T/S ATHOS I
Evaluation Report

August 25, 2005

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After Action Report

Start Date: November 26, 2004
End Date: August 25, 2005

1. Incident General Description:

At 9:30 p.m. on November 26, 2004, the Coast Guard was notified by a tug assisting the T/S ATHOS I in docking at the CITGO Asphalt Refining Company facility that the tanker was spilling oil. Simultaneously, the vessel's hull had been breached and as a result acquired an eight-degree list, thereby causing its engines to automatically shut down. The assisting tug reported that the vessel was 250 feet off of the pier. The T/S ATHOS I is a 750 foot-long, Cypriot-flagged tank ship with a single bottom, double-sided hull and was built in 1983. The T/S ATHOS I was inbound with approximately 13 million gallons of Bachaquero Venezuelan crude oil destined for the CITGO Asphalt Refining Company facility in West Deptford, NJ (hereafter CITGO). Because of its significant list, which increased the vessel's draft, the vessel could not be placed safely at its intended berth at the facility and instead anchored in Mantua Creek, in the immediate vicinity where the casualty occurred.

Immediately following the incident, the vessel activated its Oil Pollution Act of 1990 (OPA 90) mandated vessel response plan and its designated Qualified Individual (QI), The O'Brien's Group. The QI reported to the Coast Guard Operations Center at Marine Safety Office/Group Philadelphia to direct clean-up efforts on behalf of the vessel owners, Tsakos Shipping Company. Within 20 minutes of CITGO receiving the spill report, they directed their response contractor, Clean Venture, to "boom off" the vessel. The Coast Guard established a Unified Command and dispatched resources to assess the situation. The vessel's crew conducted tank soundings to determine the location of the damage and the amount of cargo lost.

Bachaquero crude oil is slightly buoyant, very viscous and sticky. It is a cargo that is heated, has a high asphalt content and weathers slowly and can easily form into tar balls. At the time of the incident, the tide was incoming and the current was approximately one and a half to two knots. The weather was clear; the wind calm, the temperature was 38 degrees Fahrenheit. Within just a few hours, thick oil covered the river as far north as the Walt Whitman Bridge, approximately six miles north of the incident, and began to spread. The preliminary report of amount of oil spilled was estimated at 30,000 gallons. Once the vessel was stabilized several days later, a worst-case estimate of amount of oil released was determined to be approximately 473,500 gallons. However, some of that oil was believed to have migrated into the number seven port wing ballast tank.

The Coast Guard Operations Center in Philadelphia made notifications to federal, state, and local agencies as well as other key stakeholders including the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator, the Department of Interior, and a myriad of other concerned parties. Personnel strike teams and response resources were activated to respond to the potential major oil spill and initiate an investigation into the cause of the incident. Other elements of the Unified Command began to be assembled during the early morning hours of Saturday, November 27, 2004. By mid-morning, a growing Unified Command comprised of representatives from Pennsylvania, New Jersey, Delaware, the Coast Guard, and the vessel's QI had been established. Initial response objectives were quickly determined. The objectives included: stabilizing the vessel and taking corrective actions to prevent further discharge, conducting shoreline assessments, deploying protective booming and monitoring existing boom for effectiveness, collecting and recovering free-floating oil, establishing and enforcing a safety zone, collecting and rehabilitating injured wildlife, facilitating vessel traffic wherever possible, and informing the public and stakeholders. A Coast Guard helicopter over-flight of the spill was conducted at first light and shoreline assessment teams were deployed to determine the extent of oil impact.

The Captain of the Port implemented a Safety Zone on the Delaware River between the Walt Whitman Bridge and the Commodore Barry Bridge. Protective booming was deployed around 12 environmentally sensitive areas. Skimming units were deployed for on water oil recovery.

It was determined by a dive survey, which was video recorded, that the vessel had not only sustained a hole in the number seven center cargo tank, it had also sustained a hole in the number seven port ballast tank as well. The bulkhead between the cargo and ballast tank had been compromised, allowing an unknown amount of cargo to migrate into the ballast tank and then into the river.

A Vessel Salvage Plan was developed and approved by the Coast Guard Marine Safety Center (MSC) and the Unified Command. On November 28, 2004, the salvor conducted internal transfer of cargo to correct vessel trim per Phase One of the Plan. Phase Two addressed lightering operations and commenced November 30, 2004. The first part of lightering the vessel required removing enough of the cargo from the vessel while moored at the anchorage to achieve a 34-foot draft prior to moving to the CITGO Paulsboro Facility to offload the remaining cargo. Completion of the first part of lightering was delayed due to the Vessel Master's requirement to develop a plan to patch the hull damage prior to vessel movement. On December 9, 2004 the vessel moved to the CITGO facility without patching the damaged hull with the Unified Command's approval. The vessel completed offload on December 11, 2004 and moved from CITGO pier to Marcus Hook Anchorage. The vessel remained at anchorage until December 21, 2004, when it then moved about 50 miles upriver to Grows Terminal, Morrisville, PA for temporary repairs. On December 30, 2004 the vessel departed Grows Terminal enroute to Atlantic Marine, Inc., Mobile, Alabama.

Tank gaugings were taken to help determine the amount of oil released. Joint gauging operations were conducted on November 29, 2004 by two gauging companies and witnessed by representatives from the USCG, CITGO, United Kingdom's Protection and Indemnity Club (UK P&I), Titan Marine Salvors and the T/S ATHOS I in order to determine the aggregate

balance of cargo remaining on board to better estimate the quantity of oil spilled. After readings were taken, it was determined that 473,500 gallons of oil was unaccounted for. It was believed that some of that oil ended up in the number seven port ballast tank. A significant amount of oil/water mixture was observed in the tank, which was empty prior to the incident. The Unified Command continued its investigation to determine the possible spill quantity.

Within the Unified Command Operations Section, a Navigation Group was established comprised of representatives from the USCG, Army Corps of Engineers, National Oceanic and Atmospheric Administration, and Randive (P&I Club hired Survey and Dive Co). The Navigation Group was tasked to determine the cause of hull damage and to ensure safety of navigation. Utilizing side scan sonar, magnetomers and diving operations the Group followed the track line of the T/S ATHOS I during its transit from the Tinicum Range to the incident location. The surveys revealed an obstruction in the lower end of Mantua Creek Anchorage. The obstruction consisted of a large U-shaped pipe, which appeared to be a large dredge pump housing. The obstruction was removed from Mantua Creek Anchorage and transported to MSO Philadelphia for storage on December 10, 2004.

To facilitate vessel movement, the Waterways Management Unit established Decontamination Task Forces to clean oil residue from vessels. The Unified Command agreed to a standard of "clean" that was defined as: "enough oil removed so the vessel no longer gives off a sheen." Oiled vessels were delayed at facilities awaiting decontamination, vessels were in anchorages and offshore awaiting open berths and vessel agents were delaying or rerouting shipments due to delays within the port. The Unified Command then established a Vessel and Facility Decontamination Prioritization Unit to assist the Waterways Management Unit with prioritizing vessels and facilities for decontamination using port economic factors as one of the decision drivers. Overall, as a result of the spill and necessary waterways management decisions, over two hundred vessels were delayed in their arrival and departure times, and still others were diverted to other ports.

The Delaware River and 214 miles of shoreline (including creeks) have been impacted in Pennsylvania, New Jersey, Delaware and Maryland. Throughout the response environmental concerns were optimally balanced with economic issues with close cooperation between the Environmental and Economic Units in the Planning Section.

Submerged oil proved to be a challenge to the Unified Command. As a precautionary measure the Salem Nuclear Power Plant shutdown two reactors due to the discovery of oil in sediment below cooling water intakes and scattered pea-sized tar balls in the intake debris screen. The Salem Nuclear Power Plant Fire Chief and Engineer were incorporated into the Planning Section Engineering Unit. The Engineering Unit developed and implemented measures to prevent oil intrusion into plant water intakes. A Submerged Oil Recovery Plan was developed, approved and implemented by the Unified Command. The reactors commenced operations on December 15, 2004.

Safety of response personnel was paramount to the Unified Command. A Safety Officer was appointed, a Site Safety Plan developed, and periodic Safety Briefs were provided to response personnel. Although dealing with the inherent risks of on water operations and cold weather

hazards, response personnel sustained only a few minor injuries. The Unified Command implemented a Safety Incentive Reward Program to recognize field workers who displayed a high level of concern for safety.

2. Operational Data:

The Coast Guard could have classified this incident as a spill of national significance (SONS) due to its size and complexity. A SONS incident is defined in Coast Guard Commandant Instruction 16465.1 as a "rare, catastrophic spill, which greatly exceeds the response capabilities at the local, regional levels." An Incident Command System (ICS) Area Command may be established to provide national-level strategic management and support as described in the National Contingency Plan. Although an ICS Area Command was not established for this incident, the response had many characteristics of a SONS including the use of ICS as the response management system, a highly complex response which created a scarcity of response resources, and a significant impact to the environment.

The National Incident Management System Incident Command System (ICS) was the cornerstone in bringing together the 1,800 person organization that was necessary to respond to this incident. Twenty agencies and numerous commercial entities committed to use ICS enabled the Unified Command, made up of representatives from the Coast Guard, Pennsylvania, New Jersey, Delaware and the Responsible Party (represented by The O'Brien's Group), to rapidly build an integrated team that had a common set of objectives and priorities.

The strength of ICS is that it transcends the different organizational structures and unique terminology and processes that agencies use internally and provides a common model that enables those in the response community to join forces. Without a strong commitment from all response entities to use ICS, the Unified Command would not have been able to speak with "one voice," providing the public with a clear and cohesive message, nor would it have been able to leverage the resources necessary to manage the multitude of operational issues that the T/S ATHOS I incident presented.

A Unified Command was established and consisted of the USCG (MSO/Group Philadelphia), The O'Brien's Group (for the Responsible Party), New Jersey Department of Environmental Protection, New Jersey State Police (OEM), Pennsylvania Department of Environmental Protection, Pennsylvania Emergency Management Agency, Delaware Emergency Management Agency, Delaware Department of Natural Resources and Environmental Control and CITGO.

Resources provided by local spill response contractors were deployed for this incident. It became apparent that additional resources were required to meet the operational needs of the incident. Additional local, regional, and national resources (equipment & personnel) were mobilized to the scene. This presented some problems since some response officials in ports/regions closest to the incident were hesitant to move resources out of their port/region to the incident because this could leave their port/region vulnerable if a spill occurred there. Therefore, it was necessary to bring resources from the Gulf of Mexico region of the country.

Aggressive pollution response activities were implemented to minimize the impacts of the spill. At the height of the response, more than 1,800 responders worked in the Command Post and along the Delaware River and its tributaries. Over 23 miles of boom was deployed. Approximately 214 miles of shoreline were impacted with oil, with the heaviest concentrations found in areas near Little Tinicum Island. Over 150 vessels were deployed to assist with the response activity. Over-flights and Shoreline Cleanup Assessment Teams were utilized for assessment of impacted areas.

As of January 18, 2005, the estimated amount of oil spilled was 265,000 gallons; amount of oil recovered is as follows: oil – 3,967 gallons; oily water mixture – 60,829; oily contaminated debris – 6,699 tons.

Eleven waterfront facilities were decontaminated.

Water quality sampling on the Delaware River is ongoing and continuous with the municipalities conducting their own sampling and analysis.

3. Support Data:

The Delaware Bay and River is a 120-mile waterway that is home to the nation's sixth largest port and third largest petrochemical port. There are approximately 3,000 deep draft vessel arrivals each year and it is the largest receiving port in the United States for Very Large Crude Carriers (tank ships greater than 125,000 deadweight tons). Nearly 42 million gallons of crude oil are moved on the Delaware River on a daily basis. The port is the largest North American port for steel, paper, and meat imports as well as being the largest importer of cocoa bean and fruit on the east coast. The port system generates approximately $19 billion in annual revenue and is home to five of the largest east coast refineries and six nuclear power plants. It is one of only 14 strategic ports in the nation transporting military supplies and equipment by vessel to support our troops overseas. The port is critical not only to the region, but also to the nation.

