U.S. CHEMICAL SAFETY BOARD

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CARIBBEAN PETROLEUM

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PUBLIC MEETING

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THURSDAY,
JUNE 10, 2015

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U.S. CHEMICAL SAFETY BOARD MEMBERS PRESENT:

RICK ENGLER, Member, U.S. Chemical Safety Board
MARK GRIFFON, Member, U.S. Chemical Safety Board

STAFF PRESENT:

DAVID HOROWITZ, PhD, Managing Director
RICHARD C. LOEB, General Counsel
VIDISHA PARASRAM, Director of Incident Screening, Investigator

ALSO PRESENT:

PHIL MYERS, PEMY Consulting

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P R O C E E D I N G S

MEMBER GRIFFON: Okay, everyone, we're going to -- I've given the signal to go live, so we are streaming this meeting on the web.

And I just -- my name is Mark Griffon. I am a Board member with the Chemical Safety Board, and to my left is Mr. Rick Engler, a Board member, and to my right is Richard Loeb, our General Counsel.

And I'd like to welcome you all to the second part of our public meeting today. Some were here earlier, some are joining us newly, I think, but this afternoon session is to address the Caribbean Petroleum tank terminal explosion and multiple tank fires, the incident near San Juan, Puerto Rico.

First, I'd just like to go through a few housekeeping things for those who weren't here in the morning. If we do have an emergency, and it's not just the alarm on the door that was ringing before earlier today, if we have an emergency, we want to go out the doors over here,

down the stairs, and then our convening point is across on Pennsylvania and 22nd, on the corner of Pennsylvania and 22nd, across the street that way, so if anything happens, that's our -- our evacuation route.

Secondly, there's restrooms out the door and to either side, men's and women's on either side of the elevators, and I think that's the primary things I need to take care of.

Again, I am happy that everyone has come to this meeting, and as you might note, we don't have a quorum today. Mr. Ehrlich is our third Board member, and we don't have a quorum of the Board, which would require three members, so we are going to have the presentation of the report, hear the findings and recommendations, staff recommendations, and then we'll listen to public comment.

We won't be able to vote on the report today, but in a way, that's also okay for us. We welcome the public comment, the feedback, and we'll try to consider those public comments in

the final -- final issuance of the report.

So thank you all for attending, and I hope you -- you sign up for public comment.

That brings another administrative note. We do have a sign-up sheet for public comment in the hallway, I believe it is. Is that -- a yellow sheet, I believe, and if you want to make public comments, sign up there. Of course, at the end, I will ask if anyone in the room has public comments.

For those watching the webcast, you can also submit public comments for the record, and if they are extensive, we'll add them to the record. If they are shorter, I will probably read them into the record, so but we welcome your comments as well if you're watching on the internet.

So welcome everyone, and I am glad to be here to discuss a very important investigation.

On October 23rd, 2009, a massive fire and explosion sent huge flames and smoke plumes

into the air out of the Caribbean Petroleum Corporation near San Juan, Puerto Rico.

The 2009 accident occurred when gasoline overflowed from a large above-ground storage tank, forming a huge vapor cloud that ignited.

While there were no fatalities, the resulting explosion damaged approximately 300 nearby homes and businesses, and petroleum leaked into the surrounding soil, waterways, and wetlands.

This incident was eerily similar to the 2005 Buncefield incident in Hertfordshire, England. This incident also involved an overflow of tanks resulting in multiple explosions.

The investigation of the Buncefield incident resulted in recommended regulatory changes as well as recommended changes in best practice. It is also notable that the investigations found -- for the Buncefield incident -- found deficiencies in safety culture and deficiencies in how the government was

addressing potential increased societal risk due to growing populations, growing residential populations, near major hazard -- or major industrial sites, major hazard industrial sites.

One unique and I find very interesting outcome of the Buncefield incident was the formation of the Petrochemical Process Standards Leadership Group, PPSLG. The industry and the regulator came together to create and deliver action designed to prevent another incident similar to the Buncefield incident.

I think this model of industry and the regulator being, as they say in their report, quote "aligned but not joined" is a very interesting model which perhaps deserves further consideration for us in the U.S.

The CSB's final report on CAPECO, which will be presented by our lead investigator, Vidisha Parasram, who I should have introduced earlier, I apologize, found that preventing such catastrophes requires that the tank terminal industry go above the current regulatory

requirements and industry and consensus standards to implement a reliable safety management system.

I look forward to the presentation of the report and the comments from everyone in the public today. Thank you.

And now, I will ask if Member Engler has any opening comments?

MEMBER ENGLER: Very briefly.

There are a wide range of potential safeguards involving large above-ground petroleum storage tanks. These include testing and inspection of materials integrity, employee training, adequate staffing, lighting, standard operating procedures, and employee participation.

This report looks in particular at the specific matter of overfill protection in some depth, and I trust it will be an important contribution to the prevention-oriented literature on this subject and will make an impact in incentivizing tank farm owners and managers to make safety improvements.

Tank farms are obviously very visible.

They often occupy a very large footprint. They are very obvious to the public. I drive up and down the New Jersey Turnpike a lot, and if you've been there, you know that there's tank farms lining both sides, often with petroleum products.

And if I go by a chemical facility, at least one, just to use New Jersey as an example, if I go by one of about 90, I can check on a list what some of the information I want to know is, and I can find out storage, as was referred to this morning under EPCRA, I can find out emissions under Toxics Release Inventory, and, even though it's more difficult to access, I can see offsite consequence information if I eventually make it to a federal reading room.

But tank farms are not covered by the EPA RMP program, which means that affected communities and the neighborhoods surrounding those communities, and likelihood also that oftentimes workers, are actually not aware of the potential risks involved in operation of these facilities.

So if tank farms were actually covered by EPA's RMP program, it would increase the public ability to understand the hazards that they potentially face in their midst. And I look forward to the report.

MEMBER GRIFFON: Thank you.

And before Vidisha starts her presentation, I should have earlier introduced our panel on the other side of the room. Dr. Daniel Horowitz is our Managing Director of the Chemical Safety Board. Phil Myers is a consultant and expert in this field and has been a great help in navigating and putting together the final product. And Vidisha Parasram has been the primary person on the -- in the Agency to bring this to the finish line, so we really thank Vidisha for all her efforts on this.

And with that, I'll turn it over to Vidisha to begin the presentation, if that's -- if that's the plan.

MS. PARASRAM: Good afternoon, ladies and gentlemen, Board Member Griffon, Board Member

Ehrlich, and esteemed colleagues.

I am here today to present the investigative team findings for our Caribbean Petroleum investigation.

I'd like to start by providing a background on the Caribbean Petroleum facility, provide an incident description and show the CSB's animation of the incident details, describe the impact of the explosion on the communities near the Caribbean Petroleum facility, discuss the emergency response as a result of the vapor cloud ignition and multiple tank fires, talk about our investigative and regulatory findings, and finally present a summary of the CSB's recommendations.

The Caribbean Petroleum tank fire was located in Bayamon, Puerto Rico, about approximately 10 miles from San Juan in the northern part of the island.

The facility started operating as a refinery in 1955. Ownership changed several times in the decades following the purchase of

the refinery by Gulf Oil Corporation in 1962 and Chevron Corporation in 1984.

First Oil Corporation acquired the refinery in 1987 and operated it as a 48,000 barrel per day petroleum refining facility until 2000, when the facility closed.

In 2001, the facility was reorganized into a tank farm. In 2010, after the Caribbean incident, the facility declared -- or Caribbean Petroleum declared bankruptcy.

I'll be referring to Caribbean Petroleum Corporation as CAPECO throughout this presentation.

The facility encompasses 179 acres, of which 115 acres are actually developed. It included a decommissioned refinery located here, the wastewater treatment area, 48 liquid storage tanks in a tank farm, bullet tanks, a loading dock located about 2.5 miles away from the facility, and it employed 65 employees.

On October 23rd, 2009, tank 409, a five million gallon capacity atmospheric storage

tank, was overfilled with gasoline while it was being transferred from a ship, the Cape Bruny, located at the CAPECO dock.

The overflowing gasoline aerosolized, forming a large vapor cloud which subsequently ignited, causing tanks to explode and become engulfed in fires that lasted over two and a half days.

To better understand the incident, I will now describe normal site operations at the CAPECO tank farm.

During normal site operations, gasoline was transferred to above-ground storage tanks at the tank farm from the CAPECO dock, and that's just the photo that shows the CAPECO terminal and the location of the dock two and a half miles away.

Gasoline was pumped to the Puerto Rico Electric Power Authority and the airport, and gasoline was then also loaded to trucks at the facility, tanker trucks, and distributed to the 170 Gulf gas stations that CAPECO owned.

The tank farm was staffed by two tank farm operators and one wastewater treatment operator during normal operations. If -- it operated on three rotating eight-hour shifts.

With regard to fueling operations, fuel transfer operations, rather, operators manually opened and closed valves to transfer and blend gasoline before pumping it to various locations on the island.

During fuel transfer operations, operations staff recorded tank levels in the morning and checked them via the side gauge hourly. Operations staff also received direction from the -- the CAPECO Planning and Economics department.

There -- there were two types of gauging systems that -- or gauging that occurred at CAPECO to obtain liquid levels inside the tank. Operations staff manually measured tank liquid levels inside the tank. For commodity management, it was common practice for operations staff and a third-party inspector to manually

measure and verify the tank levels before and after transfer operations to ensure the correct amount of product was offloaded into the tank.

The CAPECO tanks were also equipped with a float & tape device that measured liquid levels inside the tank and displayed it on the gauge mounted on the side of the tank. This is referred to as an automatic tank gauging system.

The facility also had the ability to view tank levels on a computer. Each side gauge was equipped with a transmitter card that transmitted the liquid levels to a computer in the Operations department, and then after they obtained the tank levels, Operations staff would commonly calculate the time it took to fill a tank.

This diagram shows the gauging system at CAPECO. The manual gauge requires the operator to physically gauge the tank with a tape that measures the tank levels, and the automatic gauge -- sorry, sorry -- the automatic gauge is referred to as the float & tape that -- on the

transmitter card that transmits the liquid levels to the computer.

The CAPECO Planning and Economics department had a significant role in directing operations at the tank farm. They determined the tanks to be filled with product during filling operations. They rented tank space to petroleum vendors, and they negotiated a fee for the duration of time it would take to fill -- during filling operations should take.

CAPECO would be charged this fee if unloading operations took longer than negotiated.

