1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Transcript

PHMSA Public Meeting 2022

Houston, Texas

Day 1

Tuesday, December 13, 2022

>> I am thankful that you are all able to participate.

We have a lot of topics, if you've looked at the agenda and I hope everybody in the room got a copy of our agenda, there's a lot of topics that we're going to be touching on today and tomorrow and Thursday.

And we're going to go quick, we're going to keep people on pace.

We have a lot of things we want to share with you, a lot of lessons learned, a lot of things we think you should be aware of, but also, we want to hear from various stakeholders, whether it's representatives of the public and other folks online, whether it's members of the industry, if it's regulators, other government agencies, we need input on some of these critical topics that are facing the country right now.

So this is one of many future dialogues.

So this isn't it, this isn't the only time we'll get to talk about some of these issues.

There's some very hot issues, and people said, how can you cover everything you need to cover about PIR or CO2 in an afternoon.

Well, trust me, we're going to be talking a lot more in the future.

As a matter of fact, we are tentatively planning to have another public engagement in the first quarter of '23, so make sure you start thinking, this is to whet your appetite and get the juices flowing on, here's some things we want to contribute.

So we talk about having a lot to cover.

I'm going to be kind of tough this week and keep our speakers on time, we're going to keep moving, right?

The other thing is, we do want to have some Q&A, but it's going to be tight, so for people that are on the web, if you have questions, please send your questions to the email address that is on the registration page.

It is ALANA -- it's ALANA -- two N's.

ALANNA.HERRON@DOT.GOV.

People in the room, if you're shy about coming up to the three mics, you can also send an email in.

We will try to answer questions but we're going to be limited so if we don't get everything captured, we will try to follow up at a later time.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Let's see.

Everybody, everybody has at least one of these.

Put it on stun, okay?

That only applies for people in the room.

The people on the webcast, you're fine.

Safety minute.

Okay, so, if there should be an emergency in this room, out the doors, there are doors -- many of you may have come in right through here.

Go straight out into the mall.

That will be -- we'll go on out towards the ice rink.

That will be how we get out.

Restrooms are out these doors and to the left.

They're kind of hidden, so look for the big large mirror.

There's also some upstairs.

We'll be taking a 15-minute break mid-morning, and also one this afternoon.

And let's see.

I want to make sure I've covered all of our safety items.

I think I have.

Oh, I do have a request from our webcasters.

There are limited plugs in the room, electric plugs.

Please, please do not say, well, somebody's hogging that plug, I'm going to unplug it and charge my phone or my computer.

That could be really balanced because they're using quite a few of the plugs, so please try to avoid, especially on this side.

So with that, let's get into the meeting.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

We have Tristan brown, who is our deputy administrator, Tristan, I'm sure you're out there, I almost demoted you, he is our deputy administrator, and he has prepared a video to welcome you all.

Tristan is -- he's been with us now for a couple of years and he's shown great leadership in a number of areas.

One of the places where he has really helped us is looking at the new requirements that Congress has given to us, or the new mandates, new mission, related to climate change.

And Tristan clearly has a passion for that, and he has shown that through his leadership.

And so he's helping us to see that there are -- there's a very good nexus between safety and climate and environmental protection.

We've always had environmental protection in our mission, but we're hoping to see that it means a little bit more than we thought in the past.

So I'm very happy that we have Tristan with us and he's helping us grow and emerge into a greater, stronger agency.

With that, let's roll the video, and—

>> Good morning, good morning.

Thank you for that introduction.

And thanks to all of you who are attending our first in-person public forum since 2020.

It's good to see so many of you back, having the opportunity to connect in person, and we of course appreciate all those that are attending and presenting and contributing virtually.

Hats off to the PHMSA for putting together public partners.

We are all looking forward to hearing from our presenters in the next three days and gaining input from all of you on the important topics that will be discussed.

Some of the biggest challenges facing our sector today.

As most of you are aware, PHMSA oversees the design, maintenance of our nation's approximately 3.3 million miles of gas and hazardous liquid pipelines.

It is our mission to oversee the safe transport of hazardous materials through pipelines but also through other modes of transportation, including planes, trains, trucks, vessels, and automobiles.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

In fact, nearly two-thirds of the energy we consume is at some point transported via a pipeline that we oversee.

So we plan a vital role in helping ensure the integrity of pipeline and related infrastructure, as well as ensuring environmental impacts from pipelines and pipeline facilities are mitigated.

Under Secretary Buttigieg's leadership, we've focused on maintaining and strengthening our safety missions, helping communities most in need of infrastructure investments and ensuring the U.S. maintains the most efficient and competitive transportation system in the world.

PHMSA has been integral to the governor's whole of government approach to emitting -- as well as hazardous liquid leaks and the cost of environmental impacts of both.

The new inflation reduction act and infrastructure law includes substantial new investments for infrastructure aimed at reducing greenhouse gas emissions.

Much of these investments are expected to need additional infrastructure to transport the products, that previously were emitted into the atmosphere.

This means a major new responsibility for our agency, and the new challenges to protect the public and the environment.

When I first became deputy administrator, some of the first visits I made were to meet in-person with those impacted by major pipeline incidents, like those in Mississippi, Kalamazoo, Michigan, and Washington.

My perspective on pipeline safety has in part been informed by hearing firsthand from victims, first responders, and others involved in pipeline incidents across the country.

When I visited Mississippi last May, I heard firsthand how the community responded to a major pipeline failure on one brisk February evening, nearly three years ago.