The Delaware estuary is a complex environmental system made up of diverse shoreline features. There are heavily industrialized areas with vulnerable water intakes concentrated from the Delaware Memorial Bridge to the Betsy Ross Bridge, interspersed with pristine marine habitats including the John Heinz National Wildlife Center. The Salem and Hope Creek Nuclear Power Plant is located at Artificial Island, NJ. There are several historical and archaeological sites along the river. There are a number of tributaries that feed environmentally sensitive wetlands, including Mantua Creek, Darby Creek, Raccoon Creek, Oldmans Creek and Big Timber Creek. The shorelines of Chester Island, Little Tinicum Island, and Monds Island are composed of freshwater marshes. Pea Patch Island, located near the Chesapeake and Delaware Canal, is home to the largest heron rookery on the east coast. Vegetated banks and marshes line most of the creeks that flow into the Delaware River. There are also sections of sand or sand and gravel beaches along the Delaware River shoreline. Between the numerous commercial facilities and recreational marinas, the majority of the shoreline is seawall or riprap.

The biological resources at risk in the region are primarily birds, fish and shellfish. There are high concentrations of over-wintering waterfowl (including black ducks, Canada geese and northern pintails) and diving ducks in this area, with the highest concentration in the region from the Commodore Barry Bridge to Little Tinicum Island. There are also several birds of prey in the region including Peregrine Falcons and nesting American Bald Eagle pairs. Few commercially or recreationally important fish are present in this section of the Delaware River at this time of year. The fish that are present, including spot and Atlantic sturgeon, are in the deeper waters. Blue crab is the only significant shellfish in this area and they should have moved further downstream by this time of year. If any crabs are still in the area they would most likely be in the deeper waters.

4. Location of Operation:

A heavy crude oil spill occurred in the Delaware River near Paulsboro, New Jersey. The source of the spill was from the T/S ATHOS I. Subsequent various oil spill response operations were carried out in the waters, marshes, tributaries and 214 miles shoreline between the northern point of Tacony-Palmyra Bridge to areas south along the Pennsylvania, New Jersey, and Delaware shorelines to Artificial Island.

The initial Incident Command Post (ICP) was established at the Coast Guard Marine Safety Office/Group Philadelphia facility. It was recognized early on that a larger ICP would be needed. The ICP was later moved to the Holiday Inn Historic District to accommodate a larger response organization.

5. Location of Personnel:

Response personnel were located at several primary sites:

1. Incident Command Post at the Holiday Inn Historic District, 400 Arch St., Philadelphia, PA.
2. Wildlife rehabilitation occurred at the Frink Center for Wildlife in Newark, DE and the John Heinz Wildlife Center.
3. A decontamination site was established at the “Lagoon”, a marina on the north side of Little Tinicum Island in Essington, PA.
4. “Central Supply”, a wholesale warehouse, was established at West Deptford, NJ to supply and distribute materials to the field.
5. Waste disposal sites were established at numerous locations: solid waste was brought to a location in Growes, PA; liquid waste was brought to locations in West Chester, PA, Wilmington, DE, and Lancaster, PA.

6. Objectives and Major Lessons:

a. Environmental Protection and Oil Recovery Efforts

The response to the oil spill consisted of rapid implementation of assessment, control, containment, protection and recovery strategies. These strategies were employed concurrently and continuously to meet the Unified Command's ultimate goals of protecting the environment and restoring waterways activities.

Assessment teams were deployed by air, water, underwater (divers) and ground to track the oil migration and determine the extent of oil contamination. The assessment teams determined that the oil spill impacted both shorelines of the relatively narrow Delaware River, and each tide cycle provided net movement of oil slowly to the south. In all, the shoreline between the Tacony-Palmyra Bridge and Artificial Island, including the shorelines of creeks, marshes and other tributaries, were impacted. However, only five miles of shoreline were heavily impacted with oil, while the remaining shoreline impacts were light or minimal.

One major challenge of the assessment teams was tracking and locating submerged oil. Experts with submerged oil detection and recovery experience were brought in to assist with the response. The submerged oil expert team was tasked with developing a plan for detecting, monitoring and recovering the submerged oil. Of particular concern was the potential for the submerged oil reaching the intakes of the Salem and Hope Creek Nuclear Power Plant. A special engineering assessment team was dispatched to the Nuclear Power Plant to discuss options for preventing oil from entering the water intakes. The team put together a plan that included the placement of fixed monitoring stations that could be used as an early warning system to detect surges of submerged oil concentrations heading toward the plant and to also record trends in submerged oil concentrations and migration over time.

Concurrently, as the assessments were being completed, response resources were deployed to control, contain, protect sensitive areas and recover oil. Initially, containment boom was quickly deployed around the vessel. A fleet of six on-water skimming units was deployed to recover free-floating oil and help prevent shoreline impacts. To recover submerged oil, the Unified Command chose to deploy five vessel subsurface oil recovery systems designed to collect oil on the bottom and throughout the water column. Deflection and containment boom (floating barriers) were deployed by several on-water task forces established to protect sensitive shorelines, river inlets, marinas, marshes, boats and commercial vessels and piers. At the height of the response, over 23 miles of boom was deployed.

The Delaware River region is one of the largest migratory bird transit points in the United States. Oiled birds present a highly visible symbol to the public of a spill's impact. Hundreds of personnel were deployed to disperse migrant birds and recover oiled wildlife to transport them to a triage facility. To date, over 585 birds have been impacted by the spill and 361 have been successfully cleaned and released or are awaiting release.

Despite the best protective efforts of responders, oil still impacted the shorelines due to rapid spreading attributed to weather and environmental factors (current, tide, wind, etc.). The Unified Command was prepared for this eventuality and mobilized a massive surface oil recovery effort. Over 1,800 responders were deployed. Efforts focused on removal of oil from sensitive habitats and from shorelines where oil could be re-floated and remobilized by changing tides, winds and currents. Laborers and heavy machinery under the careful supervision of expert government scientists and responders removed tons of contaminated debris from the shoreline of the Delaware River. Because of the complexity of the contaminated shoreline, the spill cleanup operation was divided into over 20 different geographic work divisions. Cleanup operations will continue into the spring and summer of 2005.

As of January 18, 2005, the following amount of oil recovered was as follows: oil – 3,967 gallons; oily water mixture – 60,829 gallons; oily contaminated debris – 6,699 tons.

Much of the spilled oil has now formed into tar balls that can be found throughout the water column. Oil that mixes with shoreline sediment can become heavier than water and sink. The tar balls are very sticky and long-lived. They will slowly breakdown by long term weathering processes such as photo-oxidation and biodegradation. Submerged oil is a considerable concern for aquatic resources. The Department of Interior, as lead federal trustee under OPA 90, in conjunction with the Responsible Party are conducting a Natural Resource Damage Assessment to determine the long term environmental impact of this oil spill and will develop a plan to restore or rehabilitate the damaged resources.

Under the Oil Pollution Act of 1990, the Responsible Party's limit of liability is established by the gross tonnage (GT) of the tankship. The GT of the T/S ATHOS I is 37, 895 GT. Accordingly, the owner's limit of liability is $45,474,000 ($1,200 per GT).

b. Port Management Issues

The oil spill cleanup operations prevented further spread of the oil and allowed for surveys of the channel bottom to be conducted to search for any obstructions. As a result of the Unified Command's proactive management of the waterways, the major refineries and smaller facilities were not forced to shut down operations. However, this necessary waterways management action did result in significant economic impacts in other areas. Initially, over 20 vessels were delayed as a result of the spill. Additionally, no vessels were allowed to leave the port until they had been decontaminated and many vessels could not enter the safety zone as their intended berths contained contaminated vessels awaiting cleanup. Before the river was re-opened to all traffic, the Unified Command had to be certain that there were no obstructions in the channel that could cause another incident and, as a result, numerous ship schedules were adversely impacted.

The Unified Command worked closely with the Mariners' Advisory Committee and The Pilots Association for the Bay and River Delaware to develop protocols for managing and authorizing vessel movements. The Maritime Exchange for the Delaware River and Bay quickly

disseminated information to the port community. On the evening of November 26, 2004 and throughout November 27, 2004, the port was closed to deep draft vessel traffic. On November 28, 2004, the Unified Command permitted commercial inbound vessels to transit through the safety zone with certain restrictions. Shortly thereafter and as a result of not finding any underwater obstruction, draft restrictions were imposed, requiring that any vessel with a draft greater than 34 feet transit the area only at high tide as a precautionary measure. Under normal circumstances, the pilotage guidelines state that the maximum fresh water draft for river transit is 40 feet and vessels arriving with a draft in excess of 37 feet are to transit during flood current. The T/S ATHOS I's draft was at 36.06 feet and met the pilotage guidelines for transiting the Delaware River.

To facilitate vessel movement, the Waterways Management Unit established Decontamination Task Forces to clean oil residue from vessels. The Unified Command agreed to a standard of "clean" that was defined as: "enough oil removed so the vessel no longer gives off a sheen." Oiled vessels were delayed at facilities awaiting decontamination, vessels were in anchorages and offshore awaiting open berths and vessel agents were delaying or rerouting shipments due to delays within the port. The Unified Command then established a Vessel and Facility Decontamination Prioritization Unit to assist the Waterways Management Unit with prioritizing vessels and facilities for decontamination using port economic factors as one of the decision drivers. Overall, as a result of the spill and necessary waterways management decisions, over two hundred vessels were delayed in their arrival and departure times, and still others were diverted to other ports.

By December 8, 2004, the river was open to all marine traffic, with the exception of wake restrictions, as oil was no longer mobile on the surface of the river and a channel survey had been completed, validating that the channel was clear of obstructions.

c. Salvage

Salvage of the damaged T/S ATHOS I involved shifting of cargo and ballast to return the vessel to an even keel, removing of the remaining 13 million gallons of oil, and effecting temporary repairs that would allow the vessel to proceed to a dry dock for permanent repairs. The vessel was returned to an even keel by internally transferring cargo and taking on additional ballast water, but the result left the vessel at a draft of 39 feet, too deep to go to the facility and offload the remaining cargo. As a result, the T/S ATHOS I remained at anchorage where barges were brought along side and cargo was pumped off to a point where the vessel could come into the CITGO facility and discharge its cargo. Effecting temporary repairs required the design and fabrication of a steel box patch and calm water for application. The ship was moved to Groves Terminal in Fairless Hills, PA on December 21, 2004 and divers were able to install a temporary patch in way of the damaged hull. On December 31, 2004, the T/S ATHOS I was allowed to proceed to the Atlantic Marine shipyard in Mobile, AL for tank cleaning, dry-docking, and to effect permanent repairs. The T/S ATHOS I arrived in Mobile, AL on Friday, January 7, 2005.

The initial spill estimate of 30,000 gallons proved to be inaccurate due to the eight-degree list on the vessel thereby preventing an accurate gauging of the tanks. It was later determined by a dive survey, which was video recorded, that the vessel had not only sustained a hole in the number seven center cargo tank, it had also sustained a hole in the number seven port ballast tank as well. The bulkhead between the cargo and ballast tank had been compromised, allowing an unknown amount of cargo to migrate into the ballast tank and then into the river. As previously stated, once the vessel was stabilized and no further oil was escaping, a worst-case estimate of oil released was approximately 473,500 gallons. When the tanks were stripped and cleaned in Mobile on January 8, 2005, a more accurate estimate of the total amount of oil lost into the Delaware River was determined to be 265,000 gallons.

d. Investigation

A Coast Guard marine casualty investigation was immediately initiated to determine the cause of the accident. The docking pilot, river pilot, and the T/S ATHOS I's master and navigation watchstanders at the time of the incident were interviewed and given drug and alcohol tests with negative results. Based on diver surveys, it was determined that the T/S ATHOS I sustained a six foot by one and a half foot tear and a two foot by one and a half foot puncture in way of the bottom of its number seven port wing ballast tank and number seven center cargo tank. The number seven port ballast tank was empty at the time of the incident, but the number seven center cargo tank contained 2,236,216 gallons of crude oil. Eyewitness accounts and preliminary ship hydrostatic calculations suggested that the damage to the T/S ATHOS I occurred after the ship exited the shipping channel and was maneuvering in the southern end of the Mantua Creek anchorage. With the help of the vessel's global positioning system, the NOAA Office of Coast Survey recreated the ATHOS I's track line to help determine when the damage to the vessel occurred. Using this information, the Army Corps of Engineers (ACOE), NOAA, and American Underwater Search and Survey, a company hired by the vessel's insurers, worked hand in hand to complete bottom surveys of the southern end of the Mantua Creek anchorage and approximately 8.5 miles of the shipping channel. On December 4, 2004, a large cast iron object was discovered approximately 700 feet from the CITGO terminal. The heavily corroded, U shaped object measured 12.5 feet long and three feet wide and weighed 12-tons. It protruded approximately three feet above the river floor. On December 9, 2004, the object was recovered from the river, and it was determined to be the lower housing of a centrifugal pump. A small red paint chip was found embedded on the housing along with fresh scrape marks. The National Transportation Safety Board's forensic laboratory matched the paint on the pump housing with a paint sample taken from the T/S ATHOS I. The Coast Guard is working with the ACOE and other entities such as the National Institute of Standards and Technology to determine the manufacturer and owner of the centrifugal pump housing. The marine casualty investigation, being conducted by members of Marine Safety Office/Group Philadelphia, is on-going.

e. Port Community Preparedness

The groundwork for mounting a successful response began long before the T/S ATHOS I incident. The Oil Pollution Act of 1990 (OPA 90) was key to the preparedness of the port in

responding to this very dynamic and challenging oil spill. OPA 90 required the establishment of an Area Committee for the port and development of an Area Contingency Plan (ACP). It also required participation in the National Preparedness for Response Exercise Program (PREP) mandating triennial oil spill response exercises. In addition to port preparedness, OPA 90 requires tank vessels to have a vessel response plan detailing actions to be taken to mitigate the impact of an incident such as what occurred to the T/S ATHOS I. OPA 90 also requires that tank vessels have a designated Qualified Individual (an individual that can immediately respond to an incident and take actions on the company's behalf) on call 24 hours a day.