And operators utilized a radio to communicate with each other. It was necessary to remain in constant contact during filling operations because of the manual nature of operations and because tank size varied, and operators were often manually switching between multiple tanks.f

In order to understand what occurred on October 23rd, 2009, I will show you the CSB animation of the incident.

(Animation begins.)

NARRATOR: On Wednesday, October 21st, 2009, Caribbean Petroleum Corporation, or CAPECO, began a routine transfer of more than 10 million gallons of unleaded gasoline from a tanker vessel docked two and a half miles from the facility.

The only storage tank that was large enough to hold a full shipment of gasoline was already in use. As a result, CAPECO planned to distribute the gasoline among four smaller storage tanks. This operation would take more than 24 hours to complete.

During transfer operations, one CAPECO operator was stationed at the dock, while another monitored valves controlling gasoline delivery at the terminal.

By noon the next day, October 22nd, two of the five tanks were filled with gasoline. The operators then diverted the gasoline into two other tanks, tanks 409 and 411.

CAPECO used a simple mechanical device consisting of a float and automatic measuring

tape to determine the liquid level inside the tanks. An electronic transmitter card sent the liquid level measurements to the control room, but the transmitter card on tank 409 was out of service, so operators were required to manually record the tank level readings once every hour.

At 10 p.m. the night of the 22nd, as tank 411 reached maximum capacity, operators fully opened the valve to tank 409. At that time, an operator read the level of tank 409 from the side gauge and reported it to his supervisor.

The supervisor estimated that tank 409 would be full at 1 a.m. But shortly before midnight, tank 409 started to overflow. Gasoline sprayed from the vents, forming a vapor cloud and a pool of liquid in the tank's containment dyke.

The CSB determined that a total of nearly 200,000 gallons of gasoline, the equivalent of 20 full tanker trucks, was released from the six vents on the tank.

On a warm, windless night, the gasoline vapor cloud grew to cover an area of 107

acres.

At midnight, the tank farm operator was ready to perform the hourly check of tank 409, but before reaching the tank, he noticed a strong odor of gasoline.

He alerted the dock operator to shut off the flow of gasoline to the tank. The tank farm operator and another operator met the supervisor at the edge of the terminal. There, they observed a white fog rising approximately three feet above the ground.

The supervisor sent one operator to the security gate to stop anyone from entering the site. Then, the supervisor and the tank farm operator drove to an elevated point away from the cloud to try to identify the source of the leak.

Meanwhile, the pooled gasoline flowed through open valves in the containment dyke toward the wastewater treatment area. There, the vapor reached electrical equipment, which ignited the cloud.

A flash fire raced back toward the

storage tanks. Seven seconds later, there was a massive explosion, registering 2.9 on the Richter scale.

The time was 12:23, approximately 26 minutes after the overflow began. Soon, 17 of the facility's storage tanks were engulfed in flames.

Fortunately, the three CAPECO employees escaped the tank farm, and there were no fatalities.

Flames from the explosion could be seen from as far as eight miles away. The shockwave damaged approximately 300 nearby homes and businesses. Fires continued to burn for over two days.

(Animation ends.)

MS. PARASRAM: The CAPECO explosion and multiple tank fires resulted in significant community and environmental impact, and actually elicited a large emergency response.

This map shows the communities neighboring the CAPECO tank farm. They include

the Catano community, the Puerto Blanco community, and an Army installation unit called Fort Buchanan.

All of them are located within one and a half to five miles from the tank farm fence line.

In the communities, over 48,000 people or residents resided there, and the -- Puerto Blanco actually experienced the most damage, with over 250 homes that were damaged as a result of the concussion wave, and Catano had about 289 homes that were assessed, and 25 were completely condemned.

The Army installation unit, Fort Buchanan, experienced over $5 million worth of damage as a result of the explosion and fires.

And the Puerto Rico Government, as a result of this accident, it happened in the middle of the night, they had to relocate a maximum security prison of 152 inmates in the middle of the night because of its close proximity to the facility.

As I mentioned, there -- the incident also resulted in a significant emergency response from federal and local responders. It involved 530 firefighters and 900 National Guardsmen responded.

A federal emergency order was declared by the President, and FEMA awarded $3.4 million to 27 municipalities and agencies, all because of an industrial fire at a tank farm.

This -- the incident, as I said, occurred in the middle of the night, while most people were asleep in these communities. After the initial explosion and fire, residents of nearby communities were told to evacuate, but they were actually told to evacuate by local police and responders going -- going through the streets using a blowhorn to tell them to evacuate because no one was sure what was going on, and people started running through the streets and weren't given direction as to where to go and shelter in place, or where to evacuate to, so the entire scene was incredibly chaotic.

This video will give you a glimpse of what the nearby community experienced that night.

(Video played.)

MS. PARASRAM: Now imagine waking up to that.

The incident also resulted in significant environmental impact to the nearby area surrounding Caribbean.

Contaminated runoff was released into a nearby creek called Malaria Creek and the wetlands adjoining the Caribbean site and stormwater channels.

EPA -- CAPECO and EPA collected and shipped offsite an estimated 170,000 gallons of oil and 22 million gallons of contact water as a result of this incident.

The facility was actually fined by EPA $8.2 million, and CAPECO declared bankruptcy in August 2010, forcing EPA to assume responsibility for the cleanup.

Now, similar catastrophic incidents like CAPECO thankfully occur at a low frequency,

but result in significant consequences when they do occur. Therefore, it is necessary that we learn from them and work towards preventing them.

Unfortunately, a very similar incident to CAPECO occurred, as Board Member Griffon mentioned in his opening comments, in England in 2005.

On December 11th, 2005, a gasoline storage tank overfilled creating a vapor cloud that ignited at the Buncefield Terminal in the United Kingdom.

The overfilling tank had a gauge that allowed operators to monitor filling operations with an independent high-level switch that allowed for automatic shutdown of filling operations if the tank overfilled, but both were out of service at the time of the incident.

The explosion generated significant blast pressure, resulting in additional loss of containment that led to fires and other damage involving 22 tanks.

Fortunately, like CAPECO, this

incident occurred earlier in the morning, at 6 a.m., and there were no fatalities, but 43 people were injured, and the damage to nearby commercial and residential property equated to about $1.5 billion. The fires also burned for four days.

The United Kingdom, unlike the United States, classifies tank terminals storing gasoline as high-tier or highly hazardous facilities and requires that these facilities use a safety management system approach to manage all facility operations.

A safety management system is a systematic approach to managing safety, which includes organizational structures, accountabilities, policies, and procedures.

The Buncefield incident caused the United Kingdom to do a comprehensive review of their regulatory requirements governing tank terminals like Buncefield's storing gasoline.

The regulator now requires an independent automatic overfill prevention system and high-integrity safety instrumented systems,

moving towards treating Buncefield-like facilities as high reliability organizations.

The Buncefield report emphasized that controlling the risks associated with a major incident like Buncefield and CAPECO requires an integration of safety integrity levels at high hazard sites specifically addressing containment of dangerous substances and process safety, with mitigation planning against offsite impact; preparedness of emergency response, and we saw a breakdown of that at the Caribbean facility during the Caribbean response; land use planning for a controlling societal risk; and regulatory enforcement at these high-hazard facilities.

Now, in addition to the Buncefield incident, the CSB identified 15 other incidents involving overfills and spills that occurred around the world at tank terminals. On January 7th, 1983, a similar incident occurred at the Texaco Oil Company tank terminal in Newark, New Jersey.

A gasoline vapor cloud exploded when

a 1.76 million gallon capacity storage tank overflowed, resulting in one fatality and 24 injuries.

Inadequate monitoring of the rising gasoline level in the storage tank during filling operations contributed to the overflow, explosion, and subsequent fires.

A National Fire Protection Association report on the incident attributed the root causes to errors in calculating the available space and pumping rates.

Equipment damage was observed for as far as 1500 feet away from the exploding tank. The overflowing tank had manual-level controls, and the facility also had no documentation of previous liquid level monitoring in hours leading up to the explosion. In fact, the last checks on the levels were done 24 hours prior.

Another incident occurred at the Indian Oil Company in Jaipur, India, just about a week after the Caribbean incident.

On October 29th, 2009, four operators

were transferring gasoline to a tank when the delivery line developed a large leak which continued unabated for 75 minutes after fumes -- after fumes overcame two of the Indian Oil Company workers.

The pooling fuel migrated through an open dyke drain system to storm drain, producing a large vapor cloud.

The cloud was ignited by either non-intrinsically-safe electrical equipment or a vehicle startup, and the resulting explosion and fireball engulfed the entire site.

Fire affected 11 tanks, and the fire persisted for 11 days. The incident resulted in 11 fatalities, 6 of them from the Indian Oil Company, and the other fatalities resulted in -- in the nearby facilities to the -- to the tank farm.

Among -- among the 39 recommendations that the Indian government issued in their report, one was for an independent hazard operability study, or risk assessment, and

another addressing automated operations and improving instrumentations and alarms at tank terminals storing petroleum.

Another incident we identified was at the -- a terminal in Huntington, Indiana, the Gladieux Trading and Marketing facility, and this incident was an overflow when a pump that was transferring product was left on at the end of a shift.

The high and high high level safety alarms activated, but it was hidden from view on the alarm monitoring screen, so human factors deficiencies.

An offsite-contracted employee spotted the product overflow from the tank 157 minutes after the overflow occurred and alerted the control room operator to the incident, so fortunately, there was no catastrophic incident from that -- that incident.

Now, the CSB found, using the EPA's Toxics Release Inventory data, that in 2012, there were almost 3,000 bulk above-ground storage

tank terminals located within one mile of communities with greater than 300,000 residents.

The CSB actually had a really difficult time finding data on tank terminals that were publically available. We saw -- we bought some data in the past and found that the TRI was the closest thing we had to identifying the number of facilities in the country and to explain the magnitude of the problem.

The CAPECO incident resulted from a number of systemic failures at the CAPECO site. In our report, we used James Reason's "Swiss Cheese Model" to demonstrate the breakdown of multiple layers of protection and lack of safeguards that resulted in the overfill of tank 409.

The investigative team found a large number of safety management system deficiencies. Again, safety management system is a systematic approach to addressing safety at all levels of an organization.

These deficiencies include a poorly

maintained level control system, lack of a preventative maintenance system or program, human factors deficiencies, and human factors refer to environmental and organizational job factors and human and individual characteristics which influence behavior at work in a way which can affect health and safety.

And then there was a lack of additional layers of protection, or relying on only one layer of protection to prevent an overfill.

