaster. Exercises such as Limon Bay provide the ideal forum for this discussion. Any deviation for standard cost accounting methods should be negotiated in advance of an emergency.

Recommendation #1

A pre-established system is needed to facilitate efficient coordination of funds. Such a system would allow ACP to immediately decide which resources should and could (based on cost consideration) be requested and deployed. According to the MOA and ISAs, ACP is required to provide funds, in advance of deployment, through electronic transfer.

Potential Action Items

Equipment lists and standard rates for manpower and resources should be provided by NRT member agencies.

Recommendation #2

A uniform system by which the ACP may wire funds to the responding agencies of the NRT during the early stages of response to a significant spill in the Canal Area must be adopted. The 2002 MOA states that “all expenses associated with the provision of assistance by the TAT or any U.S. agency will be the responsibility of the ACP on an advance of funds basis.” The agreement also states that “the EPA, or the U.S. Coast Guard, and any other U.S. agency that intends to provide assistance to the ACP consistent with this Agreement, shall execute an ISA with the ACP.” The United States Coast Guard has established and successfully used the ISA for the past three evolutions with ACP.

Potential Action Items

The model ISA procedure set forth by the USCG should be adopted by the EPA, NOAA and any other agency that may be called upon to provide assistance to ACP. EPA and NOAA should take active steps to institute a system of accepting funds from the ACP by means of an ISA. This also will require the coordination of the ACP.

3.0 *Exercise Development and Future Exercises* Observation

Exercise Participants-

Further exposure of ACP divisions and NRT agencies to one another is necessary in future exercises. In addition to involvement by the emergency response and operations divisions, there should be full ACP involvement in building awareness, which will facilitate enhanced cooperation when an actual incident occurs. Exposure to such training within Panama for ACP representatives and other agencies will be invaluable if an incident should occur. In addition, key Canal personnel, who would normally fill core roles in a real response, did not participate in the exercise because they had served on the exercise design team.

Exercise Design-

The Limon Bay Exercise scenario lacked sufficient injects. As a result, the scenario never progressed past the initial incident reports. Failure of the scenario to realistically overwhelm the response system with injects hindered the exercise’s ability to demonstrate the value of ICS and the negative effects of micromanagement by the Unified Commanders. Further, the lack of a Control Cell prohibited spontaneous interjection of injects to ensure progress through the scenario. Coordinated training was very successful.

Recommendations

- Future exercises should:
 - Invite other Canal stakeholders to participate;
 - Include staff from the ACP Maritime Traffic Control
 - Include staff from the USCG Marine Safety Center;
 - Increase length of exercise play time;

- Include a control cell responsible for directing participants through the exercise;
 - Design exercise to include more injects aimed at overwhelming standard response mechanisms and necessitating use of ICS;
 - Test the mechanism for activation of Canal emergency response; and
 - Provide graphics or detailed maps to more effectively simulate the scenario.
 - Include formal training sessions, such as ICS 300 and other “higher level” ICS training.
- The frequency of exercising should be increased.
 - The team of technical specialists that developed this exercise should be included in ICS response structures in future incidents; their scientific backgrounds would be very valuable during an oil spill or hazardous materials release response.

Potential Action Items

ACP may choose to develop an exercise schedule.

ACP may choose to hold more frequent exercises with the NRT, engaging full ACP representation for expanded involvement.

The Design Team may develop future exercises to include Master Scenario Events List (MSEL), injects and supervision by a Control cell.

Coordinate formal ICS training sessions with future joint exercises.

4.0 *Training*

Observation

ACP personnel have varied levels of training on both the ICS and their internal standard emergency response procedures. While ACP has a great Response Plan, not all personnel are familiar with the resources contained within this plan. Additionally, while the ACP has adopted the ICS response structure, they may better utilize job aids and forms that assist with response efforts.

Recommendation #1

All Canal employees likely to be involved in an emergency response should at a minimum be trained in the basics of ICS. Select Canal employees should receive position-specific ICS training.

Recommendation #2

Systematic training on the use and benefits of the Canal Response Plan must be instituted for all key response personnel. Canal staff members need increased access to hard copies of the Plan and should conduct frequent review and training on the Plan.