In addition to OPA 90, the National Oil and Hazardous Substances Pollution Contingency Plan, under which the Coast Guard Captain of the Port has the authority and responsibility to direct oil spill response operations, provides for special teams that can be called upon for technical assistance. These teams were invaluable to the T/S ATHOS I response and included the Coast Guard Strike Teams, the NOAA Scientific Support Coordinator and Ocean Survey Team, the Environmental Protection Agency Emergency Response Team, Coast Guard Public Affairs Information Team, the Army Corps of Engineers and U. S. Navy Supervisor of Salvage. These teams rapidly responded to the Unified Command's request for support and performed exceptionally.

Over the past few years the Delaware Bay and River port community, which includes federal, state and local government agencies, the maritime industry, and other interested parties has come together in an unprecedented way to work as a team in preparing to respond to incidents threatening the marine environment, public health and safety, and maritime commerce. There are three significant actions the port community took prior to the T/S ATHOS I incident that are noteworthy.

First, and most important, was the unwavering commitment by all port partners to invest their time in building relationships with one another. Two very important committees, the Area Committee and the Area Maritime Security Committee, provided the opportunity to bring together a wide range of port partners on a regular basis to conduct joint training, discuss issues of the port, and develop comprehensive port response and security plans. The relationships developed through these committees before an incident occurs are essential to responding to such a complex incident as the T/S ATHOS I oil spill.

Second, the National Incident Management System Incident Command System (ICS) was the cornerstone in bringing together the 1,800 person organization that was necessary to respond to this incident. Twenty agencies and numerous commercial entities committed to use ICS enabled the Unified Command, made up of representatives from the Coast Guard, Pennsylvania, New Jersey, Delaware and the Responsible Party (represented by The O'Brien's Group), to rapidly build an integrated team that had a common set of objectives and priorities.

The strength of ICS is that it transcends the different organizational structures and unique terminology and processes that agencies use internally and provides a common model that enables those in the response community to join forces. Without a strong commitment from all response entities to use ICS, the Unified Command would not have been able to speak with "one voice," providing the public with a clear and cohesive message, nor would it have been

able to leverage the resources necessary to manage the multitude of operational issues that the T/S ATHOS I incident presented.

Over the last two years, the port community has trained together in the use of the Incident Command System, and as the T/S ATHOS I incident reinforced, it is clearly apparent that how well you respond is directly related to how well you practice.

Third, through an aggressive exercise program, the port community put their collective training to the test during several challenging scenarios. In November 2003, the port held its triennial PREP oil spill response exercise as required by OPA 90. This major exercise had many similarities to the actual T/S ATHOS I incident and the Area Committee immediately set about implementing the many lessons learned in the ACP, including most recently, updating the ACP to be in alignment with the new National Response Plan.

In summary, the importance of the team and the close port relationships that fostered the coordination and support of this response cannot be emphasized enough. The use of a Unified Command and a single response management system is absolutely necessary. The port community cannot afford to work at odds. Pre-incident planning and port community preparedness put the Unified Command in a position to succeed.

f. Public and Government Outreach/Communication

The location of the oil spill covered three states and several different media markets creating immediate and significant local, regional and national media interest.

To meet the public's need for information and the demands of the media, a Joint Information Center (JIC) was established to provide a single source of information, ensuring that all public information regarding the spill, investigation, and response was accurate and timely. Members from federal, state, and local agencies, and various port stakeholders were represented in the JIC. Each day more than 150 media inquiries were received during the first week of the response. The first press briefing with the Unified Command was held at 11:30 a.m. November 27, 2004 and attended by 15 media representatives. Subsequent press briefings were conducted at 3:00 p.m. each day and attended by an average of 30 media representatives. This provided a predictable, consistent release of information from the key members of the Unified Command. A website was established November 27, 2004 at http://www.incidentinfo.com on the Maritime Exchange website. All the daily news releases, photos and fact sheets were posted on the website for public viewing. The website received more than 500,000 hits in the first 10 days.

The media was given access to view and record response operations, the command post, and the wildlife rehabilitation center. Locally, the JIC reached out to the public by going door to door to hand out informational fliers and answering questions. The Unified Command also held two public meetings to discuss the issues and answer questions about the spill.

Although initially understaffed, an effective group of governmental liaison officers were assigned to advise federal, state, and local elected officials of the pertinent issues associated

with the spill. They also worked closely with the local Chamber of Commerce and schools; coordinated meetings with the states' Office of Emergency Management, public health, and fire departments; published daily advisories; conducted teleconferences with congressional staffers; and hosted tours for government officials.

Coast Guard Auxiliary members were also used for public outreach. They provided invaluable assistance and information about the spill to members of yacht clubs and users of marinas.

7. Limitations and Casualties:

N/A

8. Participants:

USCG Marine Safety Office/Group Philadelphia; The O'Brien's Group; Delaware Department of Natural Resources & Environmental Control; New Jersey Department of Environmental Protection; Pennsylvania Department of Environmental Protection; USCG Atlantic Area Incident Management Assist Team; USCG National Strike Force Atlantic Strike Team (including members from the Gulf & Pacific Strike Teams) and Public Information Assist Team; Fifth Coast Guard District; National Oceanic & Atmospheric Administration; U.S. Environmental Protection Agency, Region II & III; U.S. Army Corps of Engineers; U.S. Department of the Interior – U.S. Fish & Wildlife Service; U.S. Navy Supervisor of Salvage (NAVSUPSALV); Region III Regional Response Team; Pennsylvania Emergency Management Agency; New Jersey Office of Emergency Management, New Jersey State Police; Delaware Emergency Management Agency; City of Philadelphia Police Department; CITGO and the Salem Nuclear Power Plant.

Lessons Learned/Best Practices

1. State Representation in the Unified Command

Observation:
The states of Delaware, New Jersey, and Commonwealth of Pennsylvania were each represented by their respective emergency management and natural resource agencies at Unified Command meetings. It was not always clear to all meeting attendees that there was a consistent lead agency for each state.

Discussion:
State representation at Unified Command meetings were:

New Jersey:	Department of Environmental Protection (DEP); NJ State Police, Office of Emergency Management (OEM)
Delaware:	Department of Natural Resources; Emergency Management Agency
Pennsylvania:	Department of Environmental Protection (DEP); Emergency Management Agency (PEMA)

During the numerous Unified Command discussions concerning response objectives, priorities, and other critical subjects a significant amount of time was necessary to listen to multiple agency's viewpoints. When it was time for the states to make a definitive decision or take a position, the state of New Jersey DEP appeared to be the most consistent lead state agency because this was primarily an environmental incident. New Jersey OEM was in a primary support role readily available to provide state emergency management resources, data, and information. It was not always apparent who was the lead agency speaking for Delaware and Pennsylvania when the Unified Command needed to come to a consensus.

Additionally, the working relationship between the state agencies represented in the Unified Command and their respective counties (county office of emergency management), municipalities, and other political entities was not clear to all Unified Command members. New Jersey was able to determine the status and availability of county emergency management resources. Delaware and Pennsylvania did not appear to be as effective in communicating with their respective counties to obtain resources.

Lesson Learned/Best Practice:
Each state must speak with one voice when the Unified Command needs a consensus. The state agencies represented in the Unified Command must clarify their working relationship (jurisdictional authority and/or functional responsibilities) with their respective counties, municipalities, and other political entities. Additionally, state representatives to the Unified Command must have the authority to make decisions on behalf of the Governor regarding response activities.

Recommendation:

Each state should predetermine which organization will be their lead state agency for specific types of responses (i.e., criminal, environmental, natural disaster, etc.). This designation should be documented in the Philadelphia Area Contingency Plan. State agencies that are not the lead state agency should be assigned elsewhere in the response organization such as deputies to the lead state agency, as agency representatives to the Liaison Officer, or a technical specialist.

2. COTP Identification of Facilities Appropriate to Handle Vessels Involved in Accidents

Observation:
The Responsible Party was challenged to find a facility in the immediate area willing to accept the T/S ATHOS I to make temporary repairs. After 10-days, a facility located 50-miles from the vessels original anchorage, agreed to accept the ship to effect temporary repairs.

Discussion:
T/S ATHOS I suffered damage to the number seven center cargo tank and number seven port ballast tank after striking a submerged object. The result was the discharge of an undetermined amount of Bachaquero Venezuelan crude oil into the Delaware River. This event also caused an 8-degree list and changes in the vessel's draft, which restricted the T/S ATHOS I from proceeding on to the CITGO facility, the vessel's intended destination. The vessel anchored at Mooring #9 near Mantua Creek to await lightering operations. After lightering was completed, the COTP sought an appropriate facility to provide a safer environment for diving operations to effect repairs to the damaged hull.

An exhaustive 10-day search failed to identify a facility that would accept the vessel. Many candidate facilities were unwilling to accept the T/S ATHOS I citing fears of future discharges from the ship, contamination of their facilities and the potential disruption of normal operations at their facilities. This resulted in a significant loss of time which hampered many aspects of the response including the salvage efforts and delayed the ongoing investigation.

Lesson Learned/Best Practice:
The COTP's need to work within the Harbor Operations and Area Committees to identify and start discussions on availability of berths for vessels experiencing problems as a result of pollution, security or other incidents which may require temporary berthing to facilitate resolution of problems.

Recommendation:
COTP's should set up sub-committees of the Area Committee to identify waterfront facilities to accept damaged vessels in emergencies to affect temporary repairs.

District legal should be engaged to address questions, identify areas where new authorities may be necessary to support the objectives of the subcommittee.

3. Submerged Oil

Observation:
Submerged oil tracking, recovery, and protection strategies are not well developed in national, regional and area contingency plans.

Discussion:
The T/S ATHOS I was carrying Bachaquero Venezuelan crude oil. Scientific analysis of a sample of the oil taken from the tanks of the T/S ATHOS I indicated that the oil would float and react within the environment in the expected way. However, this proved not to be the case. It was observed that, over time, the oil became suspended throughout the water column. Traditional trajectory models do not address suspended oil and were therefore of limited usefulness. Additionally, these models predicted more shoreline impacts than observers reported from the field. As a result, response strategies were put in place to locate and recover submerged oil and to protect area water intakes. Individuals with experience in submerged oil recovery were brought to the scene to lend their expertise to the response.

a. Submerged Oil Detection

The responders struggled to locate and track oil. The National Oceanic and Atmospheric Administration (NOAA) provided a best guess trajectory of the submerged oil. Because the oil could not be seen moving in the water column several devices were constructed in an attempt to validate the trajectory, determine the location and indicate the movement of the oil.

The submerged oil in this response can be divided into three categories:

1. *Mobile suspended oil*. Mobile submerged oil moved within the water column or rolled along the bottom. **Detection method:** To detect mobile submerged oil, a "snare sampler" device was developed. This consisted of a float, line and anchor with snare tied around the line from anchor to float. The snare used for this purpose, was the same type of material that had tremendous success in recovering oil along the shoreline. It consisted of hundreds of shredded strips of plastic material tied to a center point. When completed it looked similar to cheerleader 'pom-poms.' The shredded strips provided a substantial amount of surface area, and since this oil adhered well to surfaces, the snares were ideal for recovery and for submerged oil sampling. These snare samplers were deployed in transects across the river and at key strategic points ahead of critical water intakes. They were not deployed inside the channel for safety reasons. At one point, over 100 snare samplers were deployed. They were periodically sampled and over time showed declining oil contamination. In areas where bottom dwelling organisms were in abundance, a crab pot, stuffed with snare, was used to provide better capture of oil closer to the bottom. Due to the inconsistent color of the snare material,"white" snare was ordered and employed for the monitoring program. Even trace amounts of oil could be detected on the white snare, which improved consistency in field reports from several different individuals. Use of the white snare also improved the ability to estimate the amount of oiling on the snare.