And I'll go through all of these in detail.

So we found that there was a breakdown in the level control and monitoring system at the Caribbean facility. Safety-critical equipment were prone to failure. On the night of the incident, the transmitters for tank 107 and 409 were not receiving data from the side gauge. Therefore, the data on the tank liquid levels and the calculated fill rate for the tank was not available to the operators in real time.

The float & tape device was prone to failure. The gear mechanism can disengage, resulting in inaccurate readings and disrupts synchronization of the transmitter card. It's also subject to excessive wear and tear.

The computer monitoring system was often compromised by outages from lightning strikes and accidental breakage of computer cables due to maintenance activity at the time at the tank farm.

And the transmitters that sent the data to the computer were also susceptible to electromagnetic interference, and frequently needed replacing after lightning storms.

CAPECO also took weeks to replace the fault transmitters, and CAPECO operators found the computer system to be unreliable.

So after completing hourly rounds, the operators would actually just manually calculate the time it took to fill the tank, and through testimony, we found that they were doing that for decades.

This -- this is just -- this schematic just shows what was available to Caribbean at the time of the incident, so they did have a float & tape device to the side gauge, but they did not have the transmitter card transmitting it into the computer in the operations rooms, and so the only information that that operations staff had was from the side gauge, and -- because they had measured the tank before filling operations started earlier that day.

We also found that there was a poor preventative maintenance program at CAPECO. EPA's inspection reports from 1992 to 2004 found a lack of investment in equipment at the tank farm.

For the 12-year period, SPCC inspections revealed problems with leaking transfer valves, leaking product lines, insufficient secondary containment, failure to lock valves that could release content, and they found oil sheen in the dykes and adjacent dykes at the facility, indicating a migration of oil

from a leak or a spill through the dyke drain valves.

A good example of poor maintenance, preventative maintenance is that the level transmitter cards for 409 was out of service, as I previously stated, and the facility operations staff was actually waiting for parts, and despite frequent outages, they were not -- the parts weren't being -- or the cards weren't being replaced promptly enough.

Caribbean also had a history of overfills and spills at CAPECO that we found in the records. They had 15 overfills and spills from 1992 to 1999 and 3 after 2005.

The incidents occurred from filling, draining, or transferring material between tanks or via pipeline to the -- to the storage tanks, and they resulted from valves in the open position, tank gauge malfunction, or corrosion of pipes or the tank shell corrosion.

The investigative team also identified a number of human factors deficiencies. We found

that there was poor lighting in the tank farm, and it made it difficult to observe an overfill. Lighting in the tank farm was sparse. Therefore, operators used flashlights to monitor tank farm activity and read liquid levels from the tank's side gauge.

A 1999 EPA inspection found insufficient lighting at the CAPECO tank farm to detect spills and prevent vandalism.

We also found that their operating procedures were not updated. When the facility transferred from a refinery to a tank farm, they were no longer required to adhere to the Process Safety Management standard, which required periodic updates of standard operating procedures.

Now, the last update we saw on the procedures occurred in 1999, when the refinery was in service.

So they -- the terminal often had activities outlined -- they updated -- they did -- they had a two-page document that -- with

procedures for filling operations, but these -- it was just an activities outline, essentially.

The terminal often had activity outlines and checklists, but didn't have standard operating procedures to instruct employees on how to perform daily activities during filling operations.

And the Puerto Rico Occupational Health and Safety Administration issued a serious violation to Caribbean for lacking filling procedures during transfer operations.

Additional human factors deficiencies that we identified were differing valve designs that made it difficult to tell whether the secondary containment valves were open or closed. This is important because we identified that the -- the secondary containment valve was actually in the open position, which allowed gasoline to migrate to the wastewater treatment area and subsequently ignite.

We also found that there was a lack of sufficient staffing for fuel transfer operations.

Offloading to multiple tanks required more than one operator to open the valves, and so operators will often -- what they did, this workaround, was to crack a valve for the next tank in line to be filled to relieve the pressure on the line.

And more importantly, we found that there was just a reliance on one layer of protection to prevent an overfill incident. There was no high-level alarm to measure tank levels, and there was -- there -- the tanks were not equipped with a redundant or independent level alarm.

Now, an independent level alarm is -- is a sensor that is completely independent from the already-existing tank gauging system, so at Caribbean, they had the float & tape, and they had the side gauge, and an independent alarm would be another independent sensor to provide liquid levels to the tank.

Overall, what we saw was all of the layers of deficiencies in protection broke down. There was this inadequate level control and

monitoring system, and the facility actually had no independent level alarm, no automatic overfill prevention system, and this led to the overfill of tank 409.

Now both the EPA and OSHA standards apply to tank terminals storing petroleum like Caribbean, and I will now go through our regulatory findings.

The -- the Clean Air Act general duty clause, so the Environmental Protection Agency has various statutes under the Clean Air Act Amendments of 1990 and the Clean Water Act that are pertinent to our investigation and to above-ground storage tanks storing petroleum.

The general duty clause applies to protect public -- exists to protect public living near facilities. It requires covered facilities identify hazards to prevent and minimize the effect of an accidental release, and the Clean Air Act general duty clause amendment -- general duty clause lacks -- however, we found that it lacks specific guidance on preventing accidental

releases from -- from tank terminals storing petroleum, or this type of flammable liquid, NFPA 704 Class 3 flammable liquids, and I'll explain what I mean by that.

We also found deficiencies in the list rule and Risk Management Program could have prevented this accident or contributed to preventing this accident.

The Clean Water Act, the Spill Prevention, Control, and Countermeasure plan -- or rule covers tank terminals and the Facility Response Plan covers tank terminals.

Now, the EPA Risk Management Program, in 1996, EPA created the Risk Management Program to address accidental releases, covering facilities storing listed flammables and toxic chemicals above the threshold quantity are required to submit a risk management plan to EPA, conduct risk assessments, and analyze worst-case scenarios.

They are also required under the RMP, the Risk Management Program, to adhere to

recognized and generally accepted good engineering practice, or RAGAGEP.

Only facilities storing NFPA 704 Class 4 flammable liquids are covered under RMP, so Class 4 flammable liquids include pentene or acetylene highly flammable liquids.

Class 3 liquids are characterized as gasoline or acetone, and Class 2 would be diesel fuel, and Class 1 is mineral oil.

So RMP covers Class 4 liquids, and this -- EPA initially recognized the facilities storing Class 3 flammable liquids could pose an explosion hazard, but following an industry petition in 1996, EPA asserted that the general duty clause actually is -- their coverage is sufficient for Class 3 flammable liquids, but what we're saying here is that clearly, the hazard for an accidental release occurs -- can occur with Class 3 flammable liquids like gasoline.

So gasoline or all the component parts of gasoline are actually exempt from RMP because

they are actually exempt from the list rule.

With regard to the Clean Water Act, the Spill Prevention, Control, and Countermeasure requirements gather oil discharge. It was first promulgated in January of 1974 and has since been updated a number of times.

Covered facilities must develop a plan detailing steps to prevent and control oil discharge to navigable waters and shorelines.

SPCC has requirements for tank overfill protection. It requires covered facilities to protect -- provide overfill protection for each tank.

Subject facility -- they include constantly attended alarms, high-liquid-level pump cutoff devices to stop liquid flow into a tank at a previously established level. They also could choose from fast response system as a digital computer or a -- to determine liquid levels in the tank, and they have to regularly test the level sensor they choose, but SPCC only requires that the facility choose one of these

options, so one layer of protection to prevent against an overfill, not multiple, or even a redundant or independent alarm.

The -- the compliance history at Caribbean with SPCC is varied, and in 1996, EPA actually cited CAPECO for not employing engineering controls, which would be the high-level alarms, high-liquid-level pump cutoffs that I mentioned, direct audible -- or signal communication between the tank gauger and pump stationer, fast response system like a telepulse system or computer-operated system to demonstrate tank levels.

So they were cited for not employing engineering controls in 1996, and in 1999, the facility had an asphalt tank overfill, and EPA again cited them for not implementing failsafe engineering such as high-level alarms to prevent a spill.

In 2010, after the incident, EPA cited CAPECO for not employing failsafe engineering again, but the facility contended that the float

& tape device connected to the computer with the transmitter card would actually satisfy SPCC requirements.

So the -- but the facility declared bankruptcy and has since been sold.

The CSB found that SPCC also lacks data on the covered facilities. In 2008, a Government Accountability Office report found that EPA lacks information on the universe of facilities it covers, and this hinders the ability of the program to effectively regulate the covered entities, and it also hinders their ability to determine inspection priorities and evaluate program goals.

And in 2012, a report found that EPA lacked understanding of the compliance status of both SPCC and facility response -- and facilities subjected to FRP, or to facility response plan requirements, because -- because of data collection limitations.

Now, OSHA, the Occupational Safety and Health Administration, protects workers from

hazards at workplace, and OSHA's Flammable and Combustible Liquids standard applies to tank terminal facilities storing petroleum products.

Although they are not covered under PSM standard, tank terminals can benefit from the hazard assessments required under the PSM standard.

So what we found was that covered tank terminals containing flammable materials are subject to regulatory coverage under OSHA's Flammable and Combustible Liquids standard, 1910.106.

However, OSHA adopted the 1968 version of NFPA 30, Flammable and Combustible Liquids Code, and -- and this code offers no guidance on overfill prevention at terminals -- terminal facilities during transfer of flammable or combustible liquids.

While recent versions require limited overfill protection, OSHA has not updated 1910.106 to include newer versions of NFPA 30 or other updated good engineering practices.

So Puerto Rico OSHA actually cited the Caribbean facility under 1910.106 for endangering the lives of workers but couldn't cite them for overfill prevention because the standard doesn't have it.

Now, OSHA's Process Safety Management standard, 1910.119, is a performance-based standard that requires covered entities such as refineries and chemical plants to implement a safety management system approach to prevent accidental releases from highly hazardous processes.

PSM requires periodic audits, process hazard analysis, and a management of change process.

The process hazard analysis is a thorough, orderly, systematic approach for identifying, evaluating, and controlling the hazards of processes involving highly hazardous chemicals.

The -- if -- under PSM, the employer must perform an initial process hazard analysis

on all processes covered by the PSM standard, and they have to periodically update this.

The PHA methodology to address factors such as engineering -- addresses factors such as engineering administrative controls and appropriate detection methods, including process monitoring and control instrumentation with alarms.

