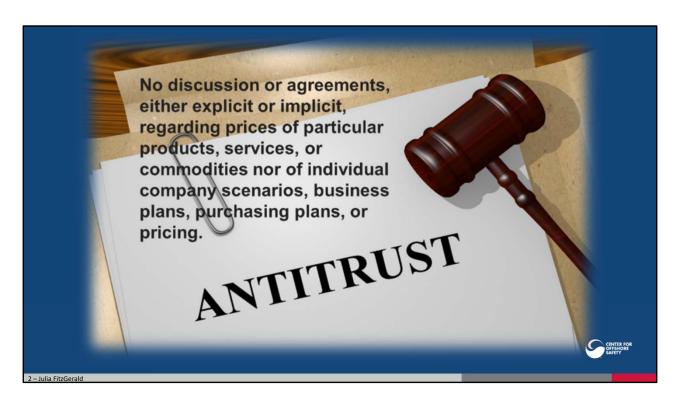


Good Morning everyone. I'm Julia FitzGerald with the Center for Offshore Safety, and I'd like to welcome you all to this COS Webinar on the IOGP Process Safety Fundamentals, or PSF.

During today's webinar, which is being recorded and will be posted on the COS website, we request that you keep your audio on mute and do not interrupt during the presentation. While there will be not be an opportunity for questions today, please feel free to any questions you may have via email, and we'll share them with our presenters and get back to you. Contact information will be shared at the end of this presentation.

If you are using a phone for your audio, please do not place us on hold, as you might subject the rest of us to what is undoubtedly delightful background music.



The Center for Offshore Safety is part of the American Petroleum Institute and as such, we are governed by API's policies and procedures, one of which is the Antitrust Guidelines. To remain in compliance with these guidelines, today we will not discuss pricing or vendors in any way that could negatively impact their business. If you feel like we have veered into those territories, please bring it to our attention and we will get back on track.



Thank you to the members of the COS Process Safety Subcommittee for their hard work in preparing today's webinar. Today's speakers have knowledge and many years of experience working in and supporting the offshore industry. In order of presentation, our speakers today are:

- Russell Holmes, Senior Director of the Center for Offshore Safety
- Tricia Grant, Process Safety Senior Advisor for Hess Corporation, and Chair of the COS Process Safety Subcommittee,
- Julian Nunez, Process Safety and Risk Advisor for ExxonMobil, and
- Jonathan Deegan, Technical Risk Manager at Occidental Petroleum

To kick things off, please welcome Russ Holmes, Senior Director of the Center for Offshore Safety.



Thank you, Julia. Good morning, everyone, and thank you for joining us to hear about the Process Safety Fundamentals developed by IOGP, the International Association of Oil and Gas Producers. Before we dive into the details, I'd like to provide a little bit of background about the Center for Offshore Safety.

COS was established 10 years ago and to this day demonstrates the industry's commitment to advancing a culture of safety in offshore operations. Our collective efforts can be broken down into four main pillars, listed on this slide, to promote systems that drive offshore safety progress; analyze offshore safety data to identify opportunities for improvement; and facilitate development and sharing of good practices that advance safety and environmental protection.

Related to these pillars, COS also serves as the Accreditation Body, recognized by the Bureau of Safety and Environmental Enforcement, to accredit third party SEMS audit service providers.

Shifting gears...we normally start all our COS meetings with some sort of safety moment. And since we have developed a range of COS Safety Shares that are available for free download from the COS website, covering topics related to Dropped Objects, Mechanical Lifting, and Process Safety, we thought it appropriate to discuss one today.



Today's safety share is based on an incident where Stop Work Authority was used by a rig employee.

#### So, what happened?

While on the job an employee was instructed to back out hold down pins to release the tubing hanger of the well head profile. Fortunately, The employee took time to STOP WORK and called on rig personnel to assess active pressure on the equipment before proceeding with the task. It was found that there was ~3,300 PSI of pressure, and during the bleed off they brought on roughly 200 barrels of oil.