2. *Stranded sunken oil*. Stranded submerged oil was oil trapped on the bottom that showed no migration. **Detection method:** To detect stranded submerged oil, the members of the Environmental Unit originally chose the pooled oil sampling technique but were unable to recover stranded submerged oil, possibly due to the oil forming less penetrable and adhesive tar mats on the river bottom. The technique used for stranded submerged oil was a vessel-towed system called VSORs (pronounced Vee-Soars), which stands for Vessel Submerged Oil Recovery System. This consisted of an 8-foot pipe, 6" to 8" in diameter, rigged in a bridle fashion, attached with several 6 to 8 foot lengths of 3/8-inch chain. Around the chains, snare was tied. The system was then towed behind a vessel and dragged along the bottom and somewhat angled through the water column. Up to 5 VSORS systems were deployed for this incident. The VSORS was used for detecting stranded submerged oil by dragging the systems through the river channel and areas where submerged oil was likely to be stranded (low points) along the riverbed. Once the VSORS detected submerged oil, they were used in a recovery fashion to remove the oil.
3. *Pooled oil*. Pooled oil was oil that settled into natural depressions and was trapped due to the cohesive forces between the oil and surrounding sandy walls of the depression. The only pooled oil found was that residing in a curved trench found near the origin of the accident. The trench was curved and over 40 feet in length. When the vessel struck the submerged object, the oil jetted out of the holes and impacted the river bottom, forming a trench, which held the injected oil. The oil jetted out of the holes due to the head pressure of the oil in the tank above the waterline. As the head pressure began to taper off, the oil discharge rate slowed and then rose to the surface, where it began to spread. The oil injected in the trench, formed a cohesive bond with the trench walls keeping it pooled in place. **Detection method:** For the pooled oil "sorbent drops" were made, consisting of a line with a weight and sorbent materials attached to one end. Users would cast the line and weight over the side of a small boat which would sink and touch bottom. The sorbent materials near the weight would then contact the oil. The surveyors then raise the device and check for oil contamination. To narrow down the sampling scope of pooled oil, bottom charts were used for identifying depressions in the river bottom. A few of these were sampled with negative results. Shortly after the pooled oil sampling begun, advance laboratory analysis indicated that the oil could not sink as originally surmised, due to weathering. It would only sink if attached to other heavy materials like sand and stone. It was then decided that no other pooled oil was likely to be present other than that found in the trench. This, combined with the negative results early on resulted in termination of pooled oil identification.

<u>Sonar</u>

Several types of sonar were used in an attempt to locate submerged oil. NOAA NRT and EPA ERT used a sonar detection device without positive results. Bioscience, a Seattle based company, provided information on their sonar, which is used to detect sea grass on the sea bottom. Both NOAA and NAVSUPSALV analyzed the information and specification data, essentially performing an ARTES (Alternate Response Tool Evaluation System) preliminary assessment on the capability of the Bioscience sonar unit. The assessment determined that the

sonar device was similar to what was used by NAVSUPSALV and would therefore only duplicate efforts.

b. Diving Operations to Recover Pooled oil

Initial diving operations conducted to assess the damage to the T/S ATHOS I reported that there was oil on the river bottom in the vicinity of the original discharge location. Once the ship had moved from anchorage the site became available for diving operations. Locating the oil in the very limited visibility of the Delaware River proved to be a difficult process.

The operation involved a diver with a helmet-mounted video camera using a pump system with a suction hose rigged with a duckbill attachment. Due to poor visibility, divers were outfitted with white latex gloves over their normal diving gloves, to guide the oil towards the suction side of the hose. The diver could hold his hand close to the camera to show that his hand was either oiled or not, this would signify whether the diver was working in the targeted area. A steam line was affixed to the suction hose that aided oil recovery by making the oil warmer and less viscous. The first pump used was a centrifugal dredge pump that was lowered into the water with a barge-mounted crane. This pump was found to pump too great a volume and tended to cause the recovered oil to mix with recovered water, which hindered collection efforts. A Foilex TDS 150 screw pump replaced the centrifugal dredge pump to reduce the volume of discharge water. The discharge water needed to be free of oil prior to decanting into the Delaware River. The discharge water was therefore gravity-separated and filtered using snare, before being decanted. The problem with the dredge pump was that it broke the oil into tiny particles about 1 mm in diameter and suspended it throughout the water column. This problem hindered the effectiveness of decant/separation. There were two ways to solve the particle size problem, increasing the amount of storage capacity for recovered liquid or eliminating the suspension by going with a low rpm pump that would not break the oil into such small particles. The low rpm Foilex TDS 150 was employed. The oil came out of the discharge hose in much larger pieces and did not suspend, which allowed effective decanting through the designed decant arrangement.

c. Submerged Oil Decanting Process

To clean the discharge water, a decanting system was created consisting of three separate 4,000-gallon tanks; one was used for collection, the second and third tanks were used for settling. A 350-gallon “polishing” tank filled with snare was the last step prior to discharge within a containment boom. Snare on a rope was used inside the containment boom as a precautionary step in case any sheen escaped the polishing tank. The first 4000-gallon open settling tank was slightly heated because the steam line mounted in the duckbill heated the recovered liquid. In the first tank, the oily water was separated with the oil floating to the top. The water from the first tank was pumped to a second tank and the oil was removed. In the second tank an oleophilic (drum) skimmer was placed to skim any residual surface oil. The oil

recovered in the second tank was pumped back to the first tank. Water that passed through the second tank was pumped to the third tank, which had been filled with snare material. Snare was placed on the top of tank #3 to recover residual oil.

Water was pumped from tank three through the 350 gallon polishing tank filled with snare prior to discharge into the boom and snare protected area. This process was evaluated and signed off by both Regional Response Team II and III. Additionally, a state representative/RRT member monitored this process.

d. Underwater Filter Fences

Several methods were used to create underwater filter fences in an attempt to provide some protection for water intakes. One type was constructed by stacking crab pots that had been stuffed with snare. This system was designed, but never constructed or employed. The "Snare Monster" design replaced the stacked crab pot design. The "Snare Monster" was constructed on site and included a large steel framework, which was laced with line or chain. Snare was attached to the lacework to create a solid barrier. The "Snare Monster" was deployed during the first day of submerged oil recovery operations to assure that no oil was being mobilized during the operation. It was agreed to abandon the "Snare Monster" after day one, as everyone was comfortable that no oil was being mobilized. (No oil detected on "Snare Monster").

Lesson Learned/Best Practice:

Submerged Oil Detection
The snare samplers were merely indicators of the passage of oil through an extremely small sampling of the water column. This sampling was not considered by the Environmental Unit to provide any ability to predict the movement of the oil through the Delaware River and tributary system. The information provided by the snare samplers and underwater filter fences did not change any of the tactics being used by the Operations Section. Information provided by the snare samplers was reviewed by the Operations Section daily to determine if changes to tactics were necessary.

Sonar was ineffective in locating submerged oil. Sorbent drops and grab samples identified several areas were oil might be pooled on the bottom. Subsequent investigation by divers did not find any pooled oil.

Submerged Oil Recovery
The VSORS did recover a small amount of oil. The VSORS program was developed and employed to assist in identifying suspect areas that had the potential of holding subsurface oil and to recover smaller concentrations of oil.

Diving Operations
The management group contracted experienced companies and individuals with a proven track record of successful submerged oil recovery projects over a broad range of conditions including

conditions encountered during the ATHOS I response. Diving operations were the most successful system for recovering submerged oil. The techniques and systems used by the divers have been used in other responses. This response did not develop any new techniques for diver recovery of submerged oil.

Recommendation:

The threat of submerged oil is very real and warrants serious attention. Equipment for detection and recovering submerged oil is not well developed, nor adequately addressed in Vessel Response Plans. Due to the multiple scenarios of varying conditions possible for submerged oil recovery operations, it would be difficult to prepare for an effective response to all scenarios. Operationally, the tools and expertise for recovering submerged oil are available. For example, different pumps work better than others based on amount of water available for pumping, temperature, viscosity of oil, etc. Detection of submerged oil is the problem and should be the focus of future activities. The Coast Guard Office of Response, Planning and Preparedness Division should charter a working group for addressing this deficiency. The Coast Guard Office of Response, Response Division, should charter the Coast Guard Research and Development Center to review existing and potential submerged oil recovery techniques and equipment. Additionally, the National Response Team should task its own working groups to address the need for developing scientific methods and equipment for detecting submerged oil.

4. State use of Pollution Removal Fund Authorization (PRFA)

Observation:
States were not familiar with the federal Pollution Removal Fund Authorization (PRFA) application and approval process.

Discussion:
New Jersey, Pennsylvania, and Delaware Unified Command representatives were asked to provide their statement of work for all their deployed assets and complete the required PFRA. States were "acting on behalf of the FOSC" in providing response the T/S ATHOS I, which met the PRFA criteria for reimbursement.

Draft copies of the PRFA statement of work from the US Fish and Wildlife Service were provided to the states as an example of how to complete the PRFA form. Although this was helpful, States still struggled with the application process.

Lesson Learned/Best Practice:
Knowledge of how to quickly complete and apply for reimbursement under the PRFA will ensure that States are properly reimbursed for their services without disrupting the response operations.

Recommendation:
The Area Contingency Plan should add an annex to include a sample PRFA application that clearly describes how it needs to be completed.

States should adopt a streamline approach to best solve this problem. They should train personnel in how to complete the required paperwork. Additionally, the states should draft a template "statement of work" that can easily be modified to fit the particular incident.

5. Volunteers

Observation:
There was no plan or systematic method for soliciting volunteers, responding to volunteer calls, training or directing volunteers to appropriate activities prior to the response.

Discussion:
Private individuals who volunteered their assistance in response efforts were always referred to the Tri-State Bird Rescue and Rehabilitation Center. The Unified Command did this because wildlife rehabilitation requires much labor with little need for upfront training, yet provides volunteers with rewarding roles that have a direct positive impact on the environment. It also provides volunteers with a safe, controlled working environment. Tri-State Bird rescue also accepted volunteers from their website and provided volunteers training required by the Occupation Safety and Health Administration (OSHA): two-hour formal training and two-hour supervised field on the job training.

The UC was also concerned with integrating specific volunteer organizations under the umbrella of the response because they could have their own response-related agendas, i.e., one volunteer did not want birds to be caged, some individuals could have been members or sympathizers of certain political activists groups. How do you safely utilize a group of citizens without associating yourself with their organizational agenda? The Delaware Riverkeeper, a non-governmental organization, contacted the response organization numerous times regarding their observations regarding the spill impacts and cleanup. In response to their repeated requests for involvement, the Environmental Unit Leader was designated the point of contact for the Delaware Riverkeeper. The Unified Command's position was to maintain contact with the Riverkeeper plus review and acknowledge their observations without encouraging their presence in the active cleanup areas.

Lesson Learned/Best Practice:
Volunteers have the potential to contribute to response efforts provided coordination and training is available. People who wish to volunteer can be incorporated into a response and contribute to its success, or may be a potential source of criticism should the response organization be unable to integrate them. However, their use in a response must be carefully managed due to liability issues.

Recommendation:
The Area Committees and the Regional Response Teams should work together to develop a policy for the use of volunteers. The Area Contingency Plan should address a Volunteer Program by identifying a Volunteer Coordinator within the Planning Section (Resources Unit) to manage volunteers. The Federal Emergency Management Agency's (FEMA) volunteer program may be used as a reference to develop a program.

6. Use of State Historical Preservation Officers (SHPO)

Observation:
The Philadelphia Area Contingency Plan does not address the use of SHPOs and their contact information.

Discussion:
Notification and consultation with SHPOs during response operations is required by a USCG/DOI Memorandum of Understanding in order to protect cultural and historic sensitive areas and prevent additional damage from response operations. During the response operations concerns arose as to the historical value of Fort Mifflin. The Documentation Unit Leader made initial contact with the SHPO regarding Ft. Mifflin. Later as response operations began planning to hotwash at Ft. Mifflin, the SHPO was again contacted regarding the work.

Lesson Learned/Best Practice:
Access to the SHPO is essential to identify significant archeological and historical sites that are potentially impacted during an oil spill or hazardous material incident.

Recommendation:

The Area Contingency Plan needs to include current SHPO contact information for Pennsylvania, Delaware, and New Jersey. The Unified Command should also utilize the Department of Interior's Regional Environmental Officer as the point of contact for additional advice on historical and archeological matters.