So the standard -- PSM elements like -- like PHA would -- could have -- if -- if the CAPECO tank farm were subjected to elements of PSM like the PHA, the process hazard requirements, it may have helped prevent the accident because they would have identified the hazard, they would have identified the proximity to the community and have to design their operations to be safe, theoretically.

So the CSB reviewed the API's, the American Petroleum Institute's Overfill Protection for Storage Tanks in Petroleum Facilities standard, API 2350, and we have an extensive review in our report, but the summary

of it is that the -- the standard provides minimum overfill and damage prevention practices for above-ground storage tanks in petroleum facilities, including refineries, marketing terminals, bulk plants, pipelines, that receive flammable and combustible liquids.

It recommends an overfill prevention system be supported by a risk assessment, but there is very limited guidance on how to conduct a thorough risk assessment at these facilities, and this is -- this is the standard, industry standard. We feel that there should be a more robust guidance on conducting a risk assessment.

We also found that there really is a lack of comprehensive industry standard for operations at tank farms, including overfill prevention.

The International Code Council develops international fire codes through consensus process. Puerto Rico adopted the International Fire Code, and the 2009 International Fire Code section has overfill --

has overfill prevention requirements.

It requires the use of an overfill prevention system for each tank over -- storing over 1,200 gallons of flammable liquids falling within Class 1, 2, or 3A.

Under the standard, under ICC or the International Fire Code, gasoline is considered Class 1B liquid, and they are required to not fill the tank in excess of 95 percent of its capacity, and they should install audible and visual alarms, reduce the flow rate to under 15 gallons per minute in a system, but they only still require one level of overfill and no risk assessment for -- to address -- to identify the hazards.

The National Fire Protection Association, also a consensus organization, develops fire codes to consensus process. The codes can be incorporated by reference or adopted by state and local jurisdictions. The standards are voluntary but can, I said, can be referenced by law.

OSHA 1910.106, the Flammable and Combustible Liquids standard, is based on a 1968 version of NFPA 30, which is why we're also issuing recommendations under NFPA 30, because we want OSHA to update 1910.106 with an updated version of NFPA 30.

Current NFPA 30 language only requires one layer of protection to prevent an overfill of gasoline. Facilities can choose one of these options, like gauging a tank at intervals, equipping a tank with high levels of independent gauging equipment, and equipment tanks with independent high-level detection systems to allow automatic shutdown or diversion.

So they can choose from this list, but they're still only required to do one, and most people just gauge tanks at intervals, that we've found.

Now, with that, the CSB -- the investigative team has -- are proposing the following recommendations to be voted on by the Board.

Our first recommendation is to the EPA. Now, the exact text of the recommendations are actually in our report. I am going to go through the EPA's first recommendation text in full and OSHA's full recommendation text, but the rest I'll summarize.

So we ask that the EPA revise where necessary the spill prevention control and countermeasures, SPCC, FRP, or the Accidental Release Prevention Program rules to prevent impacts to the environment and/or public from spills, releases, fires, and explosions that can occur at bulk above-ground storage facilities storing gasoline, jet fuels, blend stocks, or other flammable liquids having an NFP flammability rating of 3 or higher.

At a minimum, we ask that the EPA -- these revisions incorporate the following provisions.

We want them to ensure that bulk above-ground storage tank facilities conduct and document a risk assessment that takes into

account the following factors: the existence of nearby populations in sensitive environments; the nature and intensity of facility operations; realistic reliability of tank gauging system; and the extent and rigor of operator monitoring. These are all deficiencies that we highlighted in our report.

And we want -- we want the EPA to equip the bulk above-ground storage tank containers with automatic overfill prevention systems that are physically separate and independent from the tank level control system.

We also ask that they ensure that these automatic overfill protection systems follow RAGAGEP, recognized and generally accepted good engineering practices.

We ask that they are engineered and operated and maintained -- engineer, operate, and maintain automatic overfill prevention systems to achieve appropriate safety integrity levels in accordance with the International Electrotechnical Commission 61511, Functional

Safety Instrumented Systems for the Process Industry Sector.

And we ask that they remove required regular -- regularly inspected tests, automatic overfill protection systems, to ensure their proper operation in accordance with good engineering practice.

The team also makes a second recommendation. We ask that the EPA conduct the survey of randomly selected bulk above-ground storage containers storing gasoline or other NFPA flammable -- NFPA 704.3 flammable liquids at terminals that are considered in high-risk locations. That's due to the data gap that we identified in our report.

And at an (inaudible), we ask that the EPA issue appropriate guidance or -- on alerts similar -- issue appropriate guidance or an alert similar to the EPA's previously issued Chemical Safety Alert addressing rupture hazards from liquid storage tanks, but we're asking that they do this for overfill, tank overfills at covered

facilities.

Our fourth recommendation is to OSHA, the -- we ask that OSHA revise the Flammable and Combustible Liquids standard to require installing, using, and maintaining a high-integrity automatic overfill protection system with the means of level detection logic control equipment, and independent means of flow control from bulk above-ground storage tanks containing gasoline, jet fuel, other chemical mixtures or blend stocks, and other flammable liquids having an NFPA 704 flammability rating or 3 or higher, to protect from loss of containment.

Similar to -- we have very similar sub-bullets under OSHA. We ask that they're separate, physically and electronically, from the tank gauging system, engineered and operated to meet IEC 61511-SER, and to consider the existence of nearby populations, the nature and intensity of operations. They're all very similar.

We ask -- recommendation 5 asks that the International Code Council revise the

appropriate section of Overfill Prevention of the International Fire Code to require an automated overfill prevention system for bulk above-ground storage tanks. That considers more than one layer of protection.

And we make a very similar recommendation here to NFPA 30.

And with regards to American Petroleum Institute, we ask that the API revise 2350 to require the installation of automatic overfill prevention systems for existing and new facilities.

We also ask that the -- recommend that the Board asks API to develop detailed guidance on conducting a risk assessment for onsite and offsite impacts of a potential tank overfill during transfer operations.

We ask that they develop a single publication or resource describing all of the API standards that are relevant to operations at tank terminals.

With that, it was very long, I

appreciate your patience, but I am happy -- thank you for your time, and I am happy to take questions.

MEMBER GRIFFON: Thank you, Vidisha.

We have -- if you look at the agenda, we just have a brief period for Board questions, and then we're going to open it up for public comments. So we're hoping that we get some good feedback from the group here, and perhaps online as well.

So I'll ask Mr. Engler if you have any questions for Vidisha or for -- for the panel here, I suppose, are all available to answer questions.

MEMBER ENGLER: Had the facility employed multiple automatic overfill protection systems, would this incident have been prevented? And I ask that question because it gets to the core of the report, just to be as clear as possible about this.

MS. PARASRAM: Thank you for your question, Member Engler.

You know, we -- the system that CAPECO had in place was ineffective, and it was only one layer of protection. Had they had an independent alarm, that's a huge what-if scenario, but that -- that may have -- that wasn't running on the same system that failed. That could have alerted the operators to the rising levels in the tank.

MEMBER ENGLER: You cited the Buncefield incident. What impact did the Buncefield incident have in the United States, if any, on regulation or consensus standards or best practices?

MS. PARASRAM: That's an incredibly -- a good question, and we actually posed that question to the EPA during numerous meetings.

You know, we found that -- our regulatory system -- it was difficult for our regulatory system to learn from international incidents and enact any changes from -- from an incident like Buncefield, which is a shame.

We know that API 2350, the 2012 draft, learned from Buncefield and instituted or

implemented numerous -- or the requirement for risk assessment, anyway, but I'd defer to Phil Myers here.

MR. MYERS: Very good question.

First of all, to your earlier question about multiple systems, there is no system that will work without human factors. That is why the emphasis is on management systems. It takes a systematic approach involving equipment, procedures, testing, training, all management -- management of change, all these things, in order to make the equipment work reliably.

As to API 2350, I chaired that edition, the last two editions, for the past 10 years. It was published in May of 2013. It was controversial then, and it will be in the future.

API addresses many of the issues that have been raised. If any of those practices had been followed, these incidents wouldn't necessarily have happened.

But I'll point out that in Buncefield, they had a state-of-the-art automatic system, but

it failed to work because they didn't understand how it was supposed to work.

So there are practices that seem like they're simple on the face, but really it's fraught with complexity and difficulty to implement.

For example, the automatic overfill prevention system, in some cases they will work very well. In other cases, or if misapplied, or if someone doesn't know how to use it, that would be worse than not putting it in because, as was the case in Buncefield, reliance on a system that doesn't work, can you imagine driving your car and not having confidence that its reliability in the, say, the airbag is not close to 100 percent? Well, it's darn close to it, but it still results in five or ten fatalities a year for unreliable airbags.

So getting the message across, I think what underlies -- what's really important here is two things: the management system and doing the risk assessment so that you can understand what

your risks are, and then you can understand how to deal with those risks.

MEMBER ENGLER: Okay, one more question.

Could you comment any more on findings on staffing levels?

I mean, my anecdotal, just to be clear, not based on any studies, but the tank farms in some cases at least have had reductions in staff. These are very big facilities. People are working often at night and in erratic schedules.

Do you have any further thoughts about the staffing numbers at least that occurred -- that you found out about through this particular investigation?

MS. PARASRAM: No, we didn't do a comprehensive human factors analysis on how much staff would be required to do -- to work at a tank farm, but we knew that two operators wasn't sufficient to conduct operations at the Caribbean facility.

They had two operators and then the wastewater treatment operators, three, but it wasn't sufficient.

MEMBER ENGLER: Add to that?

MR. MYERS: Yeah, just to add to that from what was found at Buncefield.

I actually participated with the HSE, the Health Safety Executive, Chevron, with whom I worked at the time of the incident was an operator -- was not the operator, they were a partner and were absolved of issues related to its operation, good or bad.

In any case, in the work that was done there, it is clearly documented now, there was excessive pressures on certain aspects of the business such as production at the expense of safety and environmental issues.

So that kind of balance can't even be understood or seen without the management system because the management system does indeed clearly look at other things of value, not just to the corporate owners, but to the other stakeholders

who are indeed the public, the environment, and other people outside of the organization.

MEMBER ENGLER: Thanks very much.

MEMBER GRIFFON: Thanks, Mr. Engler.

And I just have a few, actually along similar lines of questioning.

I am curious if the tank terminals in general, if this industry ever considered this sort of incident as worst-case, even prior to Buncefield, or even after Buncefield, this sort of vapor cloud explosion, as opposed to just a overflow and a fire potential. Did they ever sort of consider this as a worst-case scenario in their planning, I guess is what I'm -- ?

