TOPS TERMINAL OPERATING PRACTICES SYMPOSIUM

ILTA

Thursday, September 24, 2020

Via the Zoom Virtual Platform



International Liquid Terminals Association • http://www.ilta.org

Program Overview

ILTA's Terminal Operating Practices Symposium (TOPS) is an educational series designed to provide terminal operators a forum to exchange lessons learned from facility incidents and near hits and discuss effective operating practices with their peers. The 2020 TOPS will take place on Thursday, September 24 and Friday, September 25, via the Zoom virtual meeting platform.

Presentations are provided by terminal operator employees who will share their experiences in addressing natural disasters, environmental releases, malfunctions, worker injuries and illnesses, near misses/hits and other abnormal operating events at their facilities. They will discuss the causes of these events and what was changed to mitigate or eliminate future occurrences. Each presentation is approximately 30 minutes, including 10 minutes for Q&A.

Industry Event for Industry

The symposium is for terminal operating company personnel ONLY. No service providers, vendors, consultants, members of the press, regulators or the public will be allowed to participate in the event. There may be times when an outside party has significant information to share with the industry (e.g., U.S. CSB), in which case that party may be allowed to attend only to make a presentation. Consultants representing Terminal Members may be allowed to attend so long as an officer of a terminal company (e.g., President, CEO, Vice President, General Manager) makes a request in writing to ILTA requesting an exception.

New Presentations Needed Every Year

To be successful with this event each year, ILTA is always looking for new presentations and presenters. We also need to hear from a diverse array of terminal operators that are different in size, geographic scope of operations and product types. The learnings shared help others in the terminal industry avoid operational incidents that can lead to significant public, personnel, environmental and reputational impacts. If you would like to offer a presentation at a future TOPS or know of an incident or learning opportunity that should be presented by another operator, please contact us at TOPS@ilta.org.

2020 Virtual TOPS Meeting Agenda

Via Zoom Platform

Thursday, September 24th at 9:00 a.m. ET

This event is open ***exclusively*** to terminal operating company employees, providing a unique forum for them to share ideas and learn from their peers. To register online, visit ILTA's website at www.ilta.org. Registration is free!

Thursday, September 24

9:00 a.m. **Welcome and Introductions**
Brian Miller, Marathon Petroleum Company & Chair of the ILTA Operations Council
Peter Lidiak, ILTA Vice President, Regulatory Affairs

9:15 a.m. **LPG Coupler Incident - Lessons Learned**
Munir Shahani & Wesam Al Hussain, Saudi Aramco

On an LPG loading arm the coupler abruptly disengaged while an operator was attempting to load a customer truck. A small amount of LPG vapor was released from the 2" LPG vapor balance line at the loading bay. The uncontrolled arm movement caused slight damage to bay equipment before the safety break valve activated and vapor was contained. No injuries occurred.

Learning objectives for this presentation include:

- Understanding potential issues with certain types of LPG couplers
- Obtain insight on design/type of LPG couplers
- Incident learnings related to improved maintenance integrity
- Share Best Practices related to this incident

9:45 a.m.

The Value of Marine Vetting

Michael Nesbitt, Energy Transfer

This presentation will speak to how vital vessel screening is to a terminal. Even though all the processes were followed for vetting, in one case, the company had a hole in the process that caused real problems. A vessel surged on the dock, setting off the emergency decoupling of the loading arms. As a result of the incident, the company changed its vetting process slightly. In turn, four ships had to change how they were outfitted at a significant expense.

Topics to be covered: Vetting, incident investigation, customer impact and vessel owner corrective actions.

Learning objectives: Understanding of how vetting can be a valuable tool for safety and improvement, how working relationships with vessel owners can benefit the terminal and continuous improvement happens from lessons learned and cooperation with all parties.

10:15 a.m.

Ships Dock Loading Arm Counterweight Incident

Don Griffon, CITGO Petroleum Corporation

A contractor was installing the second of three new loading arms on the ships berth manifold platform when the counterweights on the loading arm slid down the counterweight beam and slammed into the base of the beam. This caused the counterweights on the first loading arm beam to also slam down immediately afterwards. The loading arm counterweight bolts were found to be only hand tight. This presentation will discuss what led to insufficient torque on the counterweight bolts and procedures put in place to prevent this in the future.

10:45 a.m. **Morning Break**

11:00 a.m.

Vapor Recovery Unit Control Valve Failure

Greg Johnston, Lucknow-Highspire Terminals

Very early one morning, the company had a vapor recovery unit failure at its terminal. Product came into the process tank, then into the carbon beds, then out the pressure vents. The control valve on the supply side of the skid failed. When the unit went dormant for lack of loading, the valve failed and head pressure from the supply tank caused the product to overrun the unit.

Key learnings include the importance of control valve maintenance, the use of universal systems at all locations, if possible, and the benefit of ample terminal walk arounds.

11:30 a.m. **Vapor Recovery Unit Vacuum Pump Reliability Discussion**
Timothy Brown, Marathon Petroleum Company

VRU vacuum pump refurbishment costs are consuming a larger percentage of ever-tightening maintenance budgets. This presentation will touch on several topics:

- Refurbishment Cost Changes versus Vacuum Pump Failure Rates
- Liquid Ring Vacuum Pump Specifications
- Liquid Ring Vacuum Pump Operating Parameters
- Busch Dry Vacuum Pump Condition Monitoring
- Busch Dry Vacuum Pump Refurbishment
- Tuthill Booster Blower Oil Consumption

The presenter will address the benefits of condition-based monitoring best practices, the pros and cons of different material specifications and pump manufacturers, Busch & Tuthill lubrication best practices, and identify opportunities to minimize VRU vacuum pump costs.

12:00 p.m. **Microbial Management in Product Storage Tanks**
Brian Sutherland, Marathon Petroleum Company

This presentation will provide background on Marathon Petroleum's management of microbial control, including tank monitoring and testing, its water management program, and treatment techniques when required.

The presenter will address the impact to customers of microbial-infested products, the use of management practices to prevent microbial infestation and address treatment options in the event of positive microbial infestation.

12:30 p.m. **Lunch Break**

1:30 p.m.

Gasoline Tank Internal Floating Roof Failure

Morgan Remus, Phillips 66 Company

The aluminum IFR on a gasoline tank at the Phillips 66 East St. Louis Terminal was overcome by eight feet of product during a receipt, which effectively sank the roof.

This presentation will review the events that led up to this incident, the key learnings, and the mitigation plan put in place to prevent a recurrence.

The key lessons to be shared in this presentation include:

- The impact of physical conditions, including roof design flaws, previous pontoon repairs and additions, and the age of the roof
- The impact of operating practices, including the tank balancing process and complacency concerning level gauges

2:00 p.m.

Tank IFR Support Leg Incident

Don Griffin, CITGO Petroleum Corporation

In preparation for a product change and cleaning, the IFR roof legs were to be installed in the high 6-foot position. Twenty-five legs were installed on the inner three courses of the roof. Twenty legs on the "outer shell" course were not installed. As a result, there was a sag to the outer and unsupported edge of the IFR requiring cribbing and jacking to safely install the 6-foot support legs. This presentation will examine why the outer course of legs were not installed and the procedures put in place to avoid a similar situation going forward.

2:30 p.m.

Turbine Meters and Dual Pulse at Light Products Racks

Todd Coffman, Marathon Petroleum Company

Repeatability and uncertainty of the meter factor during proving can be significantly affected by turbine meters that are installed without proper flow conditioning. This is dependent on flow conditioning upstream and downstream of the meter and stability of hydraulic supply to the meter. An API flow conditioning study will be discussed.

Turbine meters are more susceptible to debris and measurement errors. This can be caused by debris on the blades, debris on the flow straighteners and accumulation of film on meter components.

Dual pulse security catches loose wires and more. This may include using dual pulse as a confirmation pulse for the primary pulse or to indicate reverse flow on a meter.

Key lessons include awareness of flow conditioning, both upstream and downstream of the meter, needs for turbine meters, stable hydraulic supply to the meter, a stable flow rate for proper measurement and possible maintenance to prevent powder/film buildup inside turbine meters. Also, how to use dual pulse security to maintain measurement integrity.

3:00 p.m. **Afternoon Break**

3:15 p.m. **Ethanol Pump Seal Failure and Product Release**
Douglas Hambor, Buckeye Partners

During the investigation of a product variation during an inventory close, a 500-barrel release was discovered. The source of the release was the pump seal on the terminal's Ethanol loading rack pump. Significant product clean-up activities were necessitated, and a thorough incident investigation was completed. Throughout the removal, replacement, and alignment of the pump it became apparent that there was pipe strain on the pump that was in excess of the API allowed tolerances. There were multiple issues with the fabrication, installation, and timing of the pipe supports and pump alignment. The final pump alignment did not include pipe strain measurements and was completed before the fabrication and installation of the piping.

Lessons to consider include an equipment failure due to incorrect installation by the contractor, even with inspector oversight, the use of incomplete procedures, the lack of report submission and review, a missed opportunity for SME review and the necessity for strong, timely operator rounds.

3:45 p.m. **H_2S Exposure Reduction Strategies while Loading/Off-Loading Asphalt**
Jeff Tiech, Marathon Petroleum Company

While off-loading asphalt, a third-party transport driver repeatedly climbed the side of his trailer and looked into the open hatch. After the third trip up to check the product level, the driver descended the trailer

ladder and then briefly lost consciousness on the pavement next to his transport.

Our lessons learned from this incident led to additional corrective actions in H_2S management, expanding to include asphalt off-loading stations.

H_2S Management: Possible ventilation and fall protection solutions for both loading and off-loading stations/racks

H_2S Awareness:

- Internal H_2S awareness training, aligning with location-specific procedures
- Develop localized, on-site training for all third-party drivers prior to allowing to load/off-load (similar to what we have in place for light products drivers). This training must include H_2S awareness and local emergency notification procedures.

4:15 p.m. **Building Relationships with Emergency Responders**
Daniel Vascik, Canal Barge/Terminal Company

This presentation will examine the importance of building trust and relationships with emergency response agencies. This will cover on-site inspections, walk throughs, trainings and drills. Also sharing of technology for chemical inventories, response equipment and lessons learned post drill or incident.

Key lessons include the importance of building response relationships before an incident occurs, continued participation in industry memberships and response organizations and the impacts of management of change, process safety and facility maintenance shutdowns on outside response agencies.

4:45 p.m. **Trailer Internal Drain Tube Incidents**
Betsy LeaRussa, Phillips 66 Company

Between 2009 and 2019, more than 3,400 gallons of gasoline were released from trailers at Phillips 66 truck racks due to internal drain tube failures. As a result, Phillips 66 revised its carrier equipment requirements to reduce, and ultimately eliminate, internal drain tubes. The presentation will review the basic operation of internal drain tubes and the risks they present, the actions Phillips 66 took to mitigate the risk, and the results its seen so far.

The key lessons to be shared in this presentation include: the basic operation and risks of internal drain tubes, how to translate your company's core values into actions and how to support operations to successfully implement a significant change.

5:15 p.m. **Wrap Up**
Brian Miller

5:30 p.m. **Adjourn**

ILTA Operations Council Meeting Starts at 10:00 a.m. on Friday, 9/25

TOPS 2020 - Speaker Bios

LPG Coupler Incident - Lessons Learned



Munir Shahani is a Health, Safety & Environment (HSE) professional with 20 years of diverse experience in pragmatically applying HSE principles to find solutions for project and operations related challenges. He is currently employed by Saudi Aramco as a Safety Engineer in their Eastern Region Distribution Department. He earned a Master of Occupational HSE degree and a Bachelor of Civil Engineering degree. He has worked in Upstream, Downstream, Onshore & Offshore, Projects, Operations and Wells organizations. He is experienced in influencing a Goal Zero mindset, resulting in improved HSE performance by influencing, coaching and engaging people at all levels in the organization.



Wesam Al Hussain is a mechanical engineer with 14 years of professional experience within Saudi Aramco. Wesam graduated with a Bachelor of Science degree in mechanical engineering from Colorado State University in 2006. His experience span roles with field operations, technical support and projects planning and commissioning.

The Value of Marine Vetting



Michael Nesbitt is Director of Marine Operations and Vetting with Energy Transfer. He has 18 years of experience sailing in the merchant marine, 12 years as Master and 25 years employed in various positions in marine operations management. He attended the U. S. Merchant Marine Academy, served as a Lieutenant in the U.S Navy and is a certified First-Class River Pilot and Certified Port Executive (CPE).

Ships Dock Loading Arm Counterweight Incident
Tank IFR Support Leg Incident



Don Griffin, CSP, PG, is the Northeast Region Manager of Environmental, Health, Safety & Security for CITGO Petroleum's Terminal Facilities and Pipelines. Now in his 25th year with CITGO, he is a 28-year veteran of the petroleum and environmental consulting industry. His experience at CITGO encompasses the entire EHSS spectrum from safety and environmental compliance efforts to air emissions, wastewater treatment and historic petroleum large scale remediation projects. He is a member of the American Society of Safety Engineers and is a Certified Safety Professional. He has received training in several methods of Root Cause Failure Analysis and has served as team leader on dozens of significant Incident Investigations.

Don holds a BA in Geological Science and is a graduate of the University of Oklahoma's Management Program.

Vapor Recovery Unit Control Valve Failure



Greg Johnston is the VP of operations at Lucknow-Highspire Terminals. He has 25 years of terminal experience where he has held multiple roles. Greg is the EPA Responsible Corporate Officer for Lucknow-Highspire Terminals and holds multiple PA DEP Certifications.

Vapor Recovery Unit Vacuum Pump Reliability Discussion



Timothy R. Brown, P.E. has worked for Marathon Petroleum Corporation for 18 years and has spent the last 8 years in Terminals Reliability. He graduated from the University of Missouri - Rolla with a B.S. in Mechanical Engineering in 2002. As a Reliability Engineer, Timothy's responsibilities have included monitoring and reporting VRU uptime for company-wide mechanical availability metrics.

Microbial Management in Product Storage Tanks



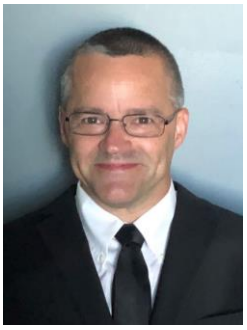
Brian Sutherland has worked for Marathon Petroleum since 2011, having started in the corporate HES&S auditing group, and for the last seven years serving as a Product Quality Professional supporting the Terminals organization. Prior to joining Marathon, Brian worked at an ethanol bio-refinery as a lab technician before being promoted to the Product Quality Manager for the facility. He has a B.S. in Environmental Biology (Heidelberg University, 2007) and a M.S. in Environmental, Safety and Health Management (University of Findlay, 2017.)

Gasoline Tank Internal Floating Roof Failure



Morgan Remus is the Operations Superintendent for Clean Products Operations in the Phillips 66 Midstream Mid-Continent Region which includes pipeline and terminal assets across the Midwest and Oklahoma. He received a Mechanical Engineering degree from Kansas State University. During his 11-year career, Morgan has held a variety of positions across operations, engineering, and maintenance within Midstream.

Turbine Meters and Dual Pulse at Light Products Racks



Todd W. Coffman, PE, has worked for Marathon Petroleum for 30 years with most of that time spent working on and around light products terminals. He is currently the subject matter expert for light products loading racks at Marathon Petroleum. He actively participates in the API Committee on Petroleum Measurement subcommittees. He attended Ohio Northern University where he graduated with a degree in Electrical Engineering.

Ethanol Pump Seal Failure and Product Release



Douglas Hambor is Senior Manager, Operational Excellence for Buckeye Partners. He joined Buckeye in 2013. Prior to that he held multiple roles with Hess Corporation from 1981 to 2013 including Terminal Superintendent, District Manager, Region Manager, HS&S Manager, SAP Team Lead, and Inventory Control Account Manager. He received a BS in Civil Engineering from the New Jersey Institute of Technology.

H_2S Exposure Reduction Strategies while Loading/Off-Loading Asphalt



Jeff Tiech is currently Marathon Petroleum's Terminals group incident investigation coordinator, holding that role for 3 years. Jeff is certified in the Taproot methodology, which is our preferred root cause methodology when investigating incidents. He has been actively leading Terminal incident investigations for over 6 years and is also currently responsible for all informal/local investigations, as well as managing our recommendation/corrective action program. Jeff's previous relevant experience includes managing the Terminals group's HES&S Communications, Sequential Safety Process, as well as multiple other safety-related programs.

Building Relationships with Emergency Responders



Daniel Vascik is a Safety Specialist for Canal Barge Company. His 28 years of experience include maritime/facility waterway response and inspection, industrial emergency response/fire suppression and prevention, municipal emergency response, industrial safety supervision and planning, risk and hazard assessment, risk mitigation and hazardous materials response. He is an instructor of Hazardous Materials Response Training for Industrial and Municipal responders and holds certifications in HAZWOPER, Rescue, Firefighting, and is an ISO 9001-2015 Lead Internal Auditor.

Trailer Internal Drain Tube Incidents



Betsy LeaRussa is the manager of the Operations Excellence organization within Phillips 66 Midstream Operations in Houston, TX. She received a Civil Engineering degree from the Colorado School of Mines and has spent her entire career with Conoco, ConocoPhillips, and Phillips 66. Betsy has over 30 years of experience in a wide variety of roles including engineering design, project management, refining, marketing, and midstream operations.