7. Average Most Probable Discharge (AMPD) Coverage

Observation:
The Philadelphia COTP approved a waiver of the AMPD lightering requirements at Big Stone Anchorage near Lewes, Delaware as listed in the Area Contingency Plan. He did this so that oil spill response vessels (OSRV) could remain on the spill response instead of returning to Big Stone Anchorage to provide AMPD coverage.

Discussion:
During the initial response to the T/S ATHOS I oil spill, two Delaware Bay and River Cooperative, Inc. (DBRC) OSRVs were contracted to perform oil spill response activities in the Philadelphia area. These two OSRVs normally provide AMPD coverage to meet the lightering regulations in the Lewes, DE area. Therefore, vessels that normally depended on DBRC could not meet the AMPD requirements. After two days of deliberation, the COTP granted a wavier for relief of the AMPD requirements for lightering operations. Despite this waiver some operators refused to conduct lightering operations without the AMPD required equipment in place.

Lesson Learned/Best Practice:
The Unified Command has the responsibility to allocate scarce resources, which are more critical as the response becomes larger and more complex. The waiver of the AMPD requirement was a good short-term solution.

Recommendation:
All plan holders must meet their response equipment requirements whether they are spillers or providers of AMPD discharge. If the COTP waives the regulatory requirement for oil spill response equipment during lightering operations for AMPD coverage, the appropriate communication, written and verbal, must be provided to all stakeholders. The Area Contingency Plan should address this anomaly to normal operations.

8. Accessing Navy Supervisor of Salvage (NAVSUPSALV)

Observation:
Contracting NAVSUPSALV to provide response resources was cumbersome and lengthy.

Discussion:
The COTP contacted NAVSUPSALV to activate resources and was directed to submit a written message in a specific format to the Department of Defense (DOD) for approval. The format for the message was not readily available and therefore, the approval by DOD was delayed. NAVSUPSALV dispatched 3 technical specialists without prior written approval from DOD to provide immediate assistance with the assurance that the message would be sent as soon as possible. The expectation of providing the NAVSUPSALV resources within a reasonable amount of time is paramount.

Lesson Learned/Best Practice:
Not knowing the proper message format, delayed the deployment of the needed NAVSUPSALV resources. Failure to receive NAVSUPSALV equipment could hamper response activities.

Recommendation:
The Area Contingency Plan needs to include expedited procedures for activating NAVSUPSALV equipment and personnel. At a minimum, the Unified Command needs to know the message format, Points of Contact, procedures for placing the equipment in a standby mode pending approval and what to expect in reply.

9. Salem Nuclear Power Plant

Observation:
The Salem Nuclear Power Plant (the Plant) performed a precautionary shutdown to safeguard against potential damage from subsurface oil.

Discussion:
The Salem Nuclear Power Plant received initial notification about the oil spill (originally estimated at 30,000 gallons). The Plant Fire Chief was in contact with MSO Philadelphia. The Plant did not express concern because of the size of the spill and the distance of their facility from the spill (the Plant is located approximately 40 miles from spill). The Plant requested updated information as appropriate.

When the volume of the spill was revised to be up to 400,000 gallons the Plant reacted. In accordance with their emergency plan, the Plant stood up an Emergency Operations Center (EOC). This included the hiring of a spill management team, Paratus, to provide protection from potential impacts to any of the power plant systems. Paratus personnel conducted two over-flights a day. These overflights were in addition to those being conducted by the Unified Command.

While this was taking place, several communication failures occurred. The Unified Command had difficulty contacting the Plant EOC. The Plant EOC believed they were communicating with the Unified Command via their daily call to the Situation Unit. The Scientific Support Coordinator (SSC) sent updated information via fax for two days to another power plant, thinking it was the Plant. Based on their frustration over receiving information about the size and location of the spill Salem Nuclear Power Plant made the decision to conduct a controlled shut down. Eventually, the Unified Command and the Plant EOC created liaison positions to enhance communications. This exchange greatly improved efforts in the planning of protection of the water intakes from both the Plant EOC and Unified Command.

The Plant set up two branches in their EOC. One was to assess the criteria for restart, the other was to protect the water intake and mitigate any impacts from oil entering the intake. On several occasions meetings were conducted to provide information to the State of New Jersey nuclear regulatory representative, Nuclear Regulatory Commission (NRC), political VIP's and representatives from both the Unified Command and the Plant's EOC.

The U. S. Army Corps of Engineers had a standing contract with the Plant for some unrelated work. However, the spill response was the nexus for planning a permanent underwater overflow damn in the confluence area of the intakes. Approximately two weeks later the amount of detected oil decreased and this plan was scrapped. Shortly thereafter, the Unified Command notified the Plant of its plan to provide snare samplers in certain locations to monitor subsurface oil moving downstream toward the Plant.

The Plant's EOC contracted a commercial crab boat to deploy crab pots stuffed with snare in front of the water intakes as a temporary barrier. The Plant's EOC felt this would provide a

guarantee against submerged oil affecting the water intakes. The NOAA SSC presented a model that showed the likelihood of oil reaching the water intakes over time. The Plant requested more snare samplers and crab pot-monitoring locations deployed with a 24-hour notification of oiling. In between the initial planning for the Plant/submerged oil issue and the above-described request for snare samplers, there was a period of approximately 15 days where approximately 100 snare samplers were placed in the river. The evidence from this extensive monitoring system was used by the Environmental Unit to evaluate the Plant's subsequent request for 5 to 7 samplers as an early warning system. The Environmental Unit believed that additional snare samplers would not provide any additional information and reported this to the Plant. The Environmental Unit recommended and subsequently established a consortium of water intake facilities that would report daily tar ball encounters to the Plant and the Unified Command.

The relationship between the Plant and the Unified Command remained cooperative. However, it is not clear if the Plant notified the Unified Command prior to their start up operations of reactors Salem No.1 and No.2.

Lesson Learned/Best Practice:
There was a significant amount of activity that was being conducted by the Unified Command and the Plant EOC, which may have been redundant, i.e., over flights, detection/cleanup and monitoring strategies.

Recommendation:
The Area Contingency Plan needs to clearly show all water intake locations on a map. Additionally, the ACP needs to include a draft water sampling and monitoring plan focused on facilities with water intakes in order to inform them on concentrations in their area of an oil or chemical spill.

The USCG should have a follow up discussion with the Salem Plant engineers for a permanent water intake design to prevent tar balls from adversely impacting their facility's operation.

The Area Committee should invite the Salem Nuclear Power Plant and any other entities with water intakes in the Delaware River to participate in the Area planning process including training and exercises.

10. Port Community Preparedness

Observation:
The entire response team quickly formed a cohesive team and enjoyed a high level of trust and confidence in each other. This positive team environment enhanced their effectiveness by allowing them to jointly focus on and address the various response issues.

Discussion:
Over the past few years the Delaware Bay and River port community, which includes federal, state and local government agencies, the maritime industry, and other interested parties has come together in an unprecedented way to work as a team in preparing to respond to incidents threatening the marine environment, public health and safety, and maritime commerce. There are three significant actions the port community took prior to the T/S ATHOS I incident that are noteworthy.

First, and most important, was the unwavering commitment by all port partners to invest their time in building relationships with one another. Two very important committees, the Area Committee and the Area Maritime Security Committee, provided the opportunity to bring together a wide range of port partners on a regular basis to conduct joint training, discuss issues of the port, and develop comprehensive port response and security plans. The relationships developed through these committees before an incident occurs are essential to responding to such a complex incident as the T/S ATHOS I oil spill.

Second, the National Incident Management System Incident Command System (ICS) was the cornerstone in bringing together the 1800 person organization that was necessary to respond to this incident. Twenty agencies and numerous commercial entities committed to use ICS enabled the Unified Command, made up of representatives from the Coast Guard, Pennsylvania, New Jersey, Delaware and the Responsible Party (represented by The O'Brien's Group who seamlessly filled the Responsible Party's role because of their long-standing familiarity from instructing and practical use of ICS), to rapidly build an integrated team that had a common set of objectives and priorities.

The strength of ICS is that it transcends the different organizational structures and unique terminology and processes that agencies use internally and provides a common model that enables those in the response community to join forces. Without a strong commitment from all response entities to use ICS, the Unified Command would not have been able to speak with "one voice," providing the public with a clear and cohesive message, nor would it have been able to leverage the resources necessary to manage the multitude of operational issues that the T/S ATHOS I incident presented.

Over the last two years, the port community has trained together in the use of the Incident Command System, and as the T/S ATHOS I incident reinforced, it is clearly apparent that how well you respond is directly related to how well you practice.

Third, through an aggressive exercise program, the port community put their collective training to the test during several challenging scenarios. In November 2003, the port held its triennial oil spill response exercise as required by OPA 90 (National Preparedness for Response Exercise Program, Government-led, Area Exercise; see separate CG Standard After Action Information and Lessons Learned System report entitled Philadelphia – Delaware 2003 Area Exercise). This major exercise had many similarities to the actual T/S ATHOS I incident and the Area Committee immediately set about implementing the many lessons learned into the ACP, including most recently, updating the ACP to be in alignment with the new National Response Plan.

The importance of the team and the close port relationships that fostered the coordination and support of this response cannot be emphasized enough. The use of a Unified Command and a single response management system is absolutely necessary. The port community cannot afford to work at odds. Pre-incident planning and port community preparedness put the Unified Command in a position to succeed.

Lesson Learned/Best Practice:
The entire response team worked extremely well together because they knew each other personally and professionally through their involvement in various response-related training, exercises, and in area committees (quarterly meetings with the Area Committee and Area Maritime Security Committee). The entire response team especially benefited from their participation in a recent National Preparedness for Response Exercise Program (PREP) Government-led Area Exercise held in the Philadelphia, Pennsylvania area in November 2003 (see separate CG SAILS report entitled Philadelphia – Delaware 2003 Area Exercise). Ironically, this PREP exercise focused on a similar scenario involving the large spill of oil in the Delaware River, during a holiday with limited available personnel available, with a transition of the Incident Command Post from one location to another. This exercise experience not only prepared the entire response team for a response of this nature, it helped develop long-standing interagency relationships and trust in each other. There are many benefits of the entire response team in participating in training, exercises, and involvement in area committees. Pre-incident training evolutions not only prepare the response organization for their role in the incident, it provides an opportunity to meet fellow responders personally and professionally prior to working together in a stressful environment. Working with someone you have met before can be very beneficial.

The response management system used to direct this response was the Incident Command System (ICS). This system was embraced by all and was highly successful in organizing and managing the many agencies and the responsible party involved with this response. The prior training and experience in ICS of the response organization ensured they were able to function within this system. The comprehensive training program that led up to Philadelphia's 2003 PREP exercise also proved invaluable to this response. The training included ICS 200 and 300 level, Incident Response Planning Workshop (IRPW), Multi-agency Team Building Enhancement System (MATES), Shoreline Cleanup Assessment Team (SCAT) Training, Joint Information Center (JIC) training and Risk communications. A tabletop exercise also preceded the PREP exercise, which explored terrorism response issues.

The port community had performed several training classes on SCAT prior to this spill. There was a sufficient cadre of trained and knowledgeable individuals to use to immediately begin the process of assessing shoreline impacts. Having this pool of pre-trained individuals, plus bringing in a skillful individual (from NOAA) to initiate and coordinate the SCAT Unit enabled the UC to collect and receive quality field data much earlier in this spill than others in the past.

Recommendation:

Potential Unified Command members and the entire response community (i.e. county offices of emergency management and response agencies) should continue to participate in multi-agency exercises; Responsible Party led exercises, ICS training, and area committees. Doing so will help foster interagency/Responsible Party relationships and trust. This will help ensure the entire response community is able to work within the Incident Command System to provide a unified response.

11. National Incident Management System Incident Command System (ICS)

Observation:
The use of the ICS ensured a safe, priority-focused response operation. The National Incident Management System Incident Command System (ICS) was the cornerstone in bringing together the 1,800 person organization that was necessary to respond to this incident. Twenty agencies and numerous commercial entities committed to use ICS enabled the Unified Command (UC), made up of representatives from the Coast Guard, Pennsylvania, New Jersey, Delaware and the Responsible Party (represented by The O'Brien's Group), to rapidly build an integrated team that had a common set of objectives and priorities.

Discussion:
The strength of ICS is that it transcends the different organizational structures and unique terminology and processes that agencies use internally and provides a common model that enables those in the response community to join forces. Without a strong commitment from all response entities to use ICS, the UC would not have been able to speak with "one voice," providing the public with a clear and cohesive message, nor would it have been able to leverage the resources necessary to manage the multitude of operational issues that the T/S ATHOS I incident presented.

Adherence to ICS Principles and Processes:

All members of the Unified Command used the National Incident Management System (NIMS). The Unified Command took a strong position from the beginning that all response personnel would strictly follow all NIMS processes and practices. This resulted in the development of effective Incident Action Plans (IAPs), which were focused on completing critical mission goals and objectives.

Use of Technical Specialists:

The Unified Command bolstered the response with the presence of several oil spill response experts fulfilling roles as Technical Specialists. Experts were brought in from the National Strike Force, the National Oceanic Atmospheric Administration, the EPA's Environment Response Team, and The O'Brien's Group. They were interspersed throughout the organization to provide technical expertise to the Operations, Planning and Logistics Sections. In addition to serving this primary function, they also formed teams for special assignments to address many critical and highly technical challenges that emerged during the incident. The Technical Specialists assisted in the development of special operations plans such as the Submerged Oil Identification and Recovery Plan, Disposal Plan, Commercial Vessel and Facility Decon Plan, Salvage Plan, Recreational Boating Plan, and the Deep Winter Operations Plan. The Technical Specialists were on hand to brief senior government officials and to attend public meetings. They formed special units within the Planning Section, such as the Salem Nuclear Power Plant Engineering Unit, designed to address protection of the plant from submerged oil. The Vessel and Facility Risk Analysis Unit was stood up to prioritize

commercial vessels and facilities for cleanup. The Technical Specialists provided depth to the Unified Command and having many on hand enabled the organization to rapidly plug them into the incident to tackle rapidly emerging issues. Additionally they brought oil spill response expertise, which is a scarcity in a time when oil spills are infrequent.

Use of Deputies:

The Unified Command employed several deputies to ensure the Command and General Staff remained focused on accomplishing critical objectives and adhering to Incident Command System processes. Each of the members of the Unified Command had deputies in order to ensure simultaneous coverage of attendance at critical ICS process meetings and scheduled conference calls, briefings and press conferences. The Operations and Planning Section also had deputies to ensure attendance at critical ICS process meetings and for addressing rapid-fire incident generated tasks and challenges.

Tracking of Response Resources:

USCG version:

Initially the tracking of response resources was performed through the use of the T-Card system. Due to the large number of resources massed for this response and the lack of oil spill experienced Resource Unit Leaders, an electronic IAP Software system was employed in the early stages of the response by the responsible party spill management team. The IAP Software system proved its value by requiring less paper generation, but was cumbersome and labor intensive to input the data and did not provide a visual display to help manage/verify resources. Additionally, this caused the demobilization process to be difficult because it was hard to determine where the resources were located in the field.

The O'Briens Group version:

Initially the tracking of response resources was performed through the use of the T-Card system. Due to the large number of resources massed for this response, an electronic IAP Software system was employed in the early stages of the response by the responsible party spill management team in parallel to T-Cards used by the USCG. Sometime after the first week, it became obvious that the T-Cards had no active utility and they were phased out. The IAP Software system proved its value by requiring less paper generation, and was less cumbersome and less labor intensive than T-Cards. The tradeoff was that the electronic system did not provide a visual display of resources for the wall. However, resource lists sorted in numerous ways were available at anytime. Additionally, one other minor issue was that the lack of T-Cards might have caused the demobilization of Federal resources to be slightly more difficult, because it was hard to determine where the resources were located in the field. This was not a problem for the Responsible Party as each contractor presents daily time sheets for personnel and equipment, which are approved by Field Supervisors.

Use of the ICS 209 Form:

The use of the ICS-209 Situation Status Summary was an effective tool for briefing agency representatives and the press. It also makes an excellent summary on cleanup progress to date.

Incident Command Post (ICP) Layout:

The layout of the ICP (Holiday Inn Historic District) provided for excellent security and check-in at the entrance of the hallway to the meeting rooms assigned to the response. All personnel entering the ICP were required to check-in and receive security badges.

The ICP consisted of six separate, co-located rooms:

1. General Staff – the largest room
2. Command Staff meeting room
3. Unified Command meeting room
4. Briefing Room – ICS process meeting room
5. Meeting Room – used by various Units during the response
6. Joint Information Center meeting room

The largest room was used for the General Staff. The General Staff Sections were setup in the largest meeting room by utilizing an open room segregated by each section. Operations and Planning Sections were located "side-by-side" with no partitions between them allowing the sections to easily communicate issues and discuss solutions to impending problems. The Resources and Situation Units were displayed on the wall behind them for viewing. It was particularly noteworthy that the Situation Display provided a road map of the response and provided an excellent depiction of the divisions and groups (including 150,000 feet of containment boom deployed in the field). The Logistics and Finance/Administration Sections were located across the room "side-by-side" with no partitions between them allowing free flow of information between sections.

The Unified Command was located in a large meeting room allowing the staff to expand when needed for UC business meetings and briefings to members outside the Unified Command.

The Command Staff was located across the hall from the UC in a separate meeting room allowing easy access to the UC and to the General Staff located next door. This was also the room where the Environmental Unit conducted their daily science meetings.

During ICS process meetings a separate/dedicated meeting room was used and allowed for the display of the poster size ICS-215 and other ICS forms. This concept prevented the potential loss of data by moving the displays from one room to the next.

The Joint Information Center (JIC) was located next to the UC, in a separate meeting room to address public and private requests for information without interfering with the current operations.

During special ICS process meetings (tactics and planning meeting) a separate/dedicated meeting room was used and allowed for the display of the poster size ICS-215 and other ICS forms.

A scribe/recorder was required in the UC to provide for documentation of important events/decisions.

Lesson Learned/Best Practice:
Strict adherence to critical ICS processes from the outset will ensure effective Incident Action Plans, which in turn ensures the response is driven toward completing critical goals and objectives.

Having a cadre of Technical Specialists on hand provides several advantages. It will ensure that challenging and technically complex issues are quickly addressed. It will provide Operations Section and Planning Section personnel the technical input needed to make sound strategic and tactical decisions. It allows the Unified Command to have depth to their organization and use these personnel to form temporary short-lived planning units or operational groups to tackle emerging issues.

Deputies ensure that critical ongoing operational and planning needs are addressed while maintaining the integrity of ICS planning processes. Throughout the course of the response the Unified Command had to address many significant issues. In order to address this need the Unified Command appointed Deputy Section Chiefs to take the lead in each of these important areas. As the issues were addressed and put behind, the Deputy Section Chief positions were eliminated.

The IAP resource tracking system took a long time to be consistent with deployed resources in the field, which was not a critical problem. After the minor problem was corrected by direct communication between the Resource Unit and Field Personnel, the system provided accurate tracking of resources.

The use of a convention center or hotel meeting rooms as the ICP was noted as an effective option. In addition, the co-location of food, lodging, phone service, Internet access, etc. in one location was particularly effective and efficient.

The Scientific Support Coordinator established a Daily Scientific Committee Meeting to address and disseminate new environmental data, effectiveness of ARTES, trajectories, etc. The attendance of Operations Section personnel in these meeting was deemed to be an effective way of bridging the gap between field operations personnel, Shoreline Clean up Assessment Team personnel and other science oriented field personnel.

A scribe or recorder was needed to provide transcription of the Unified Command's meetings and critical decisions.

Recommendation:
Unified Commanders need to set the proper tone for strict adherence to the Incident Command System early on in the incident.

Include in the Area Contingency Plan the following:

1. Emphasis on the use of deputies for the Unified Command and General Staff to ensure attendance at all ICS process meetings and to be able to handle rapid-fire issues during the incident.

2. Emphasis for the Coast Guard to maintain a constantly visual T-card system for tactical equipment that will ensure a back up system when the RP is using an electronic system and to ensure continuity of operations should an RP remove themselves from the response.

3. A schematic that visually and clearly shows how an ICP is effectively laid out. Ensure it includes all ICS sections, units, meeting rooms (identify purpose, function, or who room is dedicated to), and key display areas. A narrative description should further describe all details to set up the respective spaces such as: having walls that allow for stapling displays to them; what areas need to be open without partitions; what areas can be secluded for small working groups; the location and quantity of phones, faxes, and copiers; adequate electricity, circuits, and outlets to accommodate all responders electronic devices (computers, printers, projectors, etc).

4. Include within the organization chart, a scribe position or recorder to provide transcription of the Unified Command's meetings and critical decisions. Include a written job description.

5. Include a recommendation for the Scientific Support Coordinator to establish and facilitate routine Scientific Committee Meeting to address and disseminate new environmental data, effectiveness of Alternate Response Tool Evaluation Systems, trajectories, etc. for all interested ICP personnel.

6. Emphasis on the use of Technical Specialists in the early part of the incident to ensure sound strategic and tactical decisions are being made, and to staff short-lived emergency planning units and operational groups.

12. Incident Command Post Relocation

Observation:
The ICP moved seamlessly from the MSO/Group Philadelphia to the Holiday Inn Historic District.

Discussion:
In the emergency phase of the incident, the size of the response organization expanded beyond the capability of the ICP at the MSO, which interfered with normal operations. The Unified Command proactively addressed this issue by locating an alternative ICP and developing a Move Plan. This move was carried out expeditiously with minimal disruption to response efforts. Some of this may be due to the fact this was practiced in the November 2003 Preparedness for Response Exercise Program (PREP) exercise.

Lesson Learned/Best Practice:
The use of a move plan proved to be essential in relocating the ICP. The move plan contained the following:

1. Objectives for relocating the ICP
2. ICP Checklist (reference list available from Coast Guard ICS Coordinator)
3. Parking Information
4. Map to new ICP location
5. Messing routine
6. Diagram of ICP showing all key ICS position locations
7. List of ICP telephone numbers

Recommendation:
Update and maintain the current ICP Move Plan in the ACP, and make this plan available to other COTP's as a model. Additionally, specify pre-identified ICP locations with an address, phone number and point of contact (Emergency Operation Centers, armories, hotel ballrooms, etc.).

13. Field Responder Support

Observation:
The field responders were well supported by a contracted wholesale warehouse known as Central Supply.

Discussion:
The Logistics Section was tasked with looking for centralized storage for response supplies & resources, i.e., sorbent boom, pads, cold weather equipment, etc. While visiting a prospective site in West Deptford, New Jersey, it was observed that a new wholesale warehouse was underutilized and available. The Logistics Section coordinated an agreement with the wholesale operators, Aramsco, to supply and distribute materials and supplies to the field from the warehouse. Items provided from Central Supply includes items such as rental equipment, rakes, shovels, squeegees, planks, wood, 2X4's, plywood, chains, rope, shackles, rain gear, tents, tarps, heaters, drills, hammers, generators, batteries, etc. The contractual agreement of the Central Supply was very cost effective and its purchasing power allowed for discounts up to 25%. Aramsco is a nationwide company with connections to other national supply stores, which include products from Home Depot. This streamlined the ordering process for the field responders by providing a one-stop shopping process.

Lesson Learned/Best Practice:
When confronted with the huge logistical task of providing resources to a large number of field responders (1,800 at the response peak), a central supply wholesale warehouse is an effective and efficient means of supply.

Recommendation:
Update the Area Contingency Plan to describe how to contract a central supply warehouse to provide all field response related gear.

14. Risk-Based Matrix for Safety Issues

Observation:
The Safety Officer (SO) used a risk-based scorecard to identify potential safety risks taking into consideration various criteria. The matrix was based primarily on the USCG Operational Risk Management (ORM) tool and utilizes the GAR (green, amber, red) method of determining the level of operational restriction relative to the safety and or risk, which needs to be applied. This matrix was subsequently transformed into a worker and supervisor evaluation scorecard that was used to "grade" individuals and workforces on safety related issues.

Discussion:
Safety was paramount and held at a high priority by the Unified Command. The SO developed a clear and concise Site Safety Plan that was user friendly. With the Site Safety Plan, the SO met with all the contractor field responders in the Operations Brief each morning reinforcing the plan with a daily safety message. The daily safety message was verbally communicated and specifically engineered for the operations at hand (i.e. boat, beach, air, and diving operations), as well as weather information of the day. The SO incorporated a risk based management tool to score potential safety deficiencies and acted upon them to improve the score possibly preventing accidents or injury.

The SO initiated an incentive program awarding those who were safety conscious and performed above standards. These incentives came in the form of: lottery tickets, Outback Steakhouse Dinner Tickets, etc.

The SO translated the safety message for the Spanish-speaking workers. This ensured all non-English speaking folks were able to fully understand the safety issues.