MR. MYERS: It's --

MS. PARASRAM: Go ahead.

MR. MYERS: -- it hasn't been as well understood before the Buncefield incident.

One of the big lessons learned during Buncefield was these gigantic vapor clouds that can form quickly within five minutes under certain conditions. It doesn't mean that every

time there's an overfill, you're going to have this explosion, but those conditions are well understood now as a result of the research that took place in the U.K.

So that is kind of a lesson, you could say, that could be propagated to the general user, something that is probably not understood very well today.

So for example, the ignition that took place in both incidents that we're talking about here and in others occurred well outside the electrical classification of zones for ignitions because it wasn't understood that you could get vapor clouds that size, but it's also now understood how these things can be prevented, so there are lessons to be learned by a lot of people in the industry.

So teaching and learning is an important aspect of this risk reduction.

MS. PARASRAM: And I'd like to add that, you know, in testimony we obtained during this investigation, we learned specifically that

Caribbean had -- at Caribbean Petroleum, they didn't -- they never pre-planned for multiple tank fires or multiple explosions. The pre-planning was restricted to just one failure, one overfill, one tank fire, and so they were completely overwhelmed by the magnitude of this incident when it occurred.

MEMBER GRIFFON: But just to follow up on that, was that a CAPECO phenomenon, or was that an industry-wide phenomenon, or you don't necessarily know that?

MR. MYERS: For the bigger companies --

MEMBER GRIFFON: Yeah.

MR. MYERS: -- that know what they are doing, it's -- the single-tank fire scenario is a -- a well-supported and well-used practice. In other words, you don't design for everything being released at once. It would be like designing for meteor strikes. That's not done. Those probabilities are just too low to worry about, but yet we see these incidents that are

very bad, like the meteor strike, occurred.

What that results from, really, is a wide spectrum of practices from the very good companies to the not-so-great companies and everything in between, so that issue is of course complex, as was mentioned earlier in the day, you know, outlier-type companies, well who is an outlier and who is to say and who is to judge?

So getting people to a minimum best practice is what's really key here, but no, it would typically not be a fully engulfed terminal fire that would be designed to, so that if you're not going to design for that case, then the assumption is you're doing a good enough job including risk assessment and management systems to ensure that that doesn't happen. Then, in these cases that we're talking about, those steps were -- were failed at even the most basic levels, in the case of Buncefield with misunderstanding their safeguards, and in the case of Puerto Rico, without any redundancy in safety systems.

MEMBER GRIFFON: And just on -- on the risk assessment, can you -- can you expand a little more on what exactly -- I am not so familiar with the current guidance, are they implementing risk assessment under API 2350, is that what requires risk assessment?

And -- and how exactly is that done? Is that done to look at offsite impacts? Is that done to look -- how is that -- can you describe that a little bit?

MR. MYERS: Yeah.

One of the reasons that API 2350 was updated was to incorporate current best practices. The previous editions, of course, dealt with old technology. Today, the instrumentation is much better. You've got self-diagnostics. You've got high-reliability equipment.

But dealing with -- I kind of lost my train of thought.

MS. PARASRAM: Risk assessment.

MR. MYERS: Yeah, the -- as far as

what the -- the way risk assessment has been brought into the picture, one of the updates in the past -- the last edition of 2350 was to bring in that model.

Now, that came in large part from other safety standards, like IEC 61511 for safety-instrumented systems, or IEC 30100 for risk assessments.

Unfortunately, all of these documents say you need to do a risk assessment, but none of them tell you how. And why is that? It's because it's very complex, and it's very specific to the individuals, so it's one size doesn't fit all in the case of risk assessment. It's a complex process, difficult to deploy, but if you're going to avoid these kinds of accidents, incidents, you have to do some kind of risk assessment, and so part of it is the onus is on the owner/user to figure out exactly how to do that.

MEMBER GRIFFON: And just the last comment from my work on the Board, this sort of

ties in with some of the morning discussion, but when I had the opportunity to travel to the U.K., we actually talked to the regulator, and we were discussing safety case, of course, and Buncefield was under a safety case regime at the time of the incident.

And I think it was interesting to me -- excuse me, they -- the regulator noted that it -- it -- this incident was pretty transformative in terms of the way they did their work as a regulator because they said that at these types of facilities, which they I think also viewed as sort of not very complex and, you know, sort of straightforward, most of what they were doing was a paper review of the safety cases, and they didn't have very much experience with boots on the ground, so to speak, to verify what was put in the plan was actually taking place, being maintained, was reliable, was available, et cetera.

So looking at those safety-critical elements on the ground as opposed to just seeing

what was said in the plan, and they said they -- they sort of -- it ended up transforming their approach to much more emphasis of getting their regulators out to actually see what was being put in place rather than just reviewing the paper plans, so I thought that was a very interesting result out of the Buncefield incident in the U.K.

I don't know, do you have any follow-up?

MEMBER ENGLER: No.

MEMBER GRIFFON: And I guess at this point, we'll turn it open to public comment. I don't know if we had anyone sign up, so staff, do you have a list or -- ?

Otherwise, we can just open -- open it up to the floor, and maybe I guess there's a microphone over by Dr. Horowitz.

PARTICIPANT: There's a list.

MEMBER GRIFFON: Oh, there's a sign-up sheet too.

And just if you could state your name and organization for the record, that'd be great,

yeah, thank you.

MR. WEAVER: Sure, thanks Mr. Griffon.

MEMBER GRIFFON: Sure.

MR. WEAVER: Is that all right?

MEMBER GRIFFON: Yes.

MR. WEAVER: My name is Peter Weaver. I am Vice President with the International Liquid Terminals Association, ILTA.

And thank you, Vidisha, Ms. Parasram, for your report. We've been looking forward to this, and we've been pleased to speak with you prior to this.

You know, I have to say, just in terms of my own experience, so you know how I have been colored, I accepted my job with ILTA in November of 2005. My first day on the job was January of 2006, so everything I've done truly has had Buncefield moreso than Puerto Rico, but certainly that reinforces it, color my experience.

And based on a question that you had asked, Mr. Griffon, I am going to ask Tom, who just joined ILTA earlier this year, what was it

that I made a point of in stressing to you, the one thing that keeps me up at night, the one thing that our industry has to avoid?

MR. DUNN: Vapor clouds.

MR. WEAVER: Created by?

MR. DUNN: Gasoline spills.

MR. WEAVER: More than that? The overfills.

MR. DUNN: Overfills.

MEMBER GRIFFON: Of course, our transcriber --

MR. WEAVER: Well right, exactly, it's the overfills.

MEMBER GRIFFON: Our transcriber will have problems with that.

MEMBER ENGLER: Can you identify yourself?

MR. DUNN: Sorry, the new guy at the ILTA is Tom Dunn.

MEMBER GRIFFON: Thank you.

MR. WEAVER: But yes, overfilling tanks is something that is stressed repeatedly

within ILTA's members.

To reiterate Board Member Manny Ehrlich's statement that was read earlier today, the operating practices at CAPECO were inadequate, and I certainly share his hope that there are no other such terminals in the United States that are operating this way today.

I found that the recommendations actually kind of indict our industry in the U.S., implying that more of us do operate with such archaic safety practices, as we saw at CAPECO, and I didn't think that really was representative.

I don't generally challenge the findings at all in the report, but I do somewhat challenge the recommendations.

As Ms. Haas (phonetic) stated this morning from -- from ACC (phonetic), I think we need to focus on the fundamentals. I think we need to utilize API 2350, not rewrite it. I think we need to enforce SPCC, not expand it.

When you look at the incidents at

CAPECO from, what was it, '92 to '99, there were over 15 of them, and that was frankly when they were PSM-regulated, so let's talk about enforcement.

Putting more demands on the good actors tends to miss a lot of the failures at the bad actors, so CAPECO surely -- certainly shows us poor maintenance in the extreme. I think that the -- the issue, by your own reporting, is not inadequate processes, it was a breakdown in multiple cases of the processes, multiple breakdowns of multiple processes. This is non-compliance in the extreme.

I didn't see that enforcement really was culled out in the recommendations as quite as important a piece as it really needs to be.

So here we have a facility with a known poor track record of environmental performance. I think your Swiss Cheese slide that you put up there was a very good one. I think it's extremely apt, but it seemed to me that it was somewhat ignored in the

recommendations to really cull out just how important that confluence of missteps by the operator was.

It's very easy as a regulator, certainly for those who operate inside Washington, to default to major overhauls of existing programs, even if those programs have since been revised, I mean it's been five and a half years, and several of those programs have been revised. Certainly 2350 has been revised. Certainly SPCC has gone through some major shifts, and in fact that program has reported several times within ILTA's meeting on how SPCC has been enhanced, certainly since CAPECO.

So I think to really default to that is, at least to this individual's perception, perhaps excessive and even not -- not taking away the responsible lesson to be learned.

A couple questions that occurred to me, just to put on the table as questions. I am not expecting responses.

But I am interested in what

enforcement took place at Gladieux, the facility in 2010. Was enforcement a measure there? Were there similar compliance shortfalls there as we saw in CAPECO? Did the investigation look at those? And to that extent, how many domestic facilities did the investigative team really visit to see how things do operate within the continental United States?

I think that would tease out the extent to which CAPECO was normal or somewhat of an outlier.

Based on my read of the recommendations, I can't help but conclude, rightly or wrongly, that more domestic facilities probably should have been visited to see how things really happen in practice here.

So the recommendations I think would actually lead to a gold mine for the consulting community. I think that gold mine would largely come from the good actors. I think sadly it would leave largely untouched many of those who are the bad actors, who, you know, if -- if

you're -- you know, if you're struggling to -- to deal with the existing standards, why would more standards cause you to do more?

In terms of who is to say who the outliers are, I would start by saying those who are non-compliant, those who are repeatedly non-complaint, those who have violation after violation after violation. That's -- I would be happy to point them out as arguably outliers, certainly relative to those who we have, to the best of our ability to influence within our membership, those who are not members of major trade associations perhaps do not have as much of a benefit, and I don't want to throw them under the bus because many of them might be very -- very excellent actors.

But certainly, those who are engaged with the community of best practice sharing do have some advantages, and that is good, so I hate to overlay additional things on those who are already doing the right things for the right reasons.

So I guess, as one who works very seriously and takes kind of personally the importance of -- of elevating our industry to be responsible actors, I have to say I was a little bit disappointed in -- in the report.

I think until we really can discuss some of these issues, it would be premature to approve the report. I am not -- as written, I honestly can't say that I would support the report as written, unfortunately.