Recommendation #3

ACP may promulgate and institute the Incident Commander job aid provided by the Coast Guard Strike Team during the exercise. This and other job aids, as well

as the ICS forms are intended to organize and maximize efficiency of response and related activities.

Potential Action Items

ACP may develop a training schedule/matrix and require canal port captains to attend scheduled training sessions. Training should be capability based. The Canal may also elect to send several staff members to receive train the trainer (t-t-t) ICS instruction. ACP ICS trainers would then be able to develop an acceptable ICS training program for the Port Captains and key response personnel. Additionally, these expert trainers could potentially serve on an incident management team that would serve to support ACP ICS staff during an emergency.

The U.S. Gulf Strike Team is available to provide ICS training to the Panama Canal Authority. Additionally the Gulf Strike Team has extended an invitation to ACP personnel to attend the annual National Strike Force Oil Spill response Course in Mobile, Alabama, free of charge.

EPA should share information on ERT training programs and invite ACP to participate in future conferences and training.

5.0 *Panama Canal Area Contingency Plan*

Observation

Currently, the Canal Area Contingency Plan is available only on the ACP intranet. Maintaining the Plan electronically requires minimal effort, though it can hinder access to the Plan. Several exercise participants indicated that they had never accessed the electronic plan and were unfamiliar with the resources contained within the Plan, such as ICS forms. During non-disaster times, access may be unlimited but response personnel are unlikely to review and study an electronic plan. In an emergency, response personnel can only access sections of the Area Contingency Plan if they have both a computer and an intranet connection available. Field responders are unlikely to have computer and intranet access while on-board ships. There are also a limited number of computers in the Emergency Operations Center (EOC).

Recommendation

The traffic control center and all major equipment depots should be supplied with at least one hard copy of the Contingency Plan. Additionally, hard copies of the Contingency Plan should be available for reference during all drills.

Potential Action Item

ACP may want to consider compiling the valuable resources of their Contingency Plan into hard copy reference notebooks that can be provided to primary response personnel and stored at locations where access to the intranet is limited. It may also be beneficial to create a small library of response and contingency planning tools within MTC. A bi-annual update of the hard copy reference notebooks could be implemented to ensure the documents and information are as current as

possible. The next Plan review could also insure that essential ICS forms are available within the Plan.

6.0 Panama Canal Emergency Notification Criteria

Observation

Canal Port Captains (CPCs) noted insufficiencies in the notification of responders. While CPCs receive notification of all incidents regardless of scale, mobilization of additional resources is insufficient.

Recommendation

Examine the threshold which must be crossed to result in port captain and other responder notification. Distinguish between when responders need to receive a notification page, indicating that an incident has occurred, and when they actually need to be paged to report to the operations center for a response. Improve mechanism for notifying responders and initiating their response.

Potential Action Item

ACP may conduct a review and potentially revise the Canal emergency notification criteria. ACP may also develop a Standard Operating Procedure (SOP) regarding emergency notification and response. ACP may also choose to test notification criteria by incorporating internal notification into future exercises.

7.0 Coordination with and Integration of NRT TAT

Observation

During the initial phone consultation with the Canal, the NRT TAT convened in another room within the training complex to simulate that the Team had yet to depart for Panama. After initiating the conference call, the telephone communication system disconnected the two parties. Exercise facilitators opted to “simulate” the call and continue the exercise with both the NRT and ACP in one room. This led to a productive discussion on the need for a protocol for integrating the NRT TAT into the pre-established ACP response structure.

Recommendation

Improve the process of integrating the NRT TAT into ACP ICS structure during exercises and real emergencies. Most likely, the NRT TAT will integrate directly into the Planning Section or in the Environmental Unit within the Planning Section. This process has to be formally recognized between the IC and the TAT leader upon arrival in country.

Potential Action Item

ACP may choose to develop a protocol specifying the process by which the NRT TAT checks in upon arrival in Panama and how the TAT integrates into the Canal ICS.

Conclusion and Outcomes

The ACP plans on using the 2002 ACP-NRT MOA to facilitate NRT resources during a significant oil, hazardous material, or radiological incident in the Canal. The United States recognizes the mutual goals of safe and uninterrupted Canal operation and agrees to facilitate the deployment of these resources in accordance with the MOA. Building upon strengths reaffirmed by this successful exercise, the NRT-ACP working group will strive to enhance those areas where coordination can be improved. The NRT Executive Director assured the ACP that the NRT is dedicated to enhancing the ongoing committee structure and continuing in its agreement to provide technical assistance and resources.

The 2002 Agreement requires, at a minimum, that one tabletop exercise be conducted annually to ensure continuity of communications, planning, and operations. Since the signing of the agreement, the ACP and NRT have taken a stepwise approach, starting with a simple notification exercise in 2002 with the ultimate goal of performing a full scale exercise with equipment deployment in the future. The success of this training and tabletop exercise, including the refinement of logistic procedures, marks a significant step toward meeting the ultimate goal of seamless request for, mobilization, and provision of U.S. response resources to the Canal. Proposals were made for future exercises to encompass radiological or biological incidents.

In addition to future exercises, the ACP and NRT expressed their dedication to maintaining the highest levels of coordination by taking active steps through their planning and preparedness programs organically. The ACP continues to enhance its response capability. This has been accomplished through significant capital investments in response equipment and training and accelerated ICS training within Panama. Additionally, the NRT will work with its member agencies to provide the Republic of Panama with additional training, and will look to include ACP representatives in beneficial evolutions, such as the USCG's Spills of National Significance (SONS) exercises and the EPA's annual On Scene Coordinator (OSC) Readiness Training.