Having a direct point of contact with the local NOAA National Weather Service (NWS) field office allowed up-to-the-minute accurate spot weather data to make operational safety decisions. The NWS contacted the Scientific Support Coordinator on several occasions with warnings of storm approaches to alert Safety and Operations to move crews off the river. In addition, the NWS provided reports on climatological weather and predicted ice formation to aid in the long-term safety and operational planning.

Initially, diver safety and sub sea operations were not addressed in the Site Safety Plan primarily because the SO was not experienced with the hazards involved with both commercial diving operations and contaminated water diving. An independent safety officer experienced in commercial diving operations was contracted to address diver safety issues and update the Site Safety Plan.

The ICS-204's always included safety information.

Lesson Learned/Best Practice:
The safety officer and his team did a tremendous job of staying on top of all potential safety issues. One issue that caught them by surprise was the size of the boats that had been brought to the response. During the first several days, there was a huge influx of responders and their equipment from all parts of the country. It took one day of bad weather to learn that many responder vessels and boats were too small or inadequate. Several boats were swamped and sank. The SO put a mandate on vessel size and subsequent problems were avoided. The Unified Command must develop criteria for vessel and boat size based on operations and weather for their area of responsibility.

Assign an appropriate number of Assistant Safety Officers to all areas within the operations structure (Groups/Divisions, Functions). All Assistant Safety Officers should maintain a communications schedule with the SO. The SO should provide a daily safety message to augment the Site Safety Plan at the Operations Brief and provide translation to non-English speaking workers. Utilize a risk based decision scorecard to determine potential safety problems. Embrace OSHA in the Safety organization and use of incentive programs.

When applicable, ensure diving and sub sea operations are addressed in the Site Safety Plans and ensure the Safety Officer understands the hazards involved with both commercial diving operations and contaminated water diving.

Recommendation:
Provide an annex in the Philadelphia Area Contingency Plan pertaining to safety addressing the methods and lessons learned from this response.

15. Joint Information Center (JIC)

Observation:
The location of the oil spill covered two states and a commonwealth, and several different media markets, creating immediate and significant local, regional and national media interest. A Joint Information Center (JIC) was stood up with representation from involved agencies and organizations including the U.S. Coast Guard, Army Corps of Engineers, U. S. Fish and Wildlife Service, Responsible Party (The O'Brien's Group) Commonwealth of Pennsylvania, and states of New Jersey and Delaware, U.S. Environmental Protection Agency (EPA). This diverse group of public information specialists came together quickly forming a cohesive team that developed and provided a consistent unified message to the media and the public throughout the response.

Discussion:
This incident had a high level of media interest from the beginning due to the large amount of oil spilled from a foreign tank vessel, which affected two states and a commonwealth. Creating a high level of public trust and confidence was essential to the reputation of the agencies and organizations leading in the response, and ultimately, the states and commonwealth.

To meet the public's need for information and the demands of the media, a Joint Information Center (JIC) was established to provide a single source of information, ensuring that all public information regarding the spill, investigation, and response was accurate and timely. Members from federal, state, and local agencies, and various port stakeholders were represented in the JIC. Each day more than 150 media inquiries were received during the first week of the response. The first press briefing with the Unified Command was held at 11:30 a.m. November 27, 2004 and attended by 15 media representatives. Subsequent press briefings were conducted at 3:00 p.m. each day and attended by an average of 30 media representatives. This provided a predictable, consistent release of information from the key members of the Unified Command. A website was established November 27, 2004 at http://www.incidentinfo.com on the Maritime Exchange website. All the daily news releases, photos and fact sheets were posted on the website for public viewing. The website received more than 500,000 hits in the first 10 days.

The media was given access to view and record response operations, the command post, and the wildlife rehabilitation center. Locally, the JIC reached out to the public by going door to door to hand out informational fliers and answering questions. The Unified Command also held two public meetings to discuss the issues and answer questions about the spill.

Although initially understaffed, an effective group of governmental liaison officers were assigned to advise federal, state, and local elected officials of the pertinent issues associated with the spill. They also worked closely with the local Chamber of Commerce and schools; coordinated meetings with the states Office of Emergency Management, public health, and fire departments; published daily advisories; conducted teleconferences with congressional staffers; and hosted tours for government officials.

Coast Guard Auxiliary members were also used for public outreach. They provided invaluable assistance and information about the spill to members of yacht clubs and users of marinas.

Public trust and confidence in the response organization may have been harmed when initial estimates of released oil were found to be too low. After two media sources reported 475,000 gallons of oil spilled, the COTP Philadelphia (FOSC) found himself in the difficult position of having to re-explain to the media and the public why the original estimate of 30,000 gallons was reported. The final estimated amount spilled was closer to 265,000 gallons.

Lesson Learned/Best Practice:
The success of a JIC will depend on its early establishment and a strong emphasis on public outreach. In this response, members of the JIC were deployed on scene within 3 hours of the spill notification. This afforded the public affairs specialists the opportunity to adequately assess the situation and start dealing with the huge task of dealing with media inquiries and requests. The JIC was eventually able to get out in front of media inquires and started to plan in advance for media events instead of responding to them.

Unique tools that were effective for getting the Unified Command message out to the media and the public included: an Internet website (www.incidentinfo.com), distributing information packets, and open house/town hall meetings. The website had over 500,000 hits during the first 10-days of the response which is a strong indication of public interest. The Internet website was a great vehicle to provide the public with the most up-to-date spill information and pictures of response efforts. Information packets were delivered by hand door-to-door to homes in areas that were impacted by the oil spill. This exemplary community outreach program provided various information about the spill including: facts about the spilled oil (type, amount, location), agencies in the response organization, instructions on what to do if a person gets oiled, and wildlife reporting information. Open houses were held prior to town hall meetings at two impacted areas. The Open Houses provided the public with information about the spill through visual displays and the Town Hall meetings allowed the public to ask specific questions about the response operations.

The effect of daily press conferences and press releases was immeasurable to the success of the public image of the response. Press conferences have a distinct advantage over other types of media vehicles in getting out information about a crisis. They offer the Unified Commanders the opportunity to show unity, allow the media to ask questions, and allowed all parties an opportunity to plan their day.

Allowing the media to also take photos/videos of the response efforts, while being escorted, helped to control the story, helped to build trust with the media, and helped to educate the media, which further ensured the accuracy of the story. An escorted river tour for the media proved extremely successful.

Finally, providing the media with estimates of the amount of oil spilled early in the response can create difficulties later, if not properly managed. The JIC must be prepared to provide the media and public with information that will help explain the current situation, i.e., amount of river shoreline impacted, amount of boom deployed, number of responders on scene.

Information released should not speculate, but rather describe the data being studied to develop the estimated amount of oil spilled, i.e., size of vessel's cargo, and type of product. Following this procedure and explaining why estimates must be used will help to minimize the need to continually explain initial estimates.

Recommendation:
Update the JIC guidance in the ACP to include:

1. Establish a JIC early in the emergency phase of a large multi-jurisdictional response and seek to include representatives from each agency or organization represented in the Unified Command.

2. Ensure that the JIC is provided an adequate operating space near the Unified Command, supplied adequate phone/fax lines, and access to the Internet.

3. Conduct daily press conferences early (beginning day 1) in the response and allow/escort the media to film response efforts and/or the incident command post.

16. National Contingency Plan (NCP) Special Teams

Observation:
The use and access of the NCP special teams and other agencies integrated the expertise and professionalism of the national, state, and local spill response experts.

Discussion:
In addition to Oil Pollution Act of 1990, the National Oil and Hazardous Substances Pollution Contingency Plan, under which the Captain of the Port has the authority and responsibility to direct oil spill response operations, provides for special teams that can be called upon for technical assistance. These teams were invaluable to the T/S ATHOS I response and included the Coast Guard Strike Teams, the NOAA Scientific Support Coordinator and Ocean Survey Team, the Environmental Protection Agency Emergency Response Team, Coast Guard Public Affairs Information Team, the Army Corps of Engineers and U. S. Navy Supervisor of Salvage. These teams rapidly responded to the Unified Command's request for support and performed exceptionally.

The Unified Command noted the excellent response by the National Oceanic and Atmospheric Administration Scientific Support Coordinator (SSC), USCG National Strike Force (NSF), USCG Incident Management Assist Team (IMAT), Regional Response Team (RRT), USCG 5th District Legal, Delaware River Pilots, EPA Emergency Response Team (ERT) Mariners Exchange Committee, and Army Corps of Engineers (ACOE). Here are a few noteworthy accomplishments:

SSC - Operated the Environmental Unit, Sub-surface oil modeling, monitoring and recovery, SCAT coordination, support at Town Hall Meetings and Press Conferences, advice on Alternative Response Technologies.

NSF – Deployed quickly and filled critical ICS Positions such as, Deputy Incident Commanders, Deputy Section Chiefs, Division/Group Supervisors and other ICS positions.

IMAT - Deployed a 12 person team immediately upon notification and supported various ICS positions as directed by the Incident Commander. They also facilitated the establishment of the ICS organization.

RRT – Provided communications link to other agencies involved in the response, but had some procedural issues with the Alternative Response Agents access and use.

EPA ERT Provided fluorometer analysis to detect water contamination, plus personnel and equipment to aid in submerged oil monitoring and personnel on SCAT.

Lesson Learned/Best Practice:
The IMAT and NSF provided deputies for the Unified Command to perform administrative issues and briefing the agencies chain of command. Accessing the NRT Special Teams is agency specific and requestor should be prepared for changes in the procedures required by that agency.

Recommendation:
Update the Area Contingency Plan to include a current list of special teams and technical specialists (NOAA SSC, USCG NSF teams, USCG IMAT, RRT, USCG District Legal, USCG District Response Advisory Team (DRAT), Pilots Association, EPA ERT, Mariners Exchange Committee, ACOE, etc.) with the appropriate contact information.

Continue to request and use NCP Special Teams and other agencies to assist response organizations during the response emergency phase. These agencies and organizations have the resources and expertise to quickly provide a multitude of assistance to the response organization.

17. Briefing the Chain of Command

Observation:
All agencies involved in the response organization provided periodic informational briefs to their chain of command, as they deemed necessary. The Coast Guard experienced a heavier than anticipated drain on resources (time and personnel) to provide these briefs and added additional personnel to perform this task.

Discussion:
Although all agencies in the response organization briefed their chain of command, few were able to share resources to accomplish this task. However, one example of two agencies sharing resources was the state of Delaware. The Delaware Department of Natural Resources (DNR) and the Emergency Management Agency (EMA) started off early in the incident briefing their Governor separately (via each respective Secretary), but eventually started to provide a single brief via teleconference phone call. Implementing this process saved the agencies the time spent duplicating effort.

However, most agencies did not share a common briefing process or briefing resource and therefore briefed their chain of command separately using their own personnel and information gathering process. This ineffective process of providing higher authorities with daily/hourly information required a significant resource commitment to adequately address.

Additionally, unexpected requests for information required from the highest levels of the Coast Guard demanded immediate attention, further adding to the workload of an already taxed response staff.

ResponseLINK was very helpful in providing communications between the command post, USCG Headquarters and District offices, the Regional Response Team, National Oceanic and Atmospheric Administration, Department of the Interior, state capitals, etc. ResponseLINK is a web-based communications system for incident responders. A username and password are required to log into the system. This page is maintained by the Hazardous Materials Response Division, Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration.

Lesson Learned/Best Practice:
Agencies should anticipate a significant increase in importance and workload for timely and accurate, scheduled or unscheduled informational briefs to higher authorities during incidents of this magnitude.

This briefing task should be assigned to one or more persons of appropriate level and experience as their primary duty. Assigning this task to a member of an agency or organization as a collateral duty, or part-time role, can overwork an individual due to the heavy workload required to perform the job properly. Additionally, if the person assigned is not at the appropriate level, the briefing may require re-work from senior personnel to ensure it is appropriate for its intended audience.

This task should not be assigned to a junior member of an agency or and organization as they normally will not have the necessary skills and/or experience to handle this task.

Recommendation:
The Area Contingency Plan should include designating one Coast Guard senior officer with the single mission of briefing their chain of command. This Coast Guard position can be requested from the Area Incident Management Team or from Headquarters.

Other agencies or organizations should pre-identify an appropriate person to fill this role. It may be appropriate to recognize the importance of these situational or special briefs in the respective response plans.

18. Documentation

Observation:
The Documentation Unit (DU) struggled early in the response to maintain accurate, complete and up to date files.