I think -- I think it tends to miss a lot of the -- the key point of this incident that we all need to learn and take away from, so I applaud the effort that went into it, I think the findings were right, and I think it's a perfect foundation to really have the right conversation about how do we improve the industry, but I feel as though recommendations focused on expanding standards and expanding regulations misses the point of the fact that the core of the problem came through shortcomings and violations.

Thank you all.

MEMBER GRIFFON: Thank you, Mr. Weaver, and I'll offer this to you as well as the other presenters.

If you want to submit more detailed written comments for the record, we -- we'd welcome them, so if you have specifics, that would be --

PARTICIPANT: Mr. Griffon --

MEMBER GRIFFON: Yes?

PARTICIPANT: I had this question earlier, do you have a time window in mind for those submissions? I think that would be helpful for the stakeholder meeting.

MEMBER GRIFFON: That's --

PARTICIPANT: I didn't know how to answer --

MEMBER GRIFFON: Right, I know, that's a very good question.

I would -- I would say as soon as possible, but I would say, you know, I would say a week is reasonable, you know, so within the week, we would like them. We are trying to --

this is over five years old, so we would like to finish this report off, I was hoping on my term, but it may not happen that way.

Okay. Any public comments? Yes, go ahead.

Are you -- I have a list too, so -- but go ahead.

MR. KUGELMAN: Yes, my name is Paul Kugelman. I am with Pathfinder Group, which is my own little consulting company.

For full disclosure, I do do work for DuPont Sustainable Solutions and Pilko & Associates out of Houston, so -- but this is my opinion about this work.

A question I have to ask is to what degree do you think that their penalty for not meeting a schedule influenced people's decisions relating to this tank overfill? Do you -- was there any information about that in your investigation?

MEMBER GRIFFON: Well actually, we'd rather keep this as public comments rather than a

--

MR. KUGELMAN: Oh --

MEMBER GRIFFON: -- question and answer, but --

MR. KUGELMAN: Okay, I am going to jump --

MEMBER GRIFFON: Yeah.

MR. KUGELMAN: -- to my point then, because I just wanted to use that as an example.

I have a continuing belief that the underlying problem, like Mr. Weaver associated, is that there are bad actors, right?

And these kinds of incidents are driven by a safety culture that just accepts unacceptable systems.

And I -- I think enforcement is very important, and continued informing the public to be more vigilant about what's going on around them regarding these terminals, refineries, whatever, is extremely important.

So I would hope that in your report, you can figure out some way to communicate that

information so that local enforcement and emergency response people get involved in this.

Thank you.

MEMBER GRIFFON: Thank you.

PARTICIPANT: I hate to say, but demurrage is a common element within these transfers. I don't know of a facility that doesn't have a demurrage component if that timing is excessive, so it would have to be a management decision to rush an order as opposed to operating safely, and I'm sorry if demurrage isn't the right term, it's very common.

MEMBER GRIFFON: Just, we have to remember we're -- we're online too, so if you want to make further comments, we have to use the mic. That's okay.

MEMBER ENGLER: And identify yourself each time please.

MEMBER GRIFFON: Right, right.

Let me go to the list. I have Trevor Elliston, is that -- ?

MR. ELLISTON: Good afternoon, ladies

and gentlemen. Good afternoon, members of the Board.

My name is Trevor Elliston. I am from Columbia Shipmanagement. We are the technical managers of the ship which was discharging the cargo at the time of the incident.

We welcome this report. We think that many of the findings are absolutely correct.

We have, however, made two written submissions to the Board, the first on the 8th of June, and the second today.

The one on the 8th of June, we are pleased to note that some of the comments have been taken onboard.

There is, however, one particular point on page 43 where we still have some residual concern, and that is the comment that "normal transfer operations from the Cape Bruny established a maximum allowable back pressure at 100 psig, with a maximum discharge rate of 18,870 barrels per hour."

I am not going to talk about the

barrels rate, but in fact, there was no maximum imposed by the Cape Bruny. 100 psi is a minimum imposed by the people who charted this ship which the ship had to provide. It is a subtle difference.

The other concern is page 21 of the report, which describes the incident itself, and I think there is a discrepancy between what is described there in terms of when tanks were open and closed and what was in the extant presentation.

We do have concerns and ask that this be looked at in further detail.

Otherwise, thank you very much.

MEMBER GRIFFON: Thanks for your technical comments, appreciate it.

I have -- and I'm not sure I can get the last name here, Mark (phonetic) -- starts with an M maybe, the last name?

PARTICIPANT: Mark Wagner?

MEMBER GRIFFON: Oh, Wagner, maybe? W, is that a W? @hotmail.com is the email

address?

(No audible response.)

MEMBER GRIFFON: No, no? Okay.

And then I have a Clemence M. Savage, maybe? Clemence Savage?

MR. MESAVAGE: My name is Clement Mesavage. People in the industry call me Clem.

Full-time expert tank farms and pipelines, associated with fire, explosion, environmental pollution, variance of loss, and security. Experience with over 1,000 terminals and over 300 bulk plants, such as being asked by the previous refiner owner in Saint Croix to come down to teach the remaining few hundred employees left on the island how to change from being a refinery to a terminal.

With that background, I just had a couple minor comments.

First off, thank you very much bringing out the facts, such as lack of SOPs, bad side gauge, computer gauge off, alarm off, all of which a subsequent high level of protection may

or may not have helped, given the poor facility manners in place.

In this regard, I also thank you that you made mention that after the first two tanks were filled, that there was the continuation onto tank 409 and 107, as I recall.

I also know that, in this regard, that you said that after 409 was filled, that they went on over to fully open tank 107.

I thank you for the third time for mentioning later that you said that originally though, when the process started, that the tank 2 being -- subsequently being filled already had its valve cracked.

Tank 409 is here. Tank 107 is here. The dock is way out here. 409 is further away than 107.

If you start a cheater tank because you subsequently can go into that tank, or maybe you have an operator who just wanted to go home early, maybe you wanted to reduce the merge time, some facility problem again, if you crack that

valve, this rate to the tank that is further away changes. That is not reflected in the normal tank gauging tables.

In this regard, thanks again for mentioning that the valve had been cracked and that subsequently, the valve was fully opened. Maybe an extra sentence related to the fact that this could have changed the flow rate, could be substantially different from what the facility normally went by on their tank tables.

Thank you.

MEMBER GRIFFON: Thank you very much.

And then I think that does it for the people signed up, but I think other people had their hands up or would like to -- I'll start in the corner. Yeah, yeah, sure.

MR. CRIMAUDO: Okay, good afternoon. My name is Steven Crimaudo. I am Manager for Downstream Standards for the American Petroleum Institute.

I was involved with gentlemen like Phil Myers on the -- on the work to, you know,

revise and generate the -- the fourth edition of API 2350.

So just sort of a bit of a typo. You're referring to, let's see, recommendation 09021(r)7 to revise API 2350, in parentheses you have 2015, let's call it the fourth edition, and it was published in 2012.

I am not sure what your 2015 is referring to, but the current edition was published in 2012, and so the point is it's time for us to work on the new edition. It looks like your recommendations, the comments we made earlier to your recommendations were -- were, you know, were taken into consideration, and you did revise your original comments and generated these.

We are -- you know, listening to our ILTA members and listening to Phil, the point is we're going to look at our -- our fourth edition, or we're going to bring in experts again. It is going to be an ANSE standard, which means an American National Standard, following a little

more strict ANSE rules, while we're going to throw the door even, you know, wider open than we normally do and look for other industry representatives.

We'll -- we'll, you know, post it for comment, bring in as many people as we can, have experts like Phil in the room, and we're going to revise it to make it even better, not to say that it's going to be more strict, it will just -- we'll try to make it better. It's a voluntary engineering and design standard, and it includes a lot of references to the -- to other codes and other, you know, IEC codes.

The point is we're going to try to make it better. We're -- it's time for us to take another look at it and revise it. We're starting that process now. I -- since everyone is here, I'd like to make sure, you know, you put that on your calendar for, let's say, beginning this year, we're going to be sending notice out to begin work again and generate the fifth edition, which it's going to be due in 2017.

We'll -- we'll address everything as best we can. It may be -- it may come out where the sections we -- we -- that are -- that are referenced here, and that the recommendations ask us to revise, they may not change very much. They may change slightly.

That is all. The point is it's time for us to take another look at it. We're going to revise it. It will be an American National Standard, and we look forward to, you know, participation from the members and from CSB reps. We always like to have the CSB reps in the room, and you're welcome to participate.

MEMBER GRIFFON: Thank you very much. Yes, thanks.

Now who -- sure.

MR. SWACKHAMMER: Hi, my name is Troy Swackhammer, I am an engineer at the U.S. Environmental Protection Agency, Office of Emergency Management. I work in the Oil program along with Mark Howard, who is also on the line today too at home.

I'd like to just -- I appreciate the opportunity to provide some commentary and to build upon what Peter Weaver talked about. I know Peter knows my colleague Mark Howard, who is the National SPCC Lead, and I am the National FRP Lead, at EPA's Office of Emergency Management.

With respect to recommendation 1, again, we appreciate the -- the report. I think it was -- it was well-written. There are some comments that we will be submitting to provide some clarification on a few things, but for the most part, we appreciate the -- the recommendations and the findings.

One thing in particular with respect to recommendation 1, the term "risk assessment," and Phil Myers talked about risk assessment, I'd like to take the opportunity to point out that EPA's FRP regulation includes a hazard evaluation and vulnerability analysis component as part of the FRP plan.

Appendix F of 40 CFR Part 112 includes an annotated outline of what is required in terms

of minimal essential elements for FRP, which includes a vulnerability analysis, which in that vulnerability analysis includes the assessment of impacts to residential populations, hospitals, schools, and so forth.

So it goes beyond the bugs and bunnies aspect that is part of EPA's mandate and looks at the potential impact from a worst-case discharge from a facility such as these terminals on the surrounding population.

So I'd like to take -- I want to point that out.

Also, as part of the overfill prevention systems, as Vidisha pointed out, the SPCC rule includes at 112.8(c)8, the -- the list of -- of potential options that a SPCC facility has in their toolbox to -- to select from.

And then moving on to recommendation 2, and talking about inspection priorities and enforcement, as Peter was talking about, EPA's Office of Emergency Management is responsible for reg and policy as well as implementation of the

SPCC and FRP programs.

These programs cannot be delegated to the states, such as like the NPDES program, so it is administered through EPA regions. We have -- of course, we have 10 EPA regions around the country, and they implement the SPCC and FRP program.

