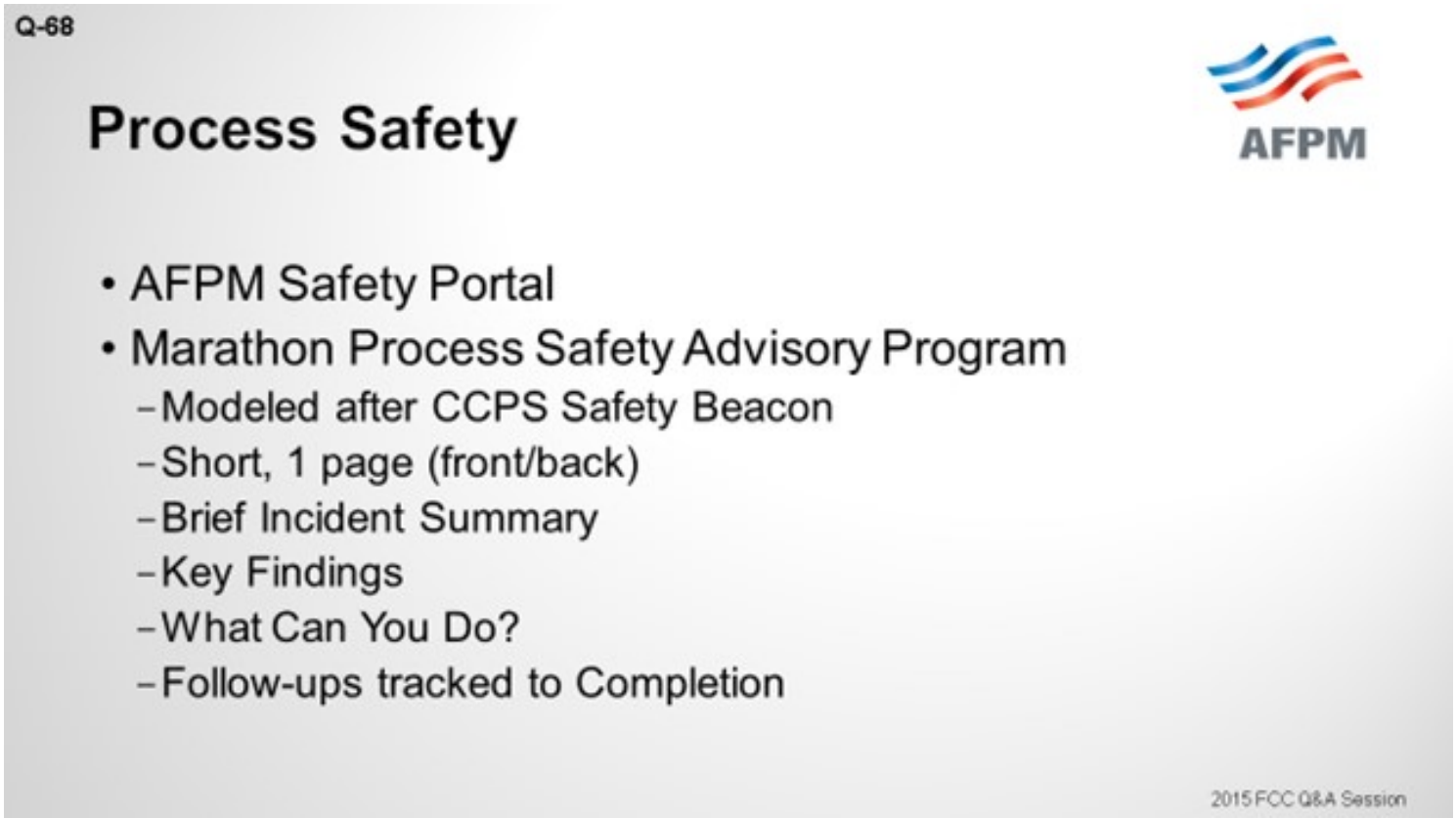
Question 68: How does your organization share operational and process safety information to foster an environment of continuous improvement?

LARSEN [Marathon Petroleum Corporation (MPC)]

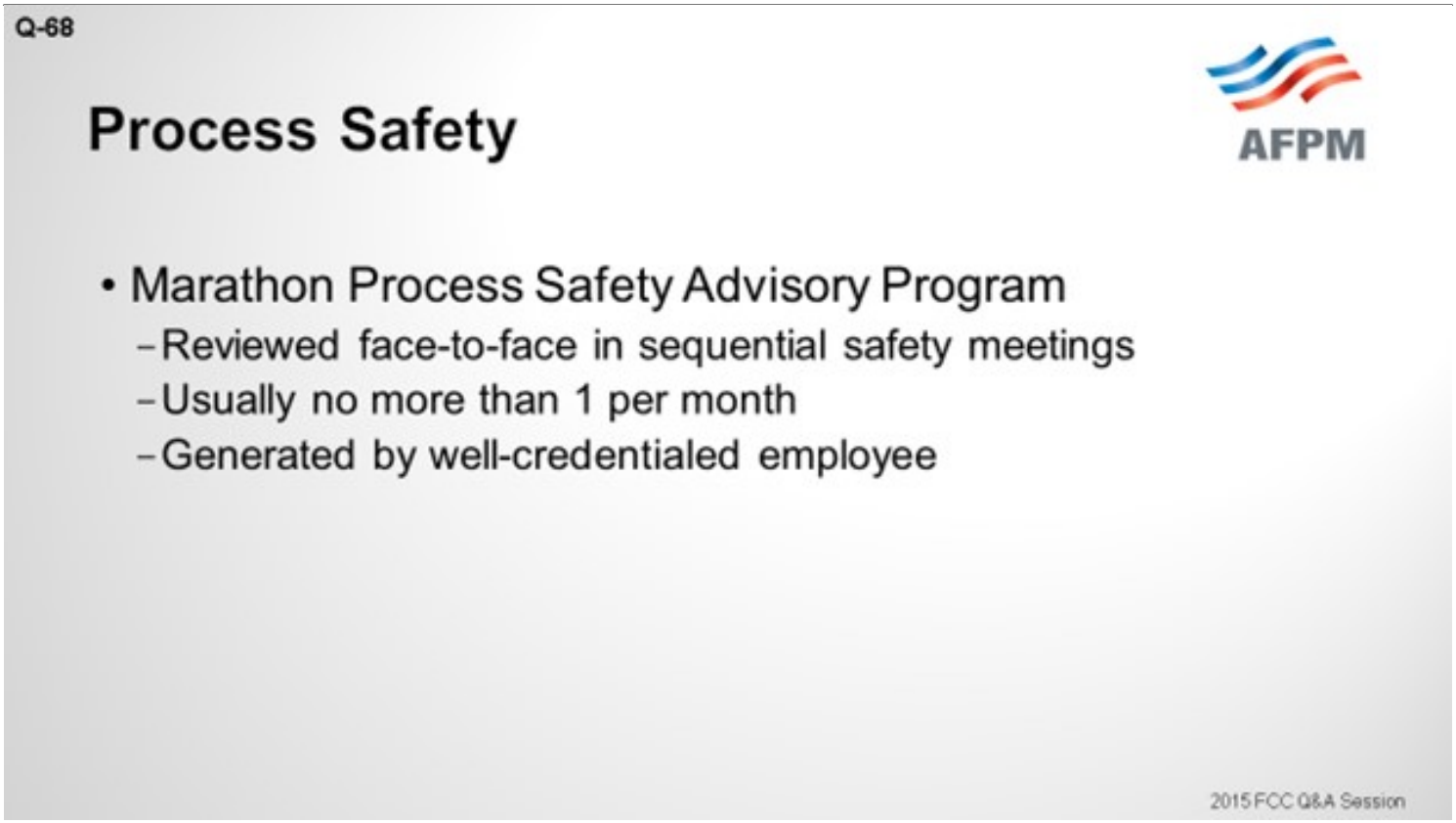
I am going to put in another plug for an AFPM tool: the AFPM Safety Portal. The FCC Advisory Group at Marathon uses this portal to share information among our different unit engineers and refineries. I know that Marathon, as well as many other companies, submits process safety data there. I think it is a good tool to use. So, if you are not already using it within your organization to learn, you should take advantage of it.

I also would like to touch on Marathon's Process Safety Advisory Program. Our program was modeled after the "Safety Beacon" of CCPS (Center for Chemical Process Safety). The document is just one page and can be printed on the front and back, if necessary. It is important that this bulletin be presented with an eye-catching layout and contain a concise listing of high-level learning events. Basically, it is just a brief, fact-based summary of the incident. We work to tailor the handout to contain a section describing what you can do in your position in the refinery to prevent incidents, whether internal or external, to Marathon and including information you can learn from these types of events.



On the next slide, you see a couple of examples; nothing fancy. One of them dealt with long-bolt flanges.

We try to do only one of these per month within our organization. It gets rolled out at refinery-wide Safety meetings and reviewed with every level of an affected organization face-to-face. So I think it is definitely a good learning tool. One of the challenges associated with it, for us, is making sure we use a well-credentialed employee to generate these documents. It should not be done by a junior person. You want someone who is recognized as having subject matter expertise about making these types of process safety advisories that have worked well for us. So that is one of the highlights of our Process Safety program that I believe works well for us.



FOSHEE (Shell Global Solutions - US)

Thanks, Nik. Sharing operational and process safety information begins with the mindset of Goal Zero: Operate our facilities without significant incidence or fatalities. This is documented in our HSSE (Health, Safety, Security, and Environment) and social performance framework which communicates and shows commitment to safety and has policies, standards, and manuals that contain mandatory safety rules for all Shell employees, joint ventures, and contractors to follow. These manuals cover topics such as health, process safety, environmental projects, contractor HSSE management, personnel safety, security, product stewardship, transportation, and social performance.

In order to further reinforce the safety mindset at Shell, we have “The 12 Lifesaving Rules” which are mandatory and cover personnel safety. Three Golden Rules within Shell to help reinforce expected behavior for our employees are to comply with governing laws, standards, and procedures; to intervene in unsafe and non-compliant situations; and, to respect our neighbors. In addition, all Shell employees take mandatory safety training on a frequent basis. Finally, there is an annual event that we call Safety Day where all Shell employees take a pause to reflect on their personal commitment to safety.

NIKOLAS LARSEN [Marathon Petroleum Company (MPC)]

MPC utilizes the AFPM Safety Portal to communicate and share experiences and knowledge within our FCC Advisory Group. It is a vital component of our goal to improve process safety performance. We also

have a Process Safety Advisory Program to learn from external industry and internal MPC process safety events, significant near misses, and high value learning events. Our Process Safety Advisory Program was modeled after the Center for Process Safety (CCPS) Beacon and is a tool for the broad distribution (all MPC refining sites) and discussion of significant external and internal process safety events and high value learning events (significant near misses).

Marathon Process Safety Advisory

Subject: Long Bolt Flangeless Valves **Date: 3-20-12**

Hazards of Long Bolt Flangeless Valves

Long bolt flangeless valves are a variety of commonly available valves that present special hazards when used in hydrocarbon services. These valves may also be referred to as "long bolt valves", "sandwich valves", "flangeless valves", and "wafer valves". These valves all have one common characteristic; they do not have flanges on the valve body to attach them to the pipe flanges on either side. Instead, these valves are sandwiched between two pipe flanges and held together with long, exposed bolts that extend between the flanges. Two examples of this type of valve are shown below.

Special Hazards

If there is a fire in the area, the exposed bolts may be directly contacted by the flames. The heat can cause them to expand and lengthen, allowing the gaskets on either side of the valve to leak. In hydrocarbon service this leakage can add fuel to the fire, increasing the damage as shown below.

Some of these types of valves may be insulated and covered with a metal jacket making them harder to identify. These installations have the added possibility of concealing corrosion to the bolts under the insulation. In hot services, adding insulation over the long bolts while the valve is in service and up to operating temperature can cause the bolts to heat and expand causing leaks.

What is Marathon doing to mitigate this hazard?

Marathon is updating our Core Specifications to no longer allow long bolt flangeless valves to be used in hydrocarbon services. SP-50-10, the Material Purchasing Specification – Valves, has already been updated to prohibit purchasing long bolt flangeless valves for hydrocarbon service. Additionally, all existing long bolt flangeless valves in hydrocarbon services will be identified for further action, such as:

- Replace the long bolt flangeless valves with a standard flanged valve.
- Insulate and cover the long bolts with a fire rated jacket and implement an inspection program to detect corrosion to the bolts under the insulation.

➢ **Note – Refining Sites shall not take either of these actions until the Corporate Program is rolled out per the Recommendation section of this advisory (unless during your survey conditions are found that require immediate attention).**

What can you do?

Review this process safety advisory within your workgroup and discuss the location and hazards of any long bolt flangeless valves in your unit.

Specifically discuss the following:

- ✓ The number and location of any flangeless valves in your area.
- ✓ The risks of inadvertently insulating them.
- ✓ The increased hazard of these valves in fire situations.
- ✓ Ensuring that when these valves are insulated for fire protection, that the insulation is maintained in good condition and immediately replaced if it is removed.
- ✓ Reporting any flangeless valves you are aware of to your supervisor who will contact maintenance so they can be added to the site survey. (See recommendation section)

Marathon Process Safety Advisory PSA #12-01 1

CCPS Beacon

Messages for Manufacturing Personnel

Sponsored by CCPS Supporters

Fire Protection - Long Bolt Flangeless Valves

April 2010

Would you recognize the metal cover (yellow arrow) in Picture 1 as an important piece of safety equipment? If it was damaged or missing, would you know to report it so that it could be repaired or replaced?

The metal cover wraps something called a "long bolt flangeless valve" (also called long bolt, sandwich, flangeless, or wafer valves). Some examples, with the covers removed, are circled in red in Pictures 2 and 3. These valves have no integral flanges for bolting to pipe or vessel flanges, and have exposed bolts longer than 3 inches (about 7 cm.). If there is a fire in the area, the long bolts may be contacted directly by flames (impingement). The heat causes the bolts to expand and lengthen, allowing the gaskets on the two sides of the valve to leak. If the leaking material is flammable or combustible, it will add fuel to the fire (Picture 4). If the pipe is under pressure, a large, spraying fire that results in more damage can occur.

The metal cover wraps the long bolts with a fire resistant material and encloses the entire assembly with a stainless steel covering to protect it from flame and heat impingement. It is an important safety device. It must be properly re-installed if removed for maintenance. It must also be inspected periodically to be sure it is in good condition, and any damage must be reported so it can be repaired.

Note larger fire at the long bolt flange joint

Bolted flange fires

4

What can you do?

- If you have long bolt flangeless valves on piping in combustible, flammable or LPG service, make sure the covers are properly maintained at all times.
- A cover on a long bolt flangeless valve can hide corrosion or other damage. The covers should be removed periodically to inspect the flanges and valves under the cover, and immediately replaced following the inspection.
- Passive fire protection on such a valve will only be rated for a short duration fire, and an inherently safer engineered solution would be to replace the flangeless valve with a fully flanged valve.

Understand your Safety Equipment!

Key Features of the Process Safety Advisory Design:

- Eye-catching, professional layout
- Short: 1 to 2 pages (If two pages, then print on the front and back.)
- Brief, fact-based description of the incident written in common terms
- Key findings from the incident investigation
- "What can you do?" section targeted for work group discussions that start with the Refinery Leadership Team and cascade down to every affected work group at the site; points in this section guide the group to explore their vulnerability to a similar incident and to take action to prevent an occurrence at their site.
- Global Follow-up section targeted at close gaps in management systems, programs, and performance at all sites which is assigned to a responsible manager with a due date and which is

put in the MPC Recommendation tracking system to follow through to resolution.

The workflow of our Process Safety Advisory Process for internal events starts with a Root Cause Incident Investigation being completed along with a first rough draft of the PSA (for external events, the corporate Refining group will compile information and generate a draft PSA). This is forwarded to the corporate Refining staff where it is reviewed. The final version of the PSA is reviewed with all refinery site managers and cascaded through the organization as a part of a sequential or other Safety meeting. Recommendations are tracked to resolution and reported quarterly in the corporate refining PSM (Process Safety Management) report. PSAs are then also connected into the PHA and Refining Standards Updates process.

Benefits of the program include:

- Provides a high impact requiring minimal resources,
- Creates an effective means of communicating with and engaging employees,
- Closes the gap at all refining sites, not just at the affected site,
- Facilitates learning and improving Process Safety Hazard Recognition,
- Offers a robust means to follow through on Global Gaps, and
- Permits us to be well poised to take incidents from the Industry Event Sharing Program.

Key success factors of the program include that we:

- Get top-down buy-in on global follow-up recommendations,
- Do not overload the sites with too many PSAs because MPC’s experience is no more than one per month, and
- Do not assign the PSA final drafting to a junior employee because the final drafting requires a “been there, done that” experience level.

Print as PDF:

Tags

Safety

Year

2015