Refinery Explosion and Fire Response

Bayamon, Puerto Rico
OSC READINESS CONFERENCE

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Disclaimer: This is not a comprehensive list of response actions undertaken by EPA and/or federal, commonwealth, or local partners. The facility remains an active clean-up response effort by multiple agencies and groups, experiencing ever-changing and challenging issues.
Description of the facility

◆ The facility was formerly a refinery, that ceased operations in 2000.
◆ At the time of the October 23, 2009 incident the facility was a storage facility, for products such as Diesel fuel, Bunker C, Jet fuel, Gasoline, and Asphalt.
◆ Various types of tanks were used including fixed roof, internal and external floating roof tanks.
◆ The facility is located in a mixed industrial/residential area. A residential community (Puente Blanco) is located less than 1 mile north of the facility. Buchanon Military Base is located to the east and south of the facility.
◆ The facility is unique in PR in that it is the only facility that can load/unload by barge, and can directly transport fuel to the San Juan Airport and San Juan’s 2 power plants.
Refinery Facility

- Located in Bayamon, PR
- Former refinery, starting in 2000 used only for oil storage
- Over 40 tanks holding gasoline, jet fuel, bunker oil, etc.
- Capacity to hold over 60 Million gallons of material on the facility. Later calculations showed there was approximately 30 million gallons of product in effect tanks
- Distributes to fueling stations, offices, power generation facilities, and other intra-island facilities
- Privately owned and operated
October 23, 2009 at 0023 hours
Cause for explosion and fire was likely a tank overfill. Still under CSB investigation
2.8 earthquake caused by explosion
It is estimated approximately 30 million gallons was released
Massive smoke plume over residential communities
Shattered windows and damage to businesses and residents
Closure of Highway 22
No deaths
Facility Overhead
Activation of Emergency Personnel

- EPA On-Scene Coordinators
  - San Juan, PR
  - Edison, NJ
- EPA Environmental Response Team (ERT)
- Response Support Team (RST)/START contractors
- ERRS contractors – NEIE
- SERAS (formerly REAC) contractors
- US Coast Guard, Atlantic Strike Teams
Initial Command Structure

- Fire Department and Local Agencies
- Potential transition into Unified Command
- Puerto Rico National Guard declared as IC
  - All others became assisting agencies
Transfer of Command

◆ Stafford Act declaration on October 24, 2009
  ▪ No Mission Assignment Issued
  ▪ FEMA was primarily providing public assistance
  ▪ EPA was still required to coordinate activities with FEMA

◆ EPA responded Using its own authorities under the NCP 300.322. Initial action funded by OSLTF

◆ Transition to Unified Command with:
  ▪ EPA, DOI, DNRA, Facility Representatives, CSB, Fire, USCG, FBI, ATF, EQB, DOT

◆ Incident Command Post was established on the facility
ICS Implementation

◆ Incident Action Plans
  ▪ Signed by members of the UC
  ▪ Done based on Operational Period
◆ Meeting Schedules
◆ Pollution Reports
◆ ICS-209
Addressing Unified Command Objectives

- Initially UC objectives were accomplished using RP Resources. Supplemented by EPA, EPA Contractor resources, as well as resources from other agencies that were part of Unified Command.

- As response action progressed the RP was having difficulty providing resources to address issues at the Site. Mainly due to monetary concerns. This issue necessitated EPA to increase the amount of contractor resources on-site.

- EPA indentified CERCLA related issues at the Site that needed to be addressed as part of the action. These areas included a drum storage area containing wastes beyond RCRA holding times, cylinders, as well as a large amount of ACM in Site buildings and the decommissioned refinery.

- Due to issues related to CAPECO willingness to commit resources for the CWA and CERCLA removal actions, EPA began the process of negotiating an Administrative Order on Consent AOC.
Initiation of Order Process

- EPA began process of negotiating an AOC with CAPECO
- Concurrently Site OSCs developed a CWA 311(c) (unilateral) Order to issue to the facility to persuade them to commit more resources to the Site. This simplified order was prepared for OSC signature. It was not issued as it appeared that the facility was receptive to agreeing to an AOC.
- The OSC issued 311(c) order was never issued.
- After a long period of negotiation CAPECO informed EPA that they would not agree to the terms of the AOC.
- Regional ORC issued CAPECO a Unilateral Order for both OPA and CERCLA actions that needed to be conducted at the Site.
- CAPECO responded that they could not comply with the terms of the Order.

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Initiation of Order Process

- After CAPECO informed EPA that they could not comply with the terms of the Unilateral Order, EPA made the decision to conduct both the OPA and CERCLA actions as fund lead Removal Actions.
- During the Fund Lead Actions conducted by EPA, CAPECO remained on-site to maintain the facility’s infrastructure, and to facilitate transfers of material off-site and within the facility.
- In August of 2010 CAPECO filed for Chapter 11 Bankruptcy.
EPA Fund Lead Actions

- In discussions with NPFC it was decided that a Notice of Federal Assumption of Response Activity would have to be issued to CAPECO before the fund lead OPA Removal could be initiated under CWA Section 311(c) (1) as amended [33 U.S.C. 1321 (c)(1)].

- OPA clean-up activities included: Removal of free oil, excavation of oil contaminated soils, demolition of heavily damaged storage tanks. And underlying contaminated soils, and draining of in-plant oil pipelines. Throughout the span of this action EPA has spent approximately 10.5 M

- Concurrently EPA prepared an Action Memorandum to complete the CERCLA action at the Site which included a drum/cylinder removal, removal of F and K waste sludge from the facility WWTP and addressing ACM issues in the decommissioned refinery and other parts of the facility. Throughout the span of the CERCLA Action EPA has spent approximately 2.5M
Removal of Free Oil
Tank Demolition

- View of test cuts in tank used to collect samples and determine level of sludge and oil remaining in tank bottom

(continued)
Tank Demolition

- View of cutting operations with shears

(continued)
Tank Demolition

- View of torch cutting operations

(continued)
Tank Demolition

- View of tank cut out with view of top shell course and roof

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Tank Demolition

- View of panel lay down

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Tank Demolition

View of tank interior
CERCLA Clean-up Activities

- Hazardous Waste Drum storage area clean-up
- Cylinder Removal
- Removal of F and K waste sludge from facility API separator
- Removal of Hazardous waste from Refinery
- Removal of ACM
- Conducting of ACM survey in the Refinery to quantify the amount of ACM. It is estimated that there approximately 67,000 linear feet of ACM in the refinery
Sale of the Facility

- CAPECO Filed for Chapter 11 Bankruptcy.
- CAPECO engaged in a jointly administered purchaser agreement with Puma Energy Caribe and the United States Bankruptcy Court.
- EPA participated in these negotiations with DOJ and the Bankruptcy Court.
- EPA accepted Puma Energy as a viable purchaser.
- As part of the purchase agreement Puma negotiated 4 AOCs with EPA for the clean-up of the Site and other purchased assets.
- The 4 agreements covered OPA, CERCLA, RCRA and UST, contingent on purchase of the property. CAPECO previously had a RCRA Corrective Action Order with EPA, this order was amended and renegotiated with Puma.
- Sale was finalized with Puma on May 11, 2011, for $82,000,000. Proceeds of purchase were used to pay creditors, the governments response costs as well as a fine.
Responsible Party Oversight Action

- Puma Energy Caribe has taken over all previous actions from EPA.
- R2 Response and Prevention Branch was designated the lead for the OPA and CERCLA Orders. RPB is conducting oversight of both of the orders in coordination with the RCRA and UST programs.
- Puma is currently cooperating with EPA and complying with all the terms of the Orders, and paying for all oversight costs.
SPCC and FRP Applicability

- Facility is regulated by both the SPCC and FRP Regulations.
- Although there was a significant release of oil from this incident, it was clear that adherence to SPCC secondary containment requirements greatly reduced the amount of oil released.
- As required by the FRP Regulation the facility had in place a contract with an approved Oil Spill Response Organization (OSRO). As a result they were able to deploy a significant amount of contractor resources to the incident. The deployment of those resources delayed because of the fire and ongoing FBI and ATF investigations.
Wetland Assessment/Damage
Potential Causes of the Explosion

◆ This incident is part of an on-going CSB investigation, and at this point their conclusions are only preliminary in nature.

◆ CSB investigated many different scenarios that could have caused the explosion.

◆ It is believed that the cause of the spill was an overfill of tank 409, during a barge transfer.

◆ The overfill produced a large vapor cloud that travelled west across the facility and found an ignition source, near the wastewater treatment plant control area, and then flashed across the facility. The resulting fire then engulfed the entire north tank farm and the majority of the central tank farm.
Tank 502 May 2010

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Tank 502 July 2010
Waste and Product Disposition

- Partial list of waste and product transferred off-site as of September 2010
- 70 yards of contaminated debris
- 4,282 tons of contaminated soil
- 1,000,000 gallons of contact water treated off-site at by PRASA
- 11,140,950 gallons of contact water treated on-site through WWTP
- 25,736,508 gallons of product transported to PREPA
- 449,022 gallons of collected oil transferred off-site
Challenges

- Responsible Parties inability to finance emergency response and removal efforts
- EPA Contracting difficulties – expired contracts, transition between contractors
- Oil Funding – competition between other national priorities (BP, Embridge)
- Communications – radios, Internet, language barrier
- Weather
- Integrity of tanks remaining
- Recovery of material from wetlands
- Identifying source material – piping, storm water channels, secondary containment, process sewers
- Obtaining resources and specialized equipment in a timely manner
- Waste Management
- Negotiating AOC with original RP
- Negotiation of 4 orders simultaneously with purchaser
- Review of work plans for the OPA and CERCLA orders
- Public Information
  - Press conferences, visits to neighborhoods, interaction with community leaders and interest groups
Successes

- Establishment of Unified Command and integration with multiple agencies, including law enforcement
- NPFC located on-site for funding issues
- Teamwork with all players
- Cooperation within Unified Command (local, federal, and Responsible Party) in operational decision making and addressing safety concerns
- Quick mobilization of personnel
- Timely distribution of documents by UC
- Establishment of physical Command Post with communication capabilities
Much More to Accomplish!