And I'd like to take the opportunity to point out that EPA's inspection priorities includes SPCC inspections at FRP facilities.

Now, FRP facilities are those that store a million gallons or more and meet one or more of the harm factors, which include whether a worst-case discharge could shut down a drinking water intake or impact fish- and wildlife-sensitive environments.

And of course, once you're subject, you've got to do that vulnerability analysis.

So it is an inspection priority. I'd like to make mention too that within our -- our inspection history between 2010 and up to now, initial compliance at SPCC inspections at FRP

facilities is less than 50 percent, so I'd like to take the opportunity to point out and stress that inspection and enforcement is an important aspect of EPA's inspection priorities.

So one of the things that in terms of looking at a survey -- as you might imagine, conducting survey requires us to go out and do -- to get an OMB control number on a survey, so as an alternative to a survey, I'd like to point out that of course with SPCC inspections, there is an opportunity to gather more information about overfill prevention equipment and devices and so forth as a routine operation, looking at their SPCC plans.

Now, since FRP facilities, those like terminals and refineries, have to have an SPCC plan and an FRP plan, the SPCC plan is typically certified by a professional engineer, which that professional engineer does look at whether the facility is following good engineering practice. That's the main mantra of an SPCC plant.

So I'd like to just point that out.

Moving on to recommendation 3, we're talking about guidance. In talking to my colleague Mark Howard, who has authored, along with Patty Gioffre, our SPCC guidance, which I also participated in as well, we do intend to update that SPCC guidance to talk about some of the recommendations and findings from the report today as well as emphasizing to our FRP facilities the -- the importance of not only overfill protection and stressing that in their SPCC plan but also looking at chain reaction, failures with potential for chain reactions.

Now, that kind of analysis is not in the SPCC regulation, but it is in the FRP regulation, and it's annotated in Appendix F in terms of the -- the requirement for a facility to look at -- in fact, all, there's three planning levels within the FRP rule, small, medium, and worst-case discharges, particularly at the worst-case discharge level, they need to assess the potential for chain reaction failures.

Now, it's a small component in the

rule, in Appendix F, but it's an important component, one that we are stressing in our outreach, The National Institute of Storage Tank Management conference that was just held in -- in April. My colleague Mark Howard does a four-hour short course, and I do a -- on SPCC, and I do a four-hour short course on FRP.

And in those short courses, we take the opportunity to stress these kinds of things: the requirement for overfill prevention and the requirement to do a vulnerability analysis and assess what the impact could be to surrounding populations, and the importance of strong incident command.

So those are the things that EPA is doing in terms of a multi-pronged approach that we could do here and now, as you can imagine that doing a rulemaking is, you know, a two-year, three-year, four-year process, so what we've done in the Agency is to take a look at what we can do in the here and now to outreach to our regulated community in terms of stressing the importance of

overfill prevention and doing that risk analysis that's titled as a vulnerability analysis in the FRP.

So I appreciate the opportunity to make these comments today, and thank you again for the report.

MEMBER GRIFFON: Thank you very much, we really appreciate your comments.

Do you want to make another follow-up? Yeah.

Question, if anyone else has a public comment? We're winding down here. I've got one from the online participants that I'll read into the record.

Please state your name again, just so we -- .

MR. MESAVAGE: Clement Mesavage, expert tank farms and pipelines systems, experience includes being an expert witness at Buncefield.

I wanted to make -- first mention that Mark Howard, his boss, is one of the best people

that was ever at EPA, and has been -- and it has been a blessing for tank farms.

SPCC rules demand large tanks have adequate capacity. This facility is not normal. It had -- and I'm talking about the Caribbean facility -- it had been converted from a refinery to a terminal.

It utilized a wastewater treatment system. Terminals don't use wastewater treatment systems. And that refinery system, that system ran out to the individual tank sub-dyke areas for drainage if it needed to be.

If a facility is so lacking in disregard of SPCC rules as to leave the sub-dyke valves open, we're not just talking about explosion. That's not the matter that needs to be a major investigation.

What we're talking about is limiting the damage. There is no reason for this to have spread all over the tank farm. That doesn't happen at a tank farm.

Thank you very much.

MEMBER GRIFFON: Thank you.

Anyone else in the room have a comment?

(No audible response.)

MEMBER GRIFFON: It's been a -- been quite a day. Do you? Yeah, yeah.

MS. MASHIERI: Thank you. My name is Azita Mashieri (phonetic) with the Teamsters Union Safety and Health Department.

I just am just curious, as a safety and health professional, you know, some of the things that we discussed this morning kind of came back up for me, and so I am going to just pose them, you know, I don't expect an answer.

But just given that, you know, it took, what, six years to, you know, produce the report, I am just wondering that if -- if in this instance, you considered issuing some immediate findings or recommendations so that, you know, things could be influenced around us?

That's one question. Should I just ask all of my questions?

The other question I have is, you know, who do you plan to disseminate these findings to, and, you know, what scale? I don't know if the company is there any longer, but you know, in general, I am just curious how you plan to use this, you know, these findings to their best advantage.

And I think the question of repeat offenders came up, and that is a valid thing, you know, in OSHA investigations. You have warnings, you have, you know, in this case, I read that there were 15 incidents prior to that, and there were practices, you know, like the way they were keeping track of things, handwriting and calculating, so there is some information, it's like how do we address that issue?

You know, if CSB could bear in on that, I think that would be helpful.

And just also about the worker involvement as a part of PSM, you know, the worker participation and contribution, I don't know if that was addressed in there, if that's

something that you considered in your interviews with the workers, you know, just to see if -- I think that that is something that's important, at least for us.

Thank you.

MEMBER GRIFFON: Thank you, thank you for your thoughts.

Oh, yeah, yeah, if you want to, go ahead, yes, yes.

MR. HOROWITZ: Thank you for the question.

And in terms of dissemination and possibility of earlier recommendations and so forth, we did learn about those layer of protection issues, of course, quite early in the case. As you can see, the regulatory issues around these terminals are quite complex, and it has required a lot of dialogue with stakeholders and still ongoing today as to how best to address those.

So that -- that was not pursued at the time, but what Ms. Parasram has done very

energetically over the last few years is go to a lot of the above-ground storage tank conferences and has even recently published an article, I think, in was it BIC Magazine, trying to get out to industry the findings of this case because we're sensitive to how long the case has taken to reach this point.

In terms of further dissemination, the animation clip that Vidisha showed is set to be part of a longer video called Filling Blind, and we hope to release that after the Board's approval of the final report and get that out to industry so that it can do some good.

Thank you.

MEMBER GRIFFON: Thanks, thanks, David.

And I just have one last, from the online observers, and it comes from G. Reznicek, R-E-Z-N-I-C-E-K, and it's just one line.

"Why do all use the term 'safety culture'? Would it not be more appropriate to use 'management culture'?"

That opens up a whole big seminar, a topic I am very interested in, but I think just for the record, we'll make sure that comment is on the record.

So I -- I want to just thank everyone for -- for coming today, for your -- for your comments, and I think end of next week, we'll try to close out our comments, but if you have more detailed comments to submit, and those online, please try to submit them by the end of next week.

Is there a place -- is there a clear way we submit them?

PARTICIPANT: Why don't you send them to public@csb.gov, and we'll -- the Board will receive those and the investigative team.

MEMBER GRIFFON: Okay, public@csb.gov.

And as we said when we started the meeting this afternoon, we don't have a quorum, so we are not going to be making a motion to vote on the report, but you had some very thoughtful comments that we will consider in the final edits

of the report.

And thank you all again for coming, and at this point, we'll adjourn. Thank you.

(Whereupon, the meeting went off the record.)

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C E R T I F I C A T E

MATTER: Public Meeting RE Caribbean Petroleum

DATE: 06-18-15

I hereby certify that the attached transcription of pages 1 to 118 inclusive are to the best of my belief and ability a true, accurate, and complete record of the above referenced proceedings as contained on the provided audio recording.

Neal R. Gross

ATTACHMENT A:
STAKEHOLDER COMMENTS

INTERNATIONAL LIQUID TERMINALS ASSOCIATION

Chemical Safety Board
2175 K Street NW
Washington, DC 20037

June 17, 2015

RE: ILTA Comments in Response to the Chemical Safety Board's June 8 Draft Final Investigation Report on the Caribbean Petroleum Corporation (CAPECO) Tank Terminal Explosion and Multiple Tank Fires; Report No. 2010.02.I.PR

The International Liquid Terminals Association (ILTA) is an international trade association that represents 83 commercial operators of aboveground liquid storage terminals serving various modes of bulk transportation, including tank trucks, railcars, pipelines, and marine vessels. ILTA members operate in 39 countries and all 50 states, as well as Puerto Rico. These companies own more than eight hundred domestic terminal facilities and handle a wide range of liquid commodities, including crude oil, refined petroleum products, chemicals, biofuels, fertilizers, and vegetable oils. Customers who store products at these terminals include oil companies, chemical manufacturers, petroleum refiners, food producers, utilities, airlines and other transportation companies, commodity brokers, government agencies, and military bases. In addition, ILTA includes in its membership nearly four hundred companies that are suppliers of products and services to the liquid storage industry. CAPECO is not a member of ILTA.

ILTA appreciates the opportunity to provide the following comments and recommendations in response to the Chemical Safety Board's (CSB) Draft Investigation Report on the October 2009 CAPECO gasoline storage tank overflow and explosion incident.

ILTA Generally Supports CSB's Findings, but Disagrees with its Recommendations

ILTA supports, in general, CSB's characterization of the events surrounding the incident. For instance, the facility experienced numerous incidents, overfills and violations throughout its history. In particular, the report highlights 15 incidents of spills and overfills between 1992 and 1999, during which time the facility was subject to the Occupational Safety and Health Administration's (OSHA) Process Safety Management (PSM) Standard. Despite this regulatory threshold, operating procedures at CAPECO had repeatedly been found to be inadequate and were cited in numerous regulatory investigations. Put plainly, inoperability of critical facility safety equipment was a direct and material contributor to the October 2009 incident.

The report's findings make it clear that the facility had a long history of operational and compliance problems, including violations of existing standards and regulations. Equipment was not properly maintained, and facility procedures were seemingly inadequate to cope with the resulting operating conditions. All of these issues point to management deficiencies and persistent shortcomings in the facility's adherence to existing regulations and its own procedures and requirements.

Claims by CSB that certain deficiencies in existing regulations should be the focus of its recommendations sidestep the root cause of significant violations which enabled the incident to occur. No amount of duplicative regulation can guarantee that a known violator will suddenly comply. CAPECO's own history of 15 spill and overfill incidents between 1992 and 1999 proves positive that redefining PSM applicability to the facility in subsequent years would not have reasonably assured any difference in outcome. Thus, ILTA would have expected CSB to issue recommendations that address the longstanding management shortcomings cited over many years of operation.

ILTA is disappointed in the draft recommendations for they abjectly fail to address the CAPECO management shortcomings. Rather, they call for more regulations, stricter standards, and more burdens for the entire tank storage industry without justification. Such recommendations fail to address the underlying problems leading to the CAPECO incident. Not only were the shortcomings at CAPECO left unaddressed, no explanation was given for how CAPECO would have better adhered to such stricter standards when it had such basic problems adhering to those in place at the time.

Unfortunately, the good effort that CSB made in developing its findings would be obviated by the illogical recommendations proposed in its draft report.

CSB Should Replace its Recommendations to Arbitrarily Expand Requirements with Targeted Measures to Improve Effective Implementation of Existing Standards

The operating community welcomes recommendations that would address systematic failures that enabled the October 2009 event to occur. Based on CSB's own findings, such recommendations would address shortcomings in CAPECO's adherence to existing standards, requirements and safe operating practices. Indeed, ILTA is disappointed that the proposed recommendations failed to address the numerous operational, procedural and compliance shortcomings at CAPECO that, both individually and collectively, were the root cause of the October 2009 explosion.

Thus, ILTA strongly recommends that CSB rescind its proposed recommendations to arbitrarily redevelop industry standards and expand existing regulatory burdens, and replace them with recommendations that would drive improved implementation of appropriate safety and compliance requirements, as already required by law, at facilities that handle flammable liquids.

Specifically, ILTA recommends the following:

1. *EPA should recommend the adoption of industry standards as a means for compliance with overfill protection requirements of its Spill Prevention Control and Countermeasures (SPCC) and Facility Response Plan (FRP) rules.*

   EPA's SPCC and FRP rules require suitable overfill prevention measures to be in place and endorsed by a professional engineer. CAPECO failed to comply with this regulatory obligation. Adopting existing industry standards would be an effective means of compliance.

2. *Facilities handling NFPA category 3 flammable liquids should be encouraged to adopt formal management systems, especially for spill prevention practices.*

Had such a program been in place at CAPECO, better procedures would have been developed to ensure proper maintenance, and better procedures would have been expected for contingency operations.

3. *Regulatory agencies such as EPA and OSHA should consider options to enhance their compliance verification activities.*

While there are multiple approaches to enforcement, arguably the most important is to ensure that operators with a record of repeated violations are engaged by the regulating agencies.

Undoubtedly, storage terminal facilities have a duty to comply not only with applicable regulations but also with their own internal procedures and practices. CAPECO did not operate with this high standard of care. Where outliers such as CAPECO are identified, it is essential that checks and balances are in place to rectify the situation, whether through improved management practices or ultimately through regulatory enforcement.

Conclusions

Fundamentally, the single point of failure at CAPECO was an operator who failed to adequately steward tank filling operations despite knowledge that product in excess of the tank's capacity was being transferred with an inoperable level transmitter and unreliable side gauge. Worse, this operation was allowed to proceed without redundant overfill protection. Finally, the operation violated existing SPCC regulation §112.8(c)(8) and 112.12(c)(8). Management practices at CAPCEO on the day of the incident allowed regulatory requirements, industry standards and company procedures to be violated.

Adoption of and adherence to industry standards is of paramount importance. The mere presence of a regulation or procedure at a facility such as CAPECO was proven insufficient to ensure adherence, and avoidance of such an incident will not be rectified by meting out additional layers of demands. CSB recommendations made a sweeping indictment of the entire tank storage industry, despite its generally very safe record according to OSHA's recordable incident logs. Implementation of ILTA's recommendations for better standards, procedures and compliance verification will do more to improve performance at the more deficient operators than will the addition of new layers of regulatory complexity.

CSB's ultimate recommendations do not reflect this fact. Additional regulation would only serve as a burden to those facilities already in compliance and of be no further deterrence to bad actors.

Thank you for your consideration of these comments. Should you have any questions, please contact Mr. Tom Dunn at 703-875-2011 or tdunn@ilta.org.

Sincerely,

Tomas W. Dunn
Manager of Regulatory Compliance and Safety

INTERNATIONAL CHEMICAL WORKERS UNION COUNCIL

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June 17, 2015

Member Manny Ehrlich
Member Rick Engler
Member Mark Griffon
US Chemical Safety Board
2175 K. Street, NW, Suite 400
Washington, DC 20037-1809

Dear Sirs:

I would like to add some comments on the draft Caribbean Petroleum report discussed at the CSB's June 10 meeting. As I mentioned in the morning's meeting, all local stakeholders deserve to hear a draft report, findings and recommendations well in advance of a vote of the Board. I strongly urge the Board to consider sending a small group of investigators and one Board member to San Juan to present these findings. Also this year, the Board chose to present the Millard Refrigeration, Mobile, Alabama report in New Jersey. Even though that facility now functions under a different management and with a different operation, it would be of value to the Mobile community to hold a public meeting there. Given this is the second instance in 2015 where the CSB has chosen not to hold a public meeting at the location of the incident, I would request a clarification at the next public business meeting what the CSB policy is on holding at least one public meeting at the location of the incident.

A theme that runs through the CAPECO report is the exemption from many OSHA standards of gasoline as a hazardous material. The CSB is not bound by these exemptions and I support the findings and recommendations related to this issue. There is no sound health and safety consideration to retain these exemptions.

For those who state that they already implement the recommended measures and have no need of additional regulation, there would be little extra work. However for those who were not in the room and do not implement these measures, that is good reason to recommend these measures and the mission of CSB. Regulations are intended to ensure uniform good practices are in place and the fact that a significant portion of any industry follows these practices is NOT a reason to fail to recommend these measures. Rather, it is good evidence that measures such as automatic overfill prevention measures are practical and feasible.

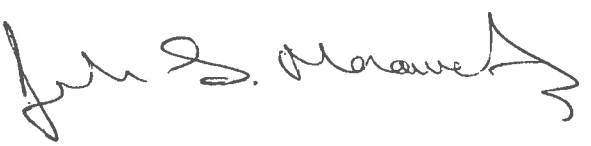
Some commenters mentioned that there should be increased enforcement of existing standards of companies with poor practices (described as a poorly maintained operation). I support this comment and hope these commenters will followup and support efforts to provide the funds to increase enforcement of those who flaunt the law, safe practices and common sense. It does not mean, however, that there should not be changes in existing regulations. In particular, if the investigation points to a gap or weakness in existing standards, they should be improved. Regretfully, some parties may ask for more enforcement in a CSB context but often want enforcement funds shifted to consultation and in general want government role and funding decreased. Enforcement is one of many methods to improve our workplaces.

There is some mention in both the report and the public meeting of the open dike valves. This contributed to the spread of the gasoline and then fire and significantly increased the damage. I find it troubling that this does not then translate into a recommendation. There is mention in section 1.5 (page 10) of the topography and the open dike valves allowing the vapor to escape. The root cause of the spread was the open dike valves and the findings should reflect that. Further, the report describes that the inspection reports noted inaccurately that the valve was closed. Although there is a section on valve design and it is mentioned as the second physical root cause, this aspect of the incident does not result in any specific recommendations, all the more puzzling since the Indian Oil Company incident with 11 deaths also had an open dike valve.

Finally, it is unclear if the new owners, Puma Energy Caribe, operate any of the undamaged tanks to store gasoline. Similarly, the report states that the reorganized CAPECO operates as a storage facility. If so, I would hope that the final report include recommendations to that management.

Let me know if you have any questions and I look forward to the final report.

Sincerely,



John Morawetz

Cc: Frank Cyphers
Neal Dillard
Darrell Hornback

McCormick, Amy

From: William Read <William.Read@eaststaffsbc.gov.uk>
Sent: Friday, June 12, 2015 4:17 AM
To: Public
Subject: Report published on Puerto Rico fire and explosion in 2009

Dear Colleagues

I have received your updates and press releases for some time, and have always found them to be very informative and interesting. Your latest report was particularly interesting, in view of the many similarities between the 2009 Puerto Rico incident and that at Buncefield, UK, in 2005. The table comparing various aspects of the two incidents was very revealing.

If there was one element of the report that I found very surprising, it was the fact that such petroleum storage facilities in the USA and **not** considered hazardous enough to justify involving local communities in their emergency planning and response arrangements. The video re-enactment of the incident showed the devastating effects of the fire and explosion. It is incredible that there were not many fatalities and injuries amongst those living nearby, and the employees of the facility.

The usual arrangement of the launch publicity for CSB reports, that I have noticed for many such reports, is that the launch takes place at a venue near to the site of the incident. However, this latest report and video was launched in Washington DC, rather than in Puerto Rico. Has the CSB changed its policy on the revealed venue for reports etc?

Yours sincerely

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12 June 2015, 0900hrs

The railway station is a 5 minute walk from the Town Hall and a 20 minute walk to the Maltsters. The Town Hall is also served by bus services 1, 1A, 2, 2A, 3A, 3B, 10, 402, V1, V2 and X38, most connecting with Burton town centre.

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MARKET HALL & PLACE

McCormick, Amy

From: Wiseman, Kim (KFWI) <KFWI@chevron.com>
Sent: Thursday, June 11, 2015 6:39 PM
To: Public
Subject: Draft Report for Caribbean Petroleum Terminal Explosion

To Whom it May Concern:

I quickly glanced at the draft CAPECO report and noted a possible error in the data represented in Appendix B- Tank Incidents Table. It appears that the number of fatalities and number of injuries may have been switched in the table for the Texaco Oil incident. According to the incident description in the table, there was only 1 fatality, yet the table shows 24 fatalities.

7	Texaco Oil Company, Newark, NJ USA	1/7/83	1	24	Gasoline	Overfill, Vapor Cloud Explosion	A gasoline vapor cloud exploded when a 1.76-million gallon capacity tank overflowed, resulting in one fatality and 24 injuries. Lack of monitoring of the rising gasoline levels in the storage tank during filling operations contributed to the overflow, explosion, and subsequent fire.

I suggest that you may want to have someone review the data and confirm that it is correctly represented in the table prior to finalizing the report.
Regards,

Kim F. Wiseman
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