Discussion:
During the initial response an individual was assigned to the DU. Initially, the DU was only able to maintain basic documentation such as Incident Action Plans, incident reports (USCG Situation Reports and Pollution Reports), communication logs, injury claims, and situation status reports. Additional staffing of the DU was necessary to interface with each section to ensure they were providing appropriate documents (i.e. Unit/Activity Logs-ICS form 214 and individual logs). Only USCG personnel and some field observers were maintaining Unit/Activity logs (ICS-214). Many other response personnel maintained spiral bound notebooks and or bound notebooks. The bound notebooks do not lend themselves to daily collection. In lieu of daily unit logs being maintained all sections were required to maintain a "waste box" to place any and all types of documentation. At a later date, the DU must look at each piece of documentation and recommend to the Planning Section Chief what to keep and file and what to destroy (shred).

There was no control of what documents were being faxed out of or into the command post because the facsimile machines were not located near the DU and no one was assigned to control the faxes.

In addition to paper documents, the DU must ensure all appropriate and applicable electronic documents and digital photos are received and filed. It is estimated that over 5,000 digital photographs have been taken. These photographs need to be reviewed, edited, and filed or cataloged. Thorough documentation can be critical in a post-incident analysis.

It may be important that someone be assigned to maintain a narrative document that is an up-to-date comprehensive history of the spill response, starting with a thorough description of the circumstances that resulted in the spill, initial response actions, key events, and key decisions made by the Incident Commander(s). This narrative could be updated daily to capture activities such as key events, milestones, key operational activities, unilateral actions taken by agencies and organizations and significant decisions made by the Unified Command. Without an up-to-date written narrative, only individuals that have been involved from the beginning of the response and maintained involvement to date can give a history of the spill based on a combination of their personal notes, memory and dated formal documentation (USCG Pollution and Situation Reports).

Lessons learned/Best Practice:
Spill documentation could be incomplete or lost without an effective retrieving, sorting and filing process. The effects of existing response documentation may be realized when post incident analysis begins.

Recommendation:
Ensure the Area Contingency Plan (ACP) emphasizes that the Planning Section Chief and Documentation Unit Leader should be proactive in collecting data and set the standard within the command post for the proper maintenance and collection of response documentation (i.e. Unit/Activity logs). Gathering of response documentation is situational. Large complex spills will require dedicated documentation personnel with standards for documents, while small spills will require little. The requirements for legal retention must not be commingled with the requirements for operational documentation.

The ACP should define what documents are required for spill operations and what documents must be gathered for legal retention. It needs to be noted that the Responsible Party's legal needs may be different than agency legal needs.

19. Waterways Management

Observation:
The Unified Command effectively managed the restart of commercial traffic on the Delaware River after three days of closure once a prioritized decontamination procedure was established for vessels and facilities affected by the oil spill.

Discussion:
The oil spill cleanup operations prevented further spread of the oil and allowed for surveys of the channel bottom to be conducted to search for any obstructions. As a result of the Unified Commands proactive management of the waterways, the major refineries and smaller facilities were not forced to shut down operations. However, this necessary waterways management action did result in significant economic impacts in other areas. Initially, over 20 vessels were delayed as a result of the spill. Additionally, no vessels were allowed to leave the port until they had been decontaminated and many vessels could not enter the safety zone as their intended berths contained contaminated vessels awaiting cleanup. Before the river was re-opened to all traffic, the COTP had to be certain that there were no obstructions in the channel that could cause another incident and, as a result, numerous ship schedules were adversely impacted.

The Unified Command worked closely with the Mariners' Advisory Committee and "The Pilots Association for the Bay and River Delaware" to develop protocols for managing and authorizing vessel movements. The Maritime Exchange for the Delaware River and Bay quickly disseminated information to the port community. On the evening of November 26, 2004 and throughout November 27, 2004, the port was closed to deep draft vessel traffic. On November 28, 2004, the Unified Command permitted commercial inbound vessels to transit through the safety zone with certain restrictions. Shortly thereafter and as a result of not finding any underwater obstruction, draft restrictions were imposed, requiring that any vessel with a draft greater than 34 feet transit the area only at high tide as a precautionary measure. Under normal circumstances, the pilotage guidelines state that the maximum fresh water draft for river transit is 40 feet and vessels arriving with a draft in excess of 37 feet are to transit during flood current. The T/S ATHOS I's draft was at 36.06 feet and met the pilotage guidelines for transiting the Delaware River.

To facilitate vessel movement, the Waterways Management Unit (within the Operations Section) established Decontamination Task Forces to clean oil residue from vessels. The Unified Command agreed to a standard of "clean" that was defined as: "enough oil removed so the vessel no longer gives off a sheen." Oiled vessels were delayed at facilities awaiting decontamination, vessels were in anchorages and offshore awaiting open berths and vessel agents were delaying or rerouting shipments due to delays within the port. The Unified Command then established a Vessel and Facility Decontamination Prioritization Unit (within the Planning Section) to assist the Waterways Management Unit with prioritizing vessels and facilities for decontamination using port economic factors as one of the decision drivers. Overall, as a result of the spill and necessary waterways management decisions, over two

hundred vessels were delayed in their arrival and departure times, and still others were diverted to other ports.

The Vessel and Facility Decontamination Prioritization Unit developed a unique computer software tool titled "Risk Based Decision Matrix" to assist in prioritizing vessels for decontamination. Weighted input factors included daily operating cost; type of cargo (perishable, community impacts, low value); length of time exposed to the oil spill, and time vessel was scheduled for cargo operations (less than 24 hrs, 24 to 48 hrs, greater than 48 hrs). Vessels receiving a high total weighted value were scheduled for decontamination ahead of ones with lower values. However, the location of a decon team also had to considered. In some instances, it was more cost effective for a decon team to stay in the immediate area to decon a lower priority vessel after just finishing a high priority vessel rather than waste time transiting the river to a higher priority vessel.

The matrix was a living document that required new daily input by the Operations Section to track decontamination progress. The decon teams would then evaluate the data for the highest priority vessels and the location of decon resources. Once vessel traffic began moving, a similar matrix was developed to prioritize facilities for decontamination.

The port of Philadelphia does not have a Vessel Traffic System but for this incident implemented a Vessel Traffic Information System operating from the command post to control vessel movements through the MSO/Group Waterways Management Branch (WMB). The WMB had to maintain daily communication with the pilots association, Maritime Exchange, Army Corps of Engineers and all tug operator dispatchers to identify the location of all vessels in the port. Additionally, a representative from "The Pilots Association for the Bay and River Delaware" assisted in the Command Post. The local knowledge of the Pilots Association representative worked effectively with the Operations Section Decon Team Branch Director in the Command Post. The WMB worked effectively with the Decon Teams to efficiently identify the location of all contaminated vessels. The WMB successfully coordinated all vessel movements.

By December 8, 2004, the river was open to all marine traffic, with the exception of wake restrictions, as oil was no longer mobile on the surface of the river and a channel survey had been completed, validating that the channel was clear of obstructions.

Lesson Learned/Best Practice:
The Unified Command effectively managed the restart of commercial traffic on the Delaware River after three days of closure once a prioritized decontamination procedure was established for vessels and facilities oiled from spilled product.

When numerous vessels and facilities require cleaning, the COTP will be challenged to explain to the maritime community the process used to assign priorities for decontamination. Using a computer software program such as the "Risk Based Decision Matrix" provides the COTP with a rationale for the prioritization process. Applying the Risk Based Decision Matrix must also include an operational component.

During this response three distinct groups were integrated to ensure the efficient gross decontamination of affected vessels and facilities. The local knowledge of the Pilots Association, the operational experience of the Decon Group and regulatory authority of the MSO Waterways Management Branch were all brought together to create an efficient and effective response to vessel and facility decontamination.

Recommendation:
Update the Area Contingency Plan to include the process established by the Unified Command to identify (MSO/Group Waterways Management Branch in coordination with the pilots association) and prioritize vessel and facilities for decontamination (Risk Based Decision Matrix). This process must include the Waterways Management Branch and Pilots Association to share and provide their data and information with the Decon Group.

20. Financial Audit

Observation:
Conducting a financial audit of the response resources and personnel during the response was disruptive and caused undue strain on the working relationships of participating agencies.

Discussion:
An independent company was contracted by the vessel's Protection & Indemnity Club to conduct an audit of response personnel and resources. The focus was primarily to verify proper expenditure of response funds. The auditing team raised many questions about the response as it was being conducted. These questions were disruptive. Personnel in the ICP felt their actions were being continuously scrutinized. The Unified Command agreed and determined the auditor's services were disruptive and required them to leave the ICP.

Lesson learned/Best Practice:
Conducting a financial audit during a response may be disruptive. This may not be true in all cases, as some audits have been reported to be transparent to response operations. However, members of a Unified Command should be aware that a financial audit has the potential to be disruptive.

Recommendation:
If audits are required during a response they should be transparent to the response operations. Prior to conducting an audit, the Unified Command and the organization conducting the audit should agree upon the specific audit procedures.

21. Wildlife Capture

Observation:
The drug, Alpha Chloralose (AC), was effectively used to target oiled Canadian geese to intoxicate them, slow them down, and allow them to be captured without trauma.

Discussion:
Oiled Canada geese were elusive from personnel attempting to catch them with nets and many would fly away without being captured. U.S. Department of Fish & Wildlife (USF&W) personnel contacted the Animal and Plant Health Inspection Service (APHIS), an agency of the Department of Agriculture, who had experience trying to capture the elusive geese at area golf courses and airports. APHIS provided an alternative; a drug that would intoxicate them, slows them down, and allows them to be captured without trauma. The drug, Alpha Chloralose (AC), was effective when properly administered in the correct dosage. A test was performed on a cornfield near the incident with one dosage imbedded within a bread ball which then hand fed one per goose. The effected birds became stupefied and fell asleep for easy retrieval. After the successful test, the AC dosage was used on the general Canada Geese population on the cornfields around the area by singling out the oiled birds. This process did require an additional 30 days for rehabilitation in order for the drug to clear the bird's system. Also, because of hunting season, this additional rehabilitation time would ensure the drug could not be passed to humans if they ingested a drugged bird. Despite the additional holding period, Tri-State Bird Rescue accepted the drugged birds and saw no better alternative technique that would successfully target and retrieve the elusive oiled birds without trauma.

The AC procedure was not brought to the Unified Command's attention. The use of AC could have been controversial if the media, special interest group, or the general public had become aware of its use and asked an unprepared Unified Command questions concerning its use during a press conference or town hall meeting.

Lesson Learned/Best Practice:
The drug, Alpha Chloralose, when administered in a controlled and professional procedure can be successful to target and retrieve elusive oiled geese, without causing them trauma, for rehabilitation.

A potentially controversial process such as drugging oiled birds for rehabilitation must be brought to the attention of the Unified Command for approval. Once approved, the UC would then have sufficient data and information to explain to the community the justification for this non-traditional process of retrieving oiled birds.

Recommendation:
Update the Area Contingency Plan needs to include a standing order to the Wildlife Branch not to pursue any non traditional procedure to capture oiled wildlife such as feeding them a drug to affect their central nervous system for an easier capture without prior Unified Command approval.

22. Legal Support

Observation:
Because of the magnitude of this spill, federal and state law enforcement agencies immediately focused significant interest on the potential for criminal misconduct on the part of the vessel and or crew involved in the incident. Without a deployed Judge Advocate on scene, the conflicting agendas and policies among the stakeholders with concurrent jurisdiction had the potential to shift the focus of the Federal On Scene Coordinator (FOSC) from the response to the incident.

Discussion:
Deploying a Judge Advocate on scene was critical in enabling the FOSC to effectively deal with the myriad of attorneys present. The ability of a deployed Judge Advocate to open lines of communication and intervene to resolve conflicts when necessary was beneficial to the FOSC and staff by removing this significant burden from them thereby enabling the response to continue. The ability of a Judge Advocate on scene to interface with the different legal interests within the Coast Guard was critical in presenting the FOSC with a coherent strategy for addressing issues such as continued Responsible Party funding, claims, documentation and the scope of Captain of The Port/FOSC authorities. Early and on-scene participation with the U.S. Attorney's office was essential in providing the correct perspective on evidence collection and evaluation, appropriate enforcement actions and national policy for environmental cases. The Judge Advocate's presence was also able to insulate and alleviate the pressure on marine casualty investigators for immediate access to documents and information.

Lesson Learned/Best Practice:
An operational Judge Advocate direct link with the FOSC as the legal advisor is necessary in complex spills involving multiple investigation issues.

Recommendation:
Assign Judge Advocates at part of the USCG Incident Management Assist Team for rapid deployment on scene.