## What went wrong?

The employee was aware that the rig had done some pumping into the casing and down the tubing earlier, so he asked if anyone had checked for pressure. Instead of addressing his concern, the employee was told "it should be good." But the employee had doubts and proceeded to check the casing annulus on his own and found it contained a lot of pressure.



#### Why did it happen?

After the incident, the company found that the written procedure did not include a step to check the backside/annulus for pressure prior to backing out the holding pins.

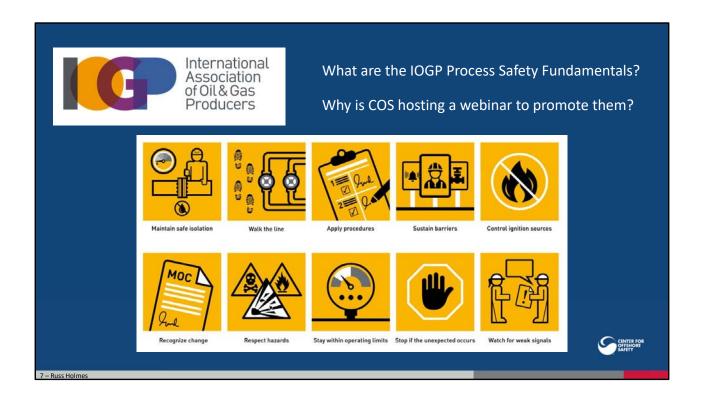
The company commended the outstanding job of the employee to trust his instinct and not let others dictate how to perform his job safely.

What areas were identified for improvement?

The De-completion Operating Service Procedure was reviewed shortly after this incident and nothing was written which indicated that checking the backside/annulus for pressure prior to backing out holding pins, was required.

The procedure has since been updated and checking for pressure is now a requirement.

After we've reviewed the IOGP Process Safety Fundamentals, we'll come back to this incident.



So, what are the Process Safety Fundamentals? And why is COS hosting the webinar? The simple answer is, we felt it much more prudent to leverage and highlight the good work of others, rather than spending the time and resources to re-create a tool to help improve offshore process safety performance.

IOGP did a review of their member data over a 10-year period – 2007 through 2017 – and found that during that time, 128 people had lost their lives in 56 process safety events. In other words, more than 12 people a year not coming home to their loved ones.

In response to this, they set about to develop a set of fundamentals designed to support front-line operations, maintenance, and wells teams. And empower or enable them to raise concerns openly and transparently.

There are 10 PSF in this set, with clear, simple icons and actions for individuals.



The goal of these fundamentals is to reduce – ideally eliminate – fatal and severe process safety events.

They are not intended to address every possible process safety risk and hazard, but instead can be used in addition to a company's existing Process Safety Management System.

The language on the following slides was written by the work group at IOGP who developed them, and you'll notice that the emphasis throughout is on "we" – "we use isolation plans..." or "we speak up when barriers don't feel adequate..." etc.

Life-Saving Rules vs PSF				
		Life-Saving Rules	Process Safety Fundamentals	
	FOCUS	Emphasis on Personal Safety with some Process Safety overlap	Process Safety	
	FLEXIBILITY	IOGP recommends adopting LSR without alteration – a common set for all industry	Core set from IOGP – companies encouraged to supplement or exchange as appropriate to scope of operations	

There's a similarity between the Life Saving Rules published by IOGP – and adopted by many companies in our industry – with the use of simple icons and clear language.

There are a few key differences, however.

The focus of the Life Saving Rules is personal safety, such as journey management and working at heights, although there are a few elements of process safety that are included.

The focus of the PSF is process safety.

And IOGP was firm in their recommendations for the Life Saving Rules that companies adopt them wholesale without alteration – a common set of rules for the entire industry.

The PSF, however, can be thought of as more of a starting place – a core set – that companies are encouraged to supplement or exchange as appropriate for their business and scope of operations.

These PSF are meant to complement the Life Saving Rules, not be in competition with them or used instead of them.

These PSF are one tool toward the goal of zero incidents but are not the ONLY tool.

And with that I hand it over to Tricia Grant from Hess, Chair of the COS Process Safety Subcommittee.



Thank you, Russ. That was a good introduction to the intent of this set of fundamentals. Now let's get into the specifics.

I was part of the work group that developed these fundamentals and I can attest that a lot of thought and great care went into drafting these and the language that goes with each. I echo what Russ said, that companies are encouraged to adopt these and supplement, if needed, to address specific company needs.

Let's take a look at the first Fundamental.



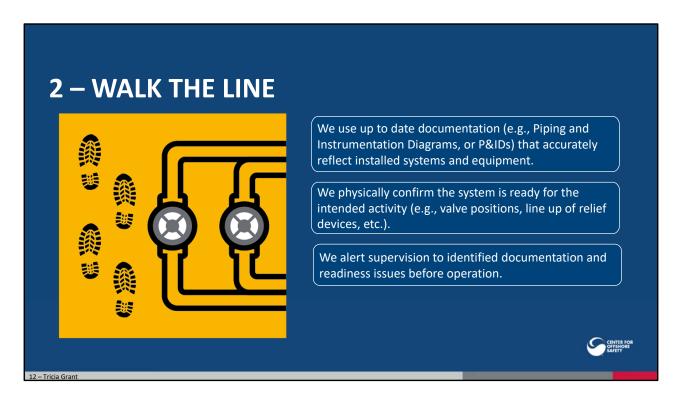
#### MAINTAIN SAFE ISOLATION.

We can see here the supporting language that goes along with this fundamental:

- We use isolation plans for the specific task, based on up-to-date information.
- We raise isolation concerns before the task starts and challenge when isolation plans cannot be executed.
- We check for residual pressure or process material before breaking containment.
- We monitor the integrity of isolations regularly and stop to reassess when change could affect an isolation integrity.
- We confirm leak-tightness before, during, and after reinstating equipment.

This fundamental can be used to prompt discussion among frontline workers, such as, asking, "How do we maintain safe isolation?"

- Always make sure that you are either in sight of, or in control of the isolations you are using for your job.
- Before putting equipment back into service, it is important to verify that the system is mechanically complete using your local practices.
- Be vigilant about potential false pressure indications (e.g., line plugs, hydrates, etc.). Before introducing hydrocarbons, it is good practice to perform a gross leak test where possible.



## The second fundamental is WALK THE LINE

- We use up-to-date documentation (e.g., P&IDs) that accurately reflect installed systems and equipment.
- We physically confirm the system is ready for the intended activity (e.g., valve positions, line up of relief devices, etc.).
- We alert supervision to identified documentation and readiness issues before operation.

## When do we walk the line? Here are some examples

- Material Transfers
- Equipment changes
- Handover from another work group or shift
- Return to operation after maintenance or turnaround.
- Temporary pipework in wells operations

## What is the benefit?

- It allows us to regularly confirm that process safety information is accurate and up-to-date
- We should discuss walk-the-line issues with front-line workers and follow up on concerns raised
- And to check that systems are in good condition and correctly set-up each time we start them up or

make a significant change in their use.



## Number 3 is APPLY PROCEDURES

- We use operating and maintenance procedures, even if we are familiar with the task.
- We discuss the key steps within a critical procedure before starting it.
- We pause before key steps and check readiness to progress.
- We stop, inform supervision, and avoid workarounds if procedures are missing, unclear, unsafe, or cannot be followed.
- We take time to become familiar with, and practice, emergency procedures.

## What does this fundamental look like in practice?

- We verify that procedures are up-to-date, effective, and easy to use.
- Leadership follows up if concerns about a procedure are raised.
- We become familiar with the plant, its equipment, and its procedures.
- We keep aware and informed of Emergency Response procedures.



## The fourth fundamental is SUSTAIN BARRIERS

- We discuss the purpose of hardware and human barriers at our location.
- We evaluate how our tasks could impact process safety barriers.
- We speak up when barriers don't feel adequate.
- We perform our roles in maintaining barrier health and alert supervision to our concerns.
- We use an approval process for operating with degraded barriers.

Are you starting to notice a pattern? How many times we've said, "We speak up..." and "We discuss..."?

So, how do we apply this fundamental?

- By knowing what the Process Safety barriers are at the location.
- By understanding how my work might affect these barriers.
- By ensuring that systematic barrier management processes are in place and that necessary resources are allocated to test and maintain barriers.

And by implementing approved risk reduction measures for degraded or failed barriers and restoring

barrier functionality as soon as practical.



We are lucky on the COS Process Safety Subcommittee to have knowledgeable and dedicated process safety specialists. At this point I'm going to turn it over to one of them – Julian Nunez from ExxonMobil. Julian?



Thank you and good morning everyone. As Tricia said, I'm Julian Nunez from ExxonMobil. Happy to be here with you all this morning. And now I'll just pick up where Tricia left off.

The fifth fundamental is CONTROL IGNITION SOURCES

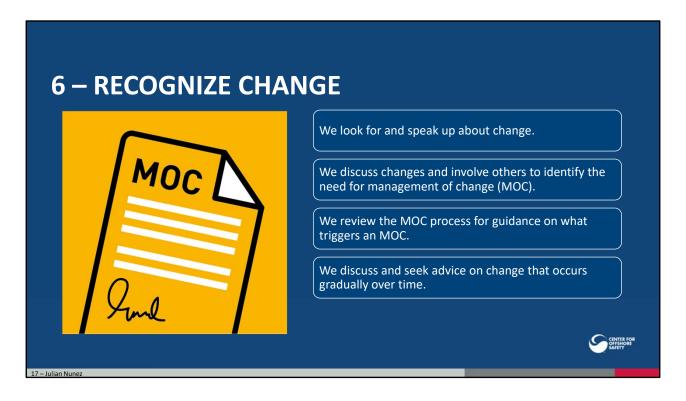
- We identify, eliminate, or control the full range of potential ignition sources during task risk assessments and during job preparation and execution.
- We minimise and challenge ignition sources even in "non-hazardous" areas.
- We eliminate ignition sources during breaking containment and start-up and shutdown operations.

How would we apply this fundamental?

- We regularly check that personnel understand the full range of potential ignition sources and the requirements for ignition source control.
- We control work risk assessments to evaluate the potential for flammable hazards even outside classified/zoned areas.

We report defects in electrical equipment to control potential ignition sources – and do the work

necessary to rectify the defects.



The next fundamental – number 6 – is RECOGNIZE CHANGE

- We look for and speak up about change. There's that "We speak up..." language again.
- We discuss changes and involve others to identify the need for management of change (MOC).
- We review the MOC process for guidance on what triggers an MOC.
- We discuss and seek advice on change that occurs gradually over time.

All of these fundamentals are important, but this is such a big one. How do we drive home the message that every time a frontline worker thinks, "Huh, we've never done it this way before," that they should call a halt and discuss the change?

How might we encourage application of this fundamental?

- We verify that systematic identification and management of change processes are in place and working effectively.
- We ensure that workforce personnel and management are trained to recognise change.

We work with teams to review their local MOC process for guidance on what triggers an MOC and

discuss examples at their location.



The last fundamental I'll share before handing off to Jonathan Deegan from Oxy is RESPECT HAZARDS

- We improve our understanding of process safety hazards at our location and our roles in controlling them.
- We are vigilant about the potential impacts of uncontrolled process safety hazards.
- We discuss process safety hazards before starting a task.
- We bring forward process safety hazards to be included in activity risk assessments.

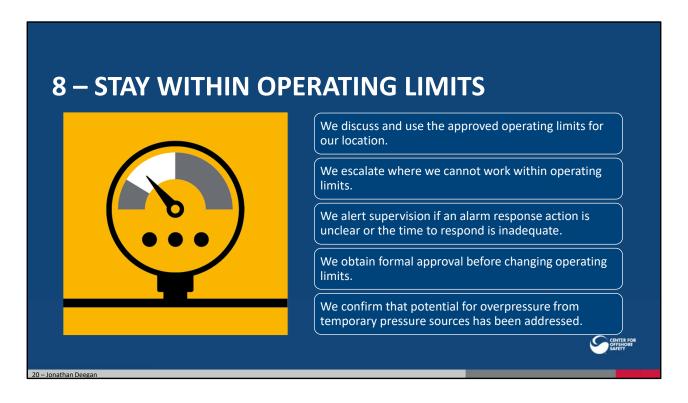
We all know that it's human nature when we're around hazards day in and day out to get used to them. For each day there is no negative consequence from that hazard, the easier it is to discount the risk. How do we combat that?

- It's important to understand the process safety hazards at our facilities and be aware of the harm they could cause if we lose control of them.
- Encouraged teams to be alert for risk assessments that do not cover all the process safety risks associated with an activity. How can we make sure we think of these ever-present hazards during our day-to-

day work?



And now, as promised, Jonathan Deegan from OXY will take us through the last three fundamentals. Jonathan?



Thank you, Julian. I appreciate the opportunity to present with you and Tricia today.

The eighth fundamental is STAY WITHIN OPERATING LIMITS.

- We discuss and use the approved operating limits for our location. I think that last bit for our location is vital.
- We escalate where we cannot work within operating limits.
- We alert supervision if an alarm response action is unclear or the time to respond is inadequate.
- We obtain formal approval before changing operating limits.
- We confirm that potential for overpressure from temporary pressure sources has been addressed.

All of these fundamentals are connected. When I look at statements such as, "We alert supervision..." or "We obtain formal approval..." it points back to earlier fundamentals like RECOGNIZE CHANGE and RESPECT HAZARDS.

So, how do we encourage application of this fundamental?

- We document Safe Operating Limits for key process variables and make them visible to frontline workers
- We regularly check personnel knowledge and skills related to staying within operating limits
- We systematically investigate excursions outside Safe Operating Limits
- We demonstrate through actions and decisions that cost, production, or schedule does not override safety

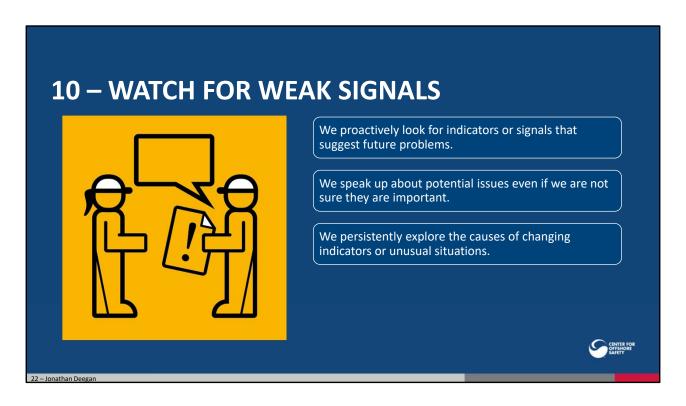


The ninth fundamental is STOP IF THE UNEXPECTED OCCURS.

- We discuss the work plan and what signals would tell us it is proceeding as expected.
- We pause and ask questions when signals and conditions are not as expected.
- We stop and alert supervision if the activity is not proceeding as expected.

This fundamental, similar to Stop Work Authority, positively recognizes people who stop to re-evaluate if a task isn't going as planned.

- We should communicate to frontline workers that they should pause and seek guidance if an activity is not proceeding as expected.
- Emphasize that while pausing or stopping a task may feel inconvenient at the time, speaking up if the unexpected occurs will actually help keep an operation on plan and under control, thus avoiding incidents, keeping people safe, and supporting good business performance.



And so we reach the final fundamental – WATCH FOR WEAK SIGNALS. Although this is the last in our list today, that shouldn't imply it's less important than any of the others.

What does this fundamental mean by WATCH FOR WEAK SIGNALS? It means,

- We proactively look for indicators or signals that suggest future problems.
- We speak up about potential issues even if we are not sure they are important.
- We persistently explore the causes of changing indicators or unusual situations.

How do we encourage frontline workers to apply this fundamental?

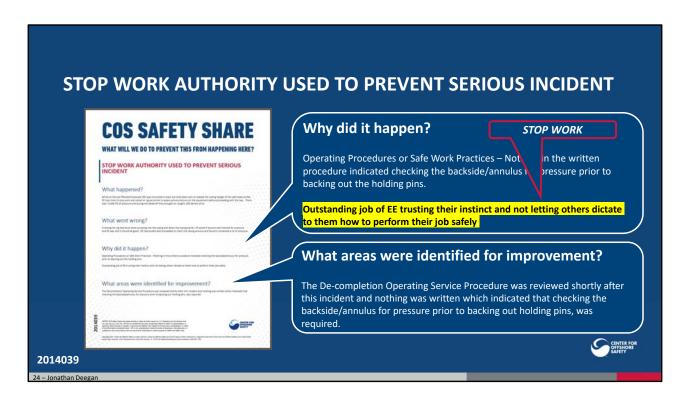
- We ask that they be alert to weak signals and respond proactively when these signals are raised.
- That they do so, even if the signals seem weak/small/unimportant, so that they can be discussed and evaluated.
- `Weak signals` can be a vital opportunity to act early to avoid and accident, so it is important that they

are persistently explored to understand the cause.



Now that we've gone through all 10 of IOGP's Process Safety Fundamentals, let's take another look at the Safety Share Russ presented at the start of this webinar. We decided on this particular Safety Share for today because it's a great example of applying these fundamentals to prevent what could have been a serious incident.

For example, by understanding the barriers in place, the employee was able to recognize the possibility of pressure on the equipment. Then despite reassurances that it all was good to go, he respected the hazard and understood the weak signals enough to do additional investigation before proceeding.



And finally, he trusted what he was seeing and called a stop until the situation could be fully assessed.

Now that we've shared the 10 fundamentals with all of you here this morning, the next step is spreading the message to your frontline workers. For information on how to do that, I turn it back over to Tricia.



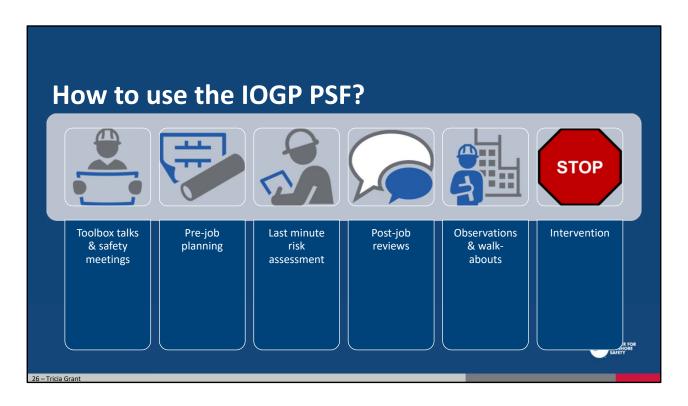
Thank you, Jonathan, and Julian, and Russ.

As mentioned earlier, I was part of the work group that developed these process safety fundamentals. There was a tremendous amount of thought and deliberation that went into crafting them to be useful and broadly applicable. But all that hard work is for nothing if the message doesn't reach the right people.

So, how can these fundamentals be used in everyday operations?

Remember these are not just another set of rules:

- There will be situations when trying to align with a PSF may prove difficult this is expected. Ask your frontline workers to let you know when this happens.
- Your frontline workers have the knowledge of actually performing the task at the site. If a PSF is difficult or impossible to apply on any one occasion, they should let their supervisors know because only by bringing these issues into the open can you learn of them and decide what to do.



So, these fundamentals should be discussed, referred to, and applied regularly to keep them front-of-mind for our boots-on-the-ground workers. In addition to posting the icons in appropriate, highly-visible locations, they can be addressed in:

# Toolbox talks & safety meetings

Can we learn from incidents that involved PSF not being followed?

## Pre-job planning

- How are the PSF applicable to the work we are doing today?
- What do we need to do to follow the PSF?
- What needs to be in place?
- Is everything in place, and in good working condition?

Last minute risk assessment

- Have I done all the PSF actions relevant before the job?
- Is everything as we discussed in the pre-job planning?
- Are there any Line-of-Fire hazards or ignition sources we didn't identify?

# Post-job review

- Did we take all the actions associated with the PSF?
- What went well? What didn't go well?
- Is there anything to note for the next time we have to this perform task or work in this area?

# Observations & walk-abouts

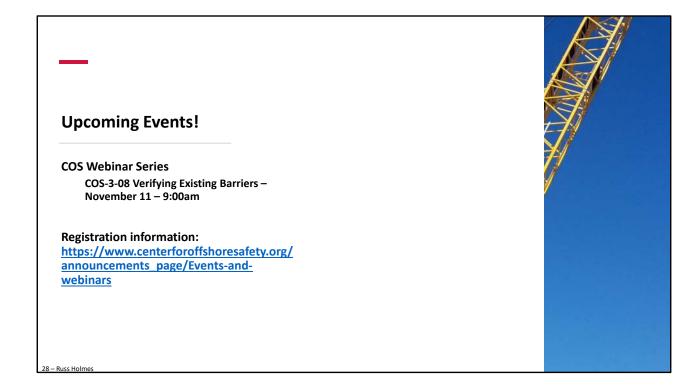
- Do you see anyone performing work where a PSF is relevant?
- Are they following it?
- Yes? Great, recognise it!
- No? Intervene!
- If someone brings up a PSF dilemma, thank them and show them you will take it seriously.



That wraps it up for us here this morning. But, as we've said, these PSF were developed by IOGP, the International Association of Oil & Gas Producers, with the hope that they will be widely adopted and – as mentioned at the beginning – supplemented with others based on your scope of operations.

To make that as easy as possible, IOGP has developed several FREE resources to spread this message. The web address here on this slide will take you to the Process Safety Fundamentals page of the IOGP website. Here you can find FREE videos, posters, slide presentations to use within your companies, and other resources.

With that I will say thank you to all of your for attending this morning and I turn it back over to Russ Holmes for some final words. Russ?



Thank you, Tricia. And thank you as well to Julian and Jonathan. You can tell from the speakers this morning that they are all passionate about process safety. We are grateful to them for sharing that passion and their knowledge with all of us.

I wanted to take a moment here at the end to let you know that we have one last webinar scheduled for this year. Next week – one week from today – we will be rolling out the latest COS good practice, COS THREE OH EIGHT Verifying Existing Barriers. Being here today demonstrates that you all have an interest in process safety, so we hope you're all planning to join us next week for this FREE webinar.

# **Become a Member!**

- · Annual Membership Fee
  - API Members \$0 additional annual fee to join COS
  - Non-API Members \$5000 annual membership fee
- For Additional Information:
- Russ Holmes holmesr@centerforoffshoresafety.org
- Julia FitzGerald <a href="mailto:fitzgeraldj@centerforoffshoresafety.org">fitzgeraldj@centerforoffshoresafety.org</a>



29 – Russ Holmes

And we can't let you go this morning without a plug for membership in COS. The mission of COS, to continually improve offshore safety and safety management, is only possible by the active participation and contributions of companies engaged in our industry.

We're happy to announce some big changes to the cost of membership in COS. Starting this year, current API members pay zero additional membership fees to become members of COS. And for non-API members, the annual membership fee is now only \$5000, regardless of company type or size.

For additional information on becoming a member of COS please reach out to me or Julia FitzGerald. Our contact information is on the screen.

Thank you for joining us this morning. From all of us at COS and today's speakers, We hope you all have a wonderful day.