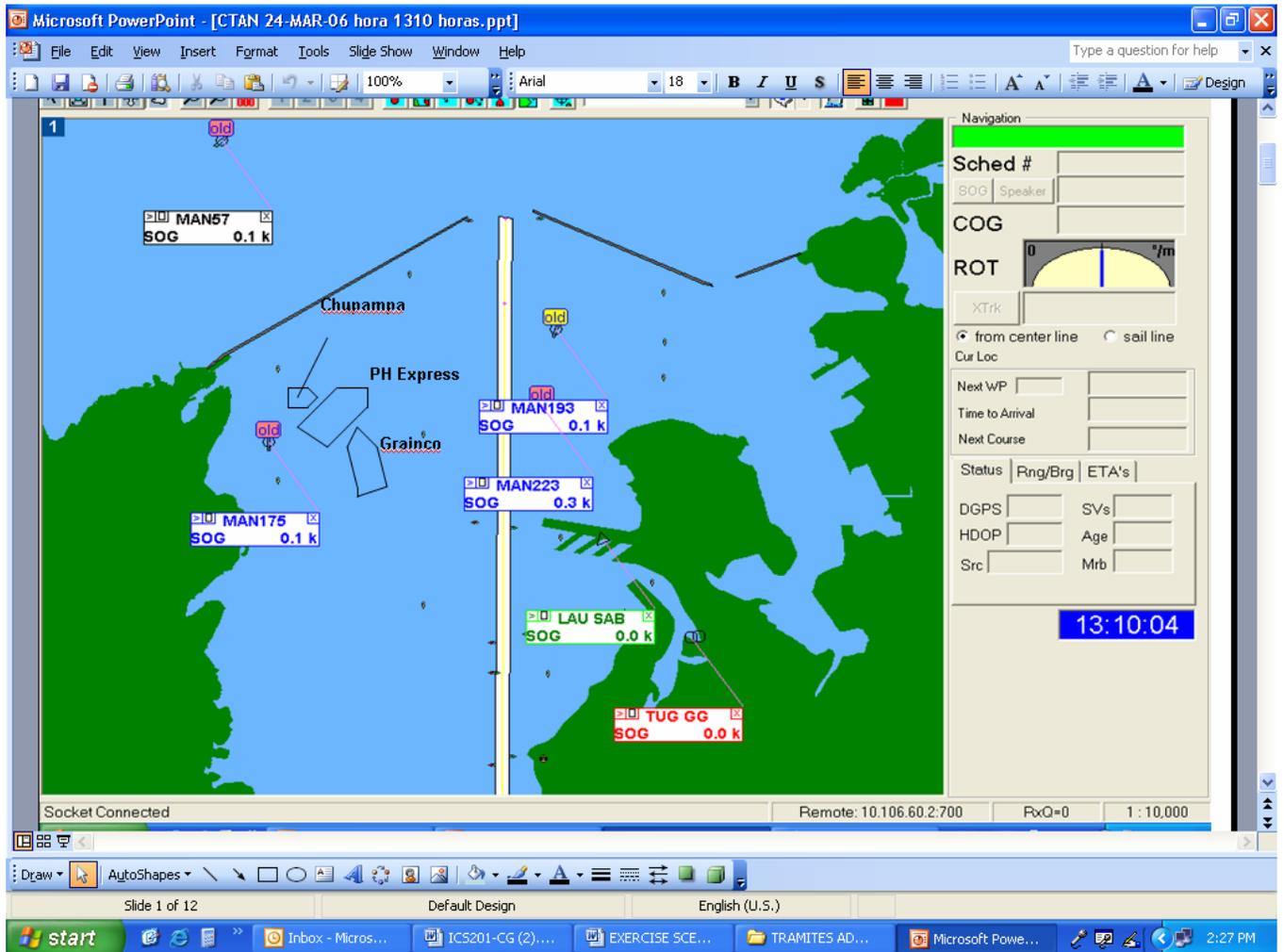
Appendix A: List of Participants

Name	Exercise Role	Office	Phone
PARTICIPANTS			
Mario Acedo	Planning Section	ACP (MRTC-CH2)	272-4181
David Cargill	Safety Officer (IC Staff)	ACP (MRE)	272-4601
Octavio Colindres	Information Officer (IC Staff)	ACP(AECN)	272-7602
Daniel Francis	Finance Section Chief	ACP (ESM)	
Gilberto Gasteazoro	Logistics Section Chief	ACP (ESMV)	276-6678
Urho Gonzal	Operations Section	ACP(MRE)	276-4635
Marc Hodges	Environmental Unit (Planning)	NOAA	-----
Peter Langman	Incident Commander	ACP (MRT)	272-4252
Edwin López	Liaison (IC Staff)	ACP (ESC)	276-4904
Guillermo Manfredo	Planning Section Chief	ACP(MRTC)	272-4252
José Maturell	Operations Section	ACP (ESMV)	276-6481
Diego Porras	Planning Section	ACP (MRTC)	272-4252
Octavio Stagg	Planning Section	ACP (MRTC)	272-4191
Luis Shannon	Operations Section Chief	ACP(MRE)	276-8953
Dennisses Valdes	Environmental Unit (Planning)	EPA (ERT)	-----
EXERCISE TEAM			
Octavio E. D'Meza	Logistics	ACP (MRE)	272-4635
CWO Rodney Elkins	Facilitator for Operations	USCG (GST)	-----
LCDR Jim Elliott	Exercise Facilitator	USCG (GST)	-----
Diovane Francis	Director	ACP (MRE)	272-4635
NRT EVALUATORS			
CAPT Rogelio Altafulla	Evaluator	ACP (HRTM)	272-8550
CAPT William Diehl	Liaison to NRT	ACP (ESXC-CG)	272-4061
LCDR Paul Lattanzi	Evaluator	U.S. Coast Guard (HQ)	-----
LT Lindsay Weaver	Evaluator	U.S. Coast Guard (HQ)	-----
OBSERVERS			
Mori Andrews	Observer	USCG Embassy Rep	-----
Freddy Chen	Observer in Ops Section	ACP (MRTC-CH1)	272-4211
Alfredo González	Observer	ACP (MRE)	272-4642
Arcelio Hartley	Observer	ACP (MRT)	272-4212
Joe Laforvara	Observer	EPA /NRT Exec. Dir	-----
Tim Lattimer	Observer	USCG Embassy Rep	-----
CAPT Mike Lodge	Observer	U.S. Coast Guard (HQ)	-----
REPORT			
Meghan McGinty	Documentation	SRA International	-----

Appendix B: Incident Briefing

1. Incident Name Limon Bay	2. Prepared by: (name) Command staff Date: 28-mar-2006 Time:1330	INCIDENT BRIEFING ICS 201-CG
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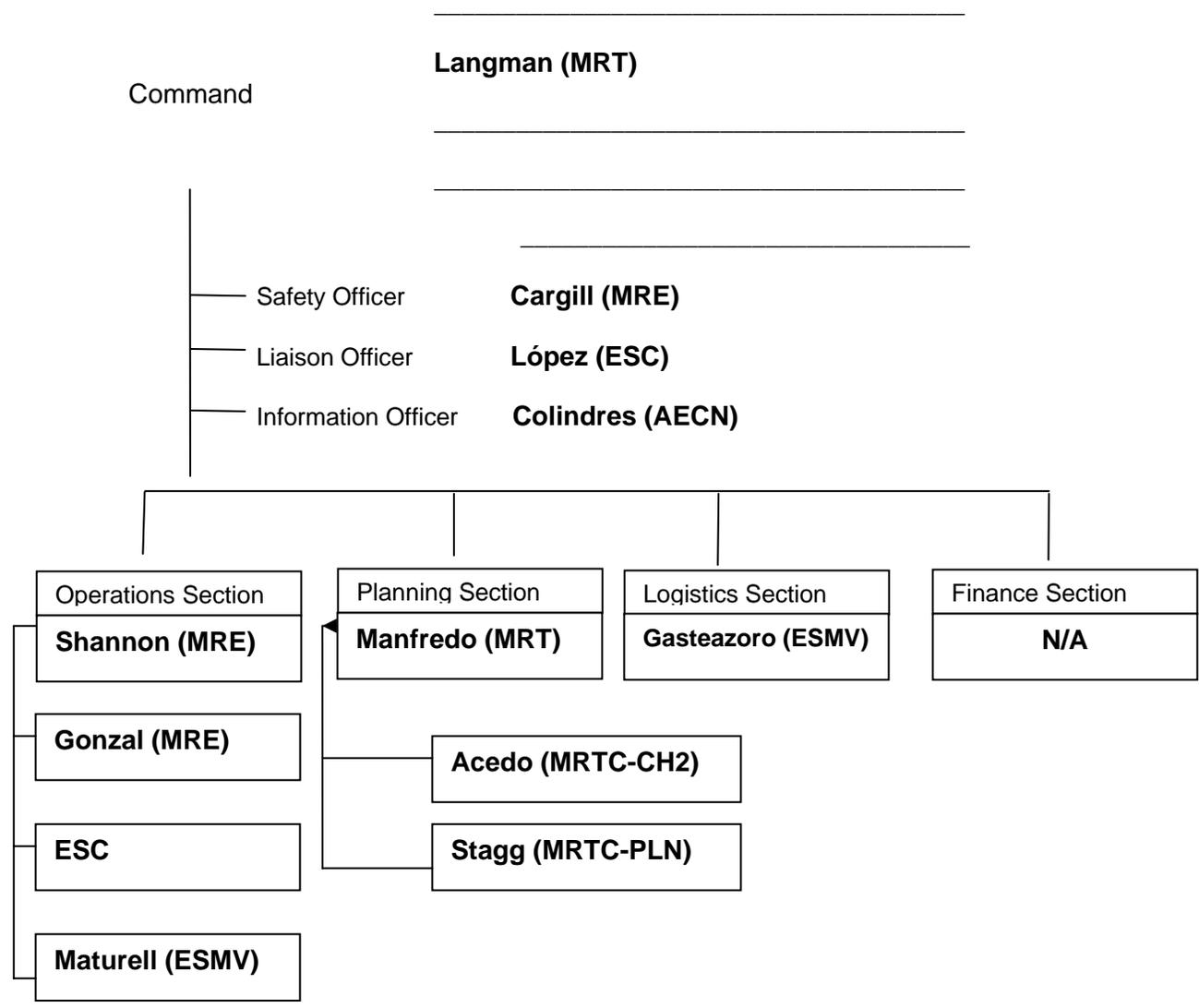
3. Map/Sketch (include sketch, showing the total area of operations, the incident site/area, overflight results, trajectories, impacted shorelines, or other graphics depicting situational and response status)



4. Current Situation
1. Product is spilling at a rate of 5,000 gallons per minute of sulfuric acid from M/T PH EXPRESS . A reaction of the acid with water is engulfing the vessel. No visible leaks have been detected in tank 3, but its liquid level appears to be decreasing.
2. Three containers from the M/V GRAINCO have fallen and sunk in the vicinity of the accident. Two of the containers are loaded with pesticide, solid, toxic, n.o.s., packing group II, 6.1.
3. It is suspected that water started to leak into the M/V GRAINCO cargo hold.
4. At this moment there is no report of any injuries or missing people from either vessel
the first tug on scene had to return to harbor because its crew was affected by inhalation of acid vapors.

1. Incident Name Limon Bay	2. Prepared by: (name) Command staff Date: 28-mar-2006 Time:1330	INCIDENT BRIEFING ICS 201-CG
5. Initial Response Objectives, Current Actions, Planned Actions		
	1. ICS organization was established –see page 3	
	2. ICS outlined the following concerns:	
	Immediate concerns:	
	2.1. safety of crew onboard vessels (tanker, barge, bulker, tug)	
	2.2 hazard associated with acid mist (impact in the vicinity of the accident)	
	2.3. stop acid leak source	
	2.4. containment of IFO 380	
	2.5. condition of vessels (tanker and bulker)	
	Midterm concerns:	
	2.6. sensitive areas that may be impacted (oil spill)	
	2.7. ACP image (public relations)	
	Long term concerns:	
	2.8. Recreational activities (tourism)	
	3. Initial response objectives	
	3.1. human life safety	
	3.2. containment and confinement of spills (acid and oil)	
	3.3. vessels stability (those involved in the collision)	
	4. Current actions taken	
	4.1. barge Chupampa is taken out of the scene (avoid any injury to crew or damage to barge)	
	4.2. evaluating tanker stability and safety considerations before sending personnel on board tanker.	
	4.3. sending one Canal Port Captain CPC and four firefighters on board tug. The CPC and two fire personnel will board tanker and the other two will remain on stand-by on board tug.	
	4.4. applying water mist from tug monitors to keep acid mist away and allow personnel approach vessel.	
	4.5. standing-by with boom for oil spill. ESMV personnel waiting the oil to reach shore.	
	5. Planned actions	
	5.1. Lightering of chemical tanker.	
	5.2 . recovery of submerged containers	
	5.3. execute oil spill clean up	

6. Current Organization (fill in additional appropriate organization)



Appendix C: Acronyms and Abbreviations

A

AAR	After Action Report
ACP	Autoridad del Canal de Panamá (Panama Canal Authority)
ALOHA	Area Locations of Hazardous Atmospheres
AMP	Autoridad Marítima de Panamá (Panama Maritime Authority)

C

CAC	Crisis Action Center
CAMEO	Computer-Aided Management of Emergency Operations

D

DOC	U.S. Department of Commerce
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E

EPA	U.S. Environmental Protection Agency
ERT	Environmental Response Team
EOC	Emergency Operations Center

G

GNOME	General NOAA Oil Modeling Environment
GST	Gulf Strike Team

I

IAP	Incident Action Plan
IC	Incident Commander
ICS	Incident Command System
IFO	Intermediate Fuel Oil
ISA	Incident Specific Agreement

M

MGO	Marine Gas Oil
MTC	Marine Transit Control
MOA	Memorandum of Agreement
M/T	Motor Tanker
M/V	Motor Vessel

N

NDT	National Decontamination Team (EPA)
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
NRT	National Response Team

O

OR&R	Office of Response and Remediation (NOAA)
OSC	On-Scene Coordinator

R

RERT Radiological Emergency Response Team

S

SMN Servicio Marítimo Nacional (Panama's National Maritime Service)

SONS Spills of National Significance

SOP Standard Operating Procedure

SSC Scientific Support Coordinator

T

TAT Technical Assistance Team

T/B Towing Barge

U

USCG U.S. Coast Guard