We are focusing on some of the root causes of that failure at this week's forum because we must ensure an incident like this never happens again.

Specifically, over the next few days we will engage around challenges with and mitigation measures for geohazards and land movement, potential impact RADII and PHMSA efforts around reducing methane emissions, hydrogen transport, and carbon capture utilization and storage.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Last year we hosted a forum two more than 500 participants, including agencies across the government and international partners, to focus specifically on the challenges, solutions and areas of research needed for future fuels like hydrogen.

Following that forum, we awarded dozens of research grants dealing with hydrogen leak detection, gas storage safety and carbon and pipeline safety.

This year we had a liquid natural gas R&D forum in November, where we focused on research and safety improvements needed in that area.

If you missed it, the forums key event files are posted on our meetings page and I encourage you to true some of the presentations and other materials on that topic.

We will continue to promote to on improve transparency and communication, and we believe this is a bright future with greater collaboration among the esteemed individuals in this room, as well as greater results for our customers, investors, companies, and the American people.

In closing, thank you all for being with us over the next few days.

We look forward to the presentations and to hearing your feedback, and, again, I would like to remind you that the purpose of this meeting is to communicate, both directions.

We want and need to hear from you on the many topics that will be discussed in the next few days.

Thanks again to your presenters, panelists and moderators over the next three days, and thank you to the office of pipeline safety for putting together such a strong agenda for working tirelessly to plan and execute the meeting at this busy time of year.

Happy holidays to you all.

Thanks.

So let's jump right into the meat of this meeting.

So I would like to introduce Mary McDaniel, she's going to be facilitating our geohazard panel.

>> Good morning, everybody.

Nice to see everybody.

My name is Mary McDaniel, I'm senior technical advisor with PHMSA.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

I was previously the southwest region director here in Houston for a couple of years and recently moved into the role of senior technical advisor.

Our presentations this morning are all focused on sort of lessons learned from recent incidents and some actions that PHMSA is taking in regards to those incidents for the development, advisory bulletins and other research or backgrounds that we're looking at that for these events that happened.

So our first panel is going to talk about recent case studies, geohazards, and talk about the advisory bulletin that was issued earlier this year.

So what we're looking at doing -- my pointer doesn't work.

Second technical issue, but then again, I'm technically challenged.

Is there somewhere I'm supposed to be pointing?

>> It worked a minute ago.

You're going to have to advance it back there.

>> I broke it.

>> I think we've broken a record.

Two glitches in the first 10 minutes.

>> There you go, okay.

Thank you.

>> So on the panel today, on the agenda that we have, we had three presenters, myself, Wesley Mathews from our accident investigation division and Gery, who are going to talk about the PHMSA perspective on some case studies and then we have Zoe shall who is going to do a presentation on geohazards.

Our discussion topics for this first portion is first a case study on the Mississippi incident, the carbon dioxide incident that Tristan mentioned, and then we're going to do another case study on the Hillsboro Kentucky natural gas incident that happened involving a geohazard and then looking to a PHMSA regulatory oversight for geohazards and then I'll talk about the advisory bulletin that was issued earlier this year.

I'd like to introduce Gery Bauman, he's a senior investigative officer, and he'll take it from here.

>> Good morning.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

I'm not Wesley Mathews.

My name is Gery Bauman, Wesley was on the program but he's out sick with the flu.

The first case study that we're going to talk about is the Mississippi CO2 rupture.

The photo, if you advance the slide, please, the photo that you see here is courtesy of the Mississippi emergency management agency.

There's a dramatic change in the landscape here.

The CO2 was being transported in a super critical phase, and the white that you see is the combination of dry ice and liquid in the soil that is frozen.

Notice the car that is parked on top of the road.

We'll see another photo later on from a different perspective.

Next slide.

Okay.

The slide here shows the accident details in addition to what the slide says, the accident occurred February 22ndof 2020 at about 7:00 p.m.

The weather was cool, in the 30sand 40sand it had been rainy for the previous couple weeks.

The pipeline was operating at 1400PSIG, and with CO2 it takes at least 1070PSIG to keep the CO2 in the super critical phase.

Did I advance two slides?

There we go.

The picture here is from the road overlooking the valley, and the slide here shows the specific details associated with the pipeline.

I wanted to note that since I'm a welding engineer, they use the E145 electrode to make the welds that joined the pipeline together.

E145 is a quasi low hydrogen electrode and used by the manual welding process and used in the downhill direction.

The use of this welding electrode had a minimal impact on the failure mode.

Also of note is the pipeline is relatively short recommendation it's only be 77 miles long.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

And the moral is you don't need a long pipeline of a thousand miles to be concerned about geohazards.

There were two key factors associated with this rupture.

It was the LOESS soil and precipitation.

It was a company of this type of soil and heavier than.

>> Rainfall that overloaded the pipeline and the girth weld was the weak link.

It's crucial to understand the risks posed by the land on and near the pipeline right-of-way.

Now, Loess soil is dusty and turns into was slippery mess when wet.

Though not full of clay, loess will still retain water, especially if there's lots of continuous precipitation which adds weight to the pipeline.

Note in the picture, the LOESS soil readily and vertically sloughs off and it creates a risk to infrastructure in the area of the pipeline, roads were known to have issues with sliding earth.

The rainfall history associated with this is -- can vary greatly.

There are areas where -- or years where it rained as much as 40 inches in one year and then the following year it was 80 inches in one year.

Operators should be paying attention to the weather as it can impact the stabilities of soils.

Now, Satartia is between four National Weather Bureau weather stations.

One station saw about double the rainfall in the previous weeks before the failure.

All of the others were well above normal range.

Roads in the area had problems with washouts and Denbury had dealt with washouts on the right-of-way in the past.

The findings and contributing factors, the failure of the pipeline was the result of soil movement, which was -- which caused excessive axial loading, leading to the father of the girth weld.

A big chunk of soil eroded down onto the pipeline and caused the weld to pull apart.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

The second case study that I'm going to talk about is the Enbridge Texas Eastern Hillsboro Kentucky failure.

Here's a photo of the fireball that burned up 52 million cubic feet of natural gas.

The total reported cost of this event was $16 million.

In addition to PHMSA investigating the event, the National Transportation Safety Board investigated, and their report is available on the web.

What you need to do is search the NST website for PIR-22-01.

In addition to the accident details that are on the slide there, the pipe was X52 and it was made by National Tube.

When the slide states known geohazard site, that means it was on a list to be remediated by the operator and unfortunately the pipeline ruptured before the remediation could occur.

Enbridge and their consultants misjudged the rate of pipeline movement and the strain capacity of the weld.

What you're seeing here is the ruptured girth weld.

The incident happened on the pipeline constructed in 1952, and as constructed, it used welding practices and workmanship of the era.

In this case and in a lot of other geohazard fearless, the girth weld turns out to be the weak link.

Typically vintage and even modern girth welds cannot carry as much strain as the pipe.

For modern pipelines we do have the welding technology to make the welds tougher and stronger than the pipe, but operators typically do not design welds that tough.

What we're looking at here is stakes over the centerline of the pipeline.

The red arrow points to the location of the ruptured girth weld, which is 8.7 feet off of the centerline.

The soil type was Colluvium, a loose incoherent mass of soil and/or rock.

There were signs of earth movement over time near the right-of-way.

As a tree grows, the tree tries to remain upright as the base of the tree moves down gradient.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

This is the characteristic S shape or pistol grip shape exhibited by the trees in the area.

The soil moves downhill, the tree tries to remain upright and so it bends.

If your technicians or pipeliners see this on the right-of-way, they should be reporting it up the chain of command so it can be investigated.

The pictures you've seen do not really show how steep the hillside was, so here's a quadrangle map of the area and the location of the rupture.

The contour lines are 20 feet elevations.

The triangle portion you see there is at the top of the hill, and the closely-spaced contour lines are steep.

That's what we should gather from this slide.

What we have here is a LiDAR image of the area.

There are publicly available LiDAR images on the internet as well as commercial companies providing this data for analysis.

The image shows the slip area at the bottom center, and the upper center.

The white, green and blue lines are the pipelines on the right-of-way.

LiDAR images can show where your pipeline is in a geohazard.

LiDAR images can be integrated along with initial measurement unit or IMU strain data to get a better understanding of geohazards and where they are on your pipeline.

Rainfall does have an impact on geohazards.

If you look at the rainfall amounts for the geographic area around the rupture site, for the previous five years, they were all above average.

During the investigation, we were able to determine the pipeline's location over time.

The data was used to generate this graph, as-built AMU data and physical staking of the pipeline and the post rupture survey.

The purple line that's at the bottom was as constructed in 1952.

The green right above it was the 2007 IMU data.

The blue is 2018 IMU data.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

The red is 2019 IMU data and the gray dots are physically staking the pipeline centerline and that happened in July of 2019.

The turquoise color at the top is from May 2020, it just happened it was taken just after the rupture.

Like I mentioned, the total displacement is 8.7 feet.

Now, our findings are that the pipeline failure -- failed as a result of soil movement, which caused excessive loading leading to the rupture of a girth weld.

The operator's procedures were inadequate, and the operator's analysis of the active landslide did not fully address uncertainties associated with the strain-carrying capabilities of the girth weld.

The pipeline's loading due to land movement, and the pipeline's response.

And now I'm going to turn the presentation over to Mary McDaniel again.

>> Thank you.

I guess what the two case studies that we just talked about, that Gery talked about, were investigated by our accident investigation division, but at the time I was the southwest region director and both of those operators fell under the southwest region.

So the Denbury one was in Mississippi, and the region did not respond to that one initially.

It was something that the AID had investigated and went out on site.

And then the region took it from that point from some of the issues with geohazards to work with the company to develop and enhance a geohazard program with the company.

Texas eastern was the same thing.

At that time we had just -- the PHMSA had readjusted our inspection program toll where we are doing operator oversight, so Texas Eastern Enbridge came to the southwest region for all natural gas assets, came to the southwest region, so five months into that, this incident occurred, and we did respond and helped with Gery during the investigation and the NTSB response.

In that case, there was an open corrective action order from a previous event that we'll talk about in the next little group, but as part of that, the southwest region, we amended the -- the PHMSA amended the corrective action order that was out there to address potential actions to deal with the geohazards.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

So for the southwest region, you know, we were just the five states, the Texas, Louisiana, New Mexico, Arkansas, we hadn't dealt with as many land movement type issues outside of the region, we were dealing with river scouring and river issues but not the massive land movement issues.

So for us in the region, it was something that we had to really get, you know, up to speed on what was going on out there.

So we had two different teams working on it.

We had those of you, John Manning's construction team, the folks on his staff were working on the Texas Eastern event, and then Juan and an inspection team working on the Denbury event, and both were very much to this day were involved.

I guess the Texas eastern has gone back to the central region so at this point moving forward, but work continues on both of these to kind of work to develop geohazards.

But as part of that, operator ownership or operator oversight, the southwest region took in a lot of assets on the East Coast as well, with energy transfer, and so they also potentially have, you know, everybody's dealing with different geohazards.

So it's something that I know for the last year's planning cycle, for 2022, there was a focus field -- operations focus on geohazards.

So this next part of the presentation, we're going to go over our regulatory oversight for geohazard, what are the code sections and what sections apply for geohazards.

Could have been my pacemaker setting I go to off.

Never know.

So the first one is for the natural gas regulations.

What are the applicable code sections for part 192.

In 192 it's a little broader in terms of what's out there.

There is the -- there's a provision in general construction, there's one in operations, there's one in maintenance, and there's one in integrity management.

So I'm going to go through each one of those and how we're looking at those.

So for the 192317, that is a construction requirement, so it says at this point that, you know, you're supposed to take -- when you're constructing a pipeline, take steps to protect your pipeline, to protect your pipeline from the washouts, floods, unstable soil,

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

landslides, and then other hazards that may cause a pipeline to move or sustain abnormal loads.

And this, I think we'll talk about, the advisory bulletin, it's something that's reinforced, as folks are designing pipelines to take those into consideration, but during the construction process, if you notice things in the soil that you're working in or the areas that you're working in, it's something to note moving forward when you begin the operation of that pipeline.

So the next one is an operations requirement under the code section, and that's for continuing surveillance.

Another thing for -- 192.613 is sort of like the catch-all for a code section for issues that are unusual to your pipeline system.

It might not be a code-specific requirement, but it puts you on alert that you have to establish the procedure for continuing surveillance to determine and take action, if there are changes to your pipeline.

The first couple of this don't apply to the geohazards, it can for fearless if you've had some fearless, leakage history, corrosion.

But the most important one that we highlight is the other unusual operating and maintenance conditions.

So that's the one where it's sort of a catch-all and that's where geohazards, geotechnical issues fit into that last portion of within that .613 when it talks about the other unusual operating conditions.

The key part to that is once you've found something that could be considered an unsatisfactory condition, you need to take steps to either recondition or phase out the pipeline, and if you can't do that, reduce your MAOP until you can take the appropriate steps to take away or minimize the hazardous condition.

All right.

The next one is a maintenance requirement.

This is the one, the observation piece when you're maintaining your pipeline, you have pipeline patrolling programs for your pipeline, so you have people on site monitoring the conditions surrounding your pipeline, so it's the -- the key part is the other factors affecting safety and operations, that's where Gery was showing the picture of the trees that are bent.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

But in some of these, with the right-of-ways, I think it's more through our investigations and through our inspections this past year, some of the right-of-ways it might be difficult to say that because the -- I know people are clearing right of ways, but there are some situations that you might not be able to see evidence that there is land movement in the area.

And so that's why it's kind of very important that we're focusing on these areas for your patrolling programs to make sure you can see the condition of the pipeline, but the other part that was brought up during these investigations and some of our other inspections is that you know the location of your pipeline.

I think we ran into some situations where the pipeline, the right-of-way -- the pipeline was supposed to be in this one spot but it actually had shifted so it was having real -- location of where the pipelines were located to make sure you know where that pipeline is actually sitting.

So when you're doing your patrolling program, if you know you have a potential geohazard issue you might want to step it up for frequency.

It's dependent upon the terrain, the seasonal weather conditions, and other relevant factors.

I think what Gery pointed out in both incidents that he just went through in the case studies, that there had been historic rainfalls, and based off of that, that would give you another reason to do more monitoring of your pipeline to make sure it has not moved or there is evidence of moving.

One of the key parts for this is, as Gery mentioned, it was a 77-mile pipeline, but if the area in which you're located is subject to land movement or earth movement or even the river scouring, things like that, that you should make that to see if it applies to any other part of your system.

It's not just located on to that one particular section because it could affect it anywhere along the pipeline that might not have the more obvious signs of there being movement in that area.

And the last one under 192 is integrity management, and this is the one that's most specific and references geohazards.

But it's for those pipelines that are in the integrity management program.

For the natural gas side, it's not a very large pipe -- percentage that are in the program, but for threat identification, a lot of folks are applying this to all pipelines, whether

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

they're in NCA's or not, but it's specifically when you get to weather-related and outside force damage, seismicity, geology and soil stability.

So these are things that -- for pipelines that lead into that geohazard program, that are specifically noted in the integrity as a threat, so it's taking that identification of those threats to all portions of your pipeline, not just those inside the HCA.

So with that, we'll look at the hazardous liquids.

The rules, we all know, were written after the natural gas rules were, but there's less code sections that specifically address geohazard and land movement type issues.

For this one, there's only three code sections that really apply or potentially apply to the geohazard and potential issues.

They're all under the operation and maintenance portion of the code.

It's under the general requirements, which is where the similarity to the 192 -- or 613 is, and there's the inspections of right-of-way, similar to the patrolling over on the natural gas side, and the HCA, the integrity management.

What's missing here in the construction, it doesn't have a specific requirement that brings out things about weather, seismicity or any land issues like it does in natural gas, it just says you're protected from external loading, so it's not -- I don't know that that's broad enough for us to be able to use in this scenario.

So under 192, 195.401, and when I mentioned that, that was the catch-all, 196.213 is the catch-all on the gas side.

195.401 is the catch-all in the liquids rule, that if you have something that could affect the integrity of the pipeline, this is the opportunity in this section to find those -- identify those potential adverse conditions and address them.

So this language has changed over the years but right now there were no pipeline can operate at a level of safety lower than that required by part 195.

And in accordance with the operation procedures.

So to me, if there is this -- the liquid incident that Gery talked about, if there is land movement and issues that could affect your pipeline, that could reduce the level of safety on your pipeline.

So based off of that, that's something that you recognize and react to in your program and your procedures.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

So specifically in 401, it tells you if you find an adverse condition, if it's not an immediate hazard, then it has to be corrected in reasonable time, and that's what we were looking for in inspections that when you're doing those surveillance activities, what your timeframe would be to address those non-immediate hazards that you found, but if you do have an immediate hazard and you identify one, you cannot operate that segment of pipeline until the condition has been corrected.

So it's a little bit more specific in 195.

The next operation and maintenance requirement under 195 is the inspection of rights-of-way and crossings of navigable waterways.

This is similar to what's in 192 but it's less detailed as what is required, it just requires you to inspect the surface conditions on or adjacent to each pipeline right-of-way.

The expectations are the same but the words are not as detailed about increasing the frequency based on land issues or potential area land effects that you are aware of.

And the last one under 195 is the pipeline integrity management identification of risks, and so here it talks about when you're making repairs, the integrity repairs, that you have to do things in a timely manner, but when you get down to the risk factors and the threat identification under (c)(1) seven and eight, it's the local environmental factors that could affect the pipeline, so it includes seismicity, climatic and geotechnical hazards.

This is the specific reference to geohazards but for those pipelines located in HCAs.

And so what -- for the pipelines that are in there, this code section applies to thread identification, but what we are looking for in our inspections this past year, if you are aware of potential threat of this on your pipeline that's in an HCA and you have segments of that pipeline that's not in HCA but is in this -- part of that same pipeline segment, that this is -- potentially could be the same threat and we would use the -- you would look under 401 to come up with a program to evaluate the condition of your pipeline.

As part of that this year, as a result of these incidents that were out there, PHMSA issued an advisory bulletin, in June of this year, June of 2022, and it updates an advisory Bulletin issued in 2019.

Throughout the years, PHMSA has issued advisory bulletins for earth -- land type issues but it's more -- always been on the Riverside, there's been scouring of rivers and exposure of pipes in rivers.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

So this year with the specific events that we've had with land movement specific to the rain and the other factors that have affected the pipeline, the land itself moving and not affected -- or directly associated with a river, we issued this advisory bulletin and it's specific to what is -- I'm sure you've seen it, but the highlights of what is in the advisory bulletin, it goes the most readily identified one, that earth movement can pose a threat to the integrity of a pipeline if those threats are not identified and mitigated.

That's what the -- that reminder I don't know it had to be out there but it is to remind everybody that those threats are out there, potentially on your pipeline, and if so, they can cause the threat to the entirety of your pipeline.

The second one is that pipelines do traverse variable, steep, rugged terrain with changing subsurface conditions.

We've all seen, for us in the southwest region, going outside of our regional area we had before and going to other parts of the country where you see the pipelines and where some of these pipelines are located brought this home for us as well in the southwest region.

A big ones is the changing weather patterns due to climate change resulting in heavier than normal rainfall.

I think in the reports that were issued from NTSB and PHMSA on the two accidents that we were just talking about, there is quite a discussion about that, that change in rainfall and how it is affecting these pipelines and their stability.

The last one, soil stability is at risk.

So I think that's -- that has been shown more recently, and there are other events that have come to light where they're going back and doing some of this research on looking at some of these incidents.

A lot of this has been going on and more operators are working on developing programs or enhancing programs that might have been started years ago but enhancing it with some of these lessons that have been learned in the more recent events.

So what the advisory bulletin advises operators to do is to become more familiar with the areas surrounding the pipelines to better assess the risk.

And I think that's where I was talking about the expansion of that, that for the integrity management it talks about threats and how you need to identify them but I think here, it's to expand it to all the areas surrounding the pipelines to better assess the risks.

It's not just limited to those as part of the integrity management program.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

The other one is to include geotechnical considerations in the design and construction planning.

There is a slight provision for that in 192 but not as much in 195, so this is something that's in the advisory bulletin to advise operators to review.

To develop monitoring plans.

So if you're in areas that are prone or have been subject to land movement in the past or you've seen potential issues involving that, that you develop some type of monitoring program to monitor the condition of your pipeline throughout the years.

The next is to conduct site-specific visits to enhance visibility to porch geohazards.

And I would say from our inspection that part of the inspection of several operators that when we're on the right-of-way, it was really important that -- I think when we were pointed to a right-of-way, this is where the pipeline was but it actually was not there.

It had moved some.

That's where, by doing more site visits, by doing more with your pipeline, you ensure that you know where your pipeline is and observe those conditions on your pipeline.

Another one is to install equipment to monitor land movement and potential strain on the pipeline.

Gery referenced this a little bit about to monitor the total strain capacity on your pipeline.

Monitoring of weather conditions and changing weather patterns.

And that's important not just for land itself moving but for rivers and things that are addressing -- when there's riverbanks scouring and the bottom of the river because exposed pipelines, to do that.

And another one is to develop and adjust mitigative measures to prevent threats associated with geohazards.

There are different things that can be done to help address your geohazards and to come up with different ways to mitigate it, and there have been some unique ideas that have come up that operators are using to mitigate some of these potential threats.

So a little wrap-up of what we have here at PHMSA, in the presentations, we do have the reference to the advisory bulletin that we talked about.

It has my name if you have questions on the advisory bulletin, I'd be happy to answer those, and a location to the failure investigation reports that Gery talked about.

So with that, I would like to turn it over to Zoe shall with PRCI, she'll talk about the pursuit of geohazard threat management and the work they've done, and she is their Executive Director of business development and strategic engagement.

She's responsible for identifying opportunities to advance PRCI's growth strategy as well as developing and leveraging PRCI's industry relationships.

And since 2018 is when she joined PRCI.

She has tirelessly sought to improve the value for its members and industry at large in her role as senior program manager.

Welcome and I turn it over to you.

>> We'll see if we can get to our third technical difficulty for the morning.

>> That's enough.

We've already had two.

>> Will it load?

>> While they're loading it, first, I'd like to say thank you to PHMSA for inviting us to participate.

In listening to the presentations that were already given, I'm hearing a lot of terminology that you'll see repeated in mine, when we talk about strains, girth weld, IMU, uncertainty or underestimation.

These are some of the things that really prompted PRCI to do the research in an effort to enhance operators integrity management programs backed by defendable science.

And that's really the key to all of it.

We'll go through a couple of my slides before they're up.

I'll tell you a little bit about PRCI.

PRCI pipeline research council international.

And we are a collective of the world's leading operator companies, vendors, equipment manufacturers, service providers, engineering firms, and other industry partners who support the industry.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

What we do is we pool our resources in terms of both financial and human capital in order to deliver relevant and applicable solutions to industry problems.

All right, so we'll just move right along here.

This is who we are.

Here's a little bit about our mission, which I touched on.

One of the things that we want to incorporate into research is the broad dissemination of results.

What good is it if you don't know about it?

And that's really one of the keys to our success.

As I mentioned, we are global.

This is just a snapshot of some of our membership, and we rely very heavily on the technical expertise of our members.

One of the things that sets us apart is our peer review.

So once the research project is done, obviously we take quite a bit of time to technically challenge the results to make sure that we have done our due diligence.

So let's jump into geohazards.

With PRCI, one of the first places to go is to see whether or not we have a compendium on the particular topic, and it just so happens that we do have a compendium on geohazard research.

This was updated in February of 2022, and it covers over 30 projects.

The topics within these projects are things such as monitoring technology such as drone-deployed, satellite, LiDAR, remote sensing and spatial information technology.

We've got strain and loading stress topics.

Monitoring techniques for rainfall and flooding.

Monitoring and assessing geological threats, and that would include things such as channel, ground and bank movement, scour, mining subsidence, frozen ground, uplift, mud, some of the things that Gery had touched on.

We've got seismic design mentioned in here, along with remediation techniques.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Just to give a broad overview of our recent history, we've invested approximately a million and a half in the last five years for geohazard related topics, from assessment to analysis, and you can see that the heavy emphasis here is in guidance.

I'd like to talk a little bit about what we've got going on currently to give you a little more information.

One of the first projects that we have still in play, this has been going on for a number of years, is to modernize the assessment of water crossings.

It was designed to facilitate more efficient and effective integrity management of water crossing pipelines through establishing sound monitoring and mitigation criteria and practice.

Within the scope, we have three objectives.

The first is to supplement and strengthen industry consensus standards and we do this in the development of screening and assessment level analytical and risk tools to identify which crossings may be at risk for flooding and requiring monitoring or mitigation techniques.

The program also includes field verification to test the applicability of advances in vortex induced fatigue criteria and vibration response models.

The second objective is in developing technology.

We look to leverage NOAA's that weather model to create virtual stream gauges to diagnose the probability of loss containment.

This allows for a more focused resource deployment.

The third objective is to promote the new knowledge through fluvial, geomorphical and related engineering principles to identify potential exposures at river crossings, including field testing and verification of channel, scour and bank erosion.

In the pipeline right-of-way crossing monitoring with satellites, this work is to provide the pipeline industry further understanding of the current capabilities and limitations of combined synthetic aperture radar, also known as SAR, and high resolution optical satellite imagery for the monitoring of pipeline right-of-ways which span river crossings.

In this project there were four geographical areas analyzed, including Canada, the United Kingdom, Louisiana, and Arizona.

This was published last week so this is hot off the press.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

The practical girth weld evaluation criteria is what I would call related project.

It wasn't specifically designed to address the failures through geohazards but it's obviously heavily related.

The project objective is to provide practical guidance that will prevent failures due to weld strength mismatch and this in hope, hope, I say, will affect the girth weld standards such as API1104 and CSA662.

The common river assessment and information sharing platform is a specific approach in support of APR -- excuse me, API recommended practice 1133 to develop a nationwide river risk database and visualization tool.

By leveraging detailed scour and erosion assessments at water crossings throughout North America, we intend to establish a baseline protocol to determine which crossings are at risk, evaluation of flood events that require additional assessments, clarify how long the collected site-specific data is good for, and when to reassess.

Oh, excuse me.

I thought we were in a laser light show at a pink Floyd concert.

Appalachia land slight activity characterization and warning.

This builds a regionally focused proof of concept approach that supports understanding the viability in landslide movement rates and sensitivity to integrate into PR CI members geohazard management planning.

The initial phase builds a foundation to link the velocity and sensitivity data obtained in the current scope with hydroclimatic data within machine learning models to support data-driven understanding as to the sensitivity in different regions and landslide types in hydroclimatic inputs.

This supports proactive operational response and addresses regulatory requirements.

And what makes this difference, obviously in terms of proof of concept, is that it's regional.

Boy, I really seem to like that laser button.

Let's try that one more time.

There we go.

Assessing interactive threats at pipeline waterway crossings is another of the projects that we have on our 2023 roadmap, which I forgot to mention about.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

As we enter the new year, we've developed a suite of geohazard projects to pursue, and so these are some of the ones that are going to be on the docket for our members.

In assessing the interactive threats, these are studies and projects being implemented by pipeline operators that focus on the integrity threats due to natural forces regarding hydrotechnical considerations.

So very specifically flood-related.

There are geotechnical considerations as a result of hydrotechnical threats.

In this scope, we work with the pipeline operators to identify, reviewer and manage where there may not be a threat at a waterway crossing but instead a geotechnical threat caused by bank instability.

The data is expected to help operators build a more robust integrity management plan, reduce geotechnical incidents, maintain business continuity, and one that we don't say often enough, support the reputation credibility.

Operating range of strain gauges, this says it all.

This is all about the strain gauges.

There are the three types that are going to be tested to determine the operating range, what happens out of range, and of course come up with some operator guidelines for use.

That one's pretty straightforward.

And the last of the projects that we have on our 2023 roadmap is the strain demand estimation.

The pipeline industry has to consider the impact of the geotechnical hazards, specifically on pipeline -- excuse me, specifically as it relates to IMU ILI tools, they infer pipe bending strain based on curvature however, they do not report pipeline uniform axial extension strains and can thus underestimate the strain state of the pipeline, something we touched on previously.

The proposed research will develop and present a three level analytical tool that will augment IMU ILI data to estimate the total pipeline strain to improve the integrity assessment and pipeline safety.

The level 1 is conservative load data requirement screening tools.

Level 2 is empirical equations considering the pipeline, soil and slope data.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

And level 3 is the detailed finite element modeling tools.

And those level 3 modeling approaches will be presented as a best practice guidance on which types of models should be used under what conditions and what analysis parameters are most important to consider.

So that just leaves us left with what is the big picture looking like?

At PRCI, one of the things that we do is try to identify what we can consider primary concerns in the industry.

We, as in not just PRCI staff, we rely heavily on our members to bring that forward to us.

And we try to focus our resources on addressing these concerns.

We've had several in play over the past couple of years, mechanical damage, effective and efficient crack management, greenhouse gas emissions, and another one that we're looking at is geohazard, and very specifically geotechnical hazards, river crossings.

You can see our developing strategic research priority that we will put for consideration to our members, has five key areas that we'll be focused on.

But some of the considerations will include pipe exposure.

Mechanics have a lot of variability based on global watershed, and local channel characteristics close to pipeline crossings.

There's a change in the global weather patterns affecting rainfall and flood patterns, and so, for instance, the one in the 200-year flood event, not so rare anymore, sorry to say, many of us actually know that, and there's a need for better collection data practices, industry-wide sharing and a joint effort for understanding scour depth, erosion rates.

Also consider loss of containment during exposure.

Pipeline exposure occurs more often than loss of containment.

The current models for loss of containment can have high data demands and low predictive capacity of actual mode of failure.

Within the strategic research priority we're proposing seven projects.

In here, we will touch on channel monitoring, scour depth monitoring, flood event thresholds, cumulative effect of the events.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

We'll leverage the public domain as Gery had mentioned, Satartia was located in between four data centers, there's a lot of public information out there that we can rely on and build into our models.

Girth weld fatigue, prediction of remediation time linings, validation of mitigating options and of course one of the ones I would be most excited to see is establishment of an incident and near miss database for operator use.

Really truly missing across many, many topics, but this is this one.

So that's an overview, really, to the research that's being done and the key here is that it is defendable science, it is what PHMSA needs and it is what the industry needs in order to move forward in managing their geohazards.

So with that, I would say thank you kindly, and I would be happy to take any questions, and if I can't answer them, I can certainly put you in touch with the person who can.

Thank you.

>> Thank you.

So before we go to questions, and I know we already have some from our online folks, hopefully you all are thinking about them and will queue up, Mary had a comment she wanted to make and I also did, so, Mary, you want to --

>> I want to mention in the engineering research division, I'm familiar now with R&D projects, so there is one project that was funded for this next year for geohazard decision and risk modeling, so I think tomorrow afternoon the group from the R&D section will talk more in detail, but PHMSA has also kind of expanded out and has an R&D project that is being funded in this area.

I wanted to mention that.

I forgot to mention that.

>> So for my comments, this is where I put on my mean, evil regulator hat.

So in 2019 we issued an advisory bulletin that said, gotta pay attention to geohazards, look out for your pipe.

We saw many incidents, Mary mentioned the river scouring, we saw various types of land movement issues.

That was in 2019.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Three years later, we had a need to issue updated and reissue it because we are continuing to see pipeline failures due to land movement.

So I've been working with DOT for 30 years, and 30 years ago, if we had a land movement, we had a pipe failure due to land movement, it was Mother Nature, what can you do, right?

Our attitude was, well, the pipe failed, how can you prevent that, right?

And you move on.

We're in a different place now.

There is technology out there to monitor.

We have knowledge that there are changes in our environment.

We have awareness and we have responsibility.

So we're trying to communicate very clearly, pay attention, look at your facilities, be very aggressive.

In that advisory bulletin and in the research that's going on and in the presentations you heard today and the bulletin, it may not be a perfect solution.

There is information out there.

We should not be seeing pipeline failures due to land movement.

Things may happen, yeah, but the information is out there.

So it's our job, right?

Both as regulatory and as an industry, and even the public has a responsibility.

When you see those issues, you flag them.

You see the things of the pistol, you see trees growing up squirrely, you saw pictures in Gery's presentation, you've got land movement.

I went to the -- which one was it, Gery?

Hillsboro?

I was at that incident site, and I saw the trees.

And that's when I learned the term pistol butting, curved, right?

So the trees -- that tells you those trees have been growing for a long time.

That land has been moving for a while.

In that case the company was monitoring, was taking actions and had plans.

The other message is, even companies that have geohazard plans are still having failures.

So those of you that do not have a plan and are not monitoring, you're rolling that dice and there's too much information out there telling you this is a risk to avoid it.

You have the information.

You need to act on it.

I'm being harsh because I'm trying to get the message out there, right?

We have information.

Act on it.

So we have lots of questions.

So after I set that tone -- sorry, guys, please do feel free to come up.

We have three mics in the room and I know we have some online questions.

So, do you have a mic back there?

>> I do.

>> Okay.

What's the first question?

>> I'll direct this question to Mary.

What happened to the other two pipelines in the right-of-way that -- regarding the incident you reviewed, and was there testing on the pipelines post-incident?

>> Regarding the incidents that you reviewed, what happened to the other two lines in the right-of-way?

>> Yeah, I think it's referring to there were three lines of 10, 15, and 25 that were all on the same right-of-way and all three of those were reviewed and evaluated as part of the

corrective action order that PHMSA had issued on that pipeline, that all 775 miles of that pipeline system were included in that.

And the review of the operation of those pipelines.

So all three of them were evaluated.

And the one line stayed down longer for the repair but the other two were included in that evaluation.

>> Thank you.

That's the only question I have right now.

>> Anybody else have a question?

Oh, come on, folks.

Bill from the pipeline safety trust.

>> Gery, you had mentioned that the technology and knowledge is there for girth welds to be stronger than the pipe but a lot of operators are not doing that.

Is there a safety reason for that or is that just cost and time?

>> I believe -- I believe -- this is not working.

>> I'll check the mic.

>> I believe that our present API1104 standard just requires on the strength of the weld to be stronger than the material specification.

And so there is -- and then there are also the technology barrier.

A lot of operators count on using the cellulosic type electrodes and the cellulosic electrodes don't maintain that high strength as necessary to deal with some of the pipeline grades that are actually pulling higher tensile strengths than the specification that they're manufactured to.

I believe that this is an area where the industry can grow.

On the other side of it, these particular welds, if they were as strong as the pipe, would delay the failure, but based upon the loading that the pipeline experiences, you have to get there and you have to mitigate the loading, either through some sort of earth movement, some sort of shielding, some sort of drainage canal, drainage ditch, drainage pipe, to remove that loading from the pipe before it fails.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Stronger girth welds give you a longer time to failure, but they're not the perfect answer.

>> And I guess I'd like to add to that.

I think one of the things in the advisory Bulletin when it goes through the listing of the previous incidents, I think that's something to look at, is the history of some of these pipelines and the welding and it's very important that this list in the advisory bulletin includes several factors like that.

>> That list is not all-inclusive.

I would also hint that I think we're investigating an incident right now that may have a factor associated with soil slippage.

And I suspect if we were to go back and do a forensic analysis of incidents that occur, you know, 10, 20 years ago, that we might find more.

So it's something we need to constantly review and learn from and keep our eyes open to.

I think we often tend to look at why the pipe itself failed, we tend to focus, is it corrosion, is it cracking, weld failures at an old weld, that times perhaps we do not pay as much attention on the external issues that may have impacted that pipe.

One of the things that we'll be touching on very briefly are, you know, the risk assessment process.

We had a conference a few years ago that looked at interactive threats, and interactive threats is a huge issue when you look at geohazards.

It may not be just the land is moving; it may be the land is moving and the weld is not as strong as it could be, or it could be the land is moving and you're having, you know, in the case of water processing vortex issues happening on the pipe, and, you know, the pipe being stressed in different ways that it hasn't seen.

So do we have any more questions?

If not, we're going to break early.

>> If I could, I want to add one more thing.

We're going to talk a little bit later this morning about hard spots and flow reversals.

One of the themes that comes through is that they didn't -- data never goes out of date.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

I think a lot of this for us going back and reviewing data, there is information in there that I think like Linda mentioned, 15, 20 years ago we wouldn't have thought about it in terms of something with a geohazard but when you go back and look at this data, wow, there's hints and indications that we thought it was land movement and move on.

I think that's where data doesn't have an expiration date so I think it's important that everybody used their data that's out there to go back and continue to evaluate.

>> Putting a plug in for SMS, SMS says you always go back and look at your data and see what more -- what new learnings can you take away from old information, because sometimes, looking at that, that former data with a new lens, you might see something different.

Okay, with that, if there are no more questions, we're going to -- Brian?

>> Sorry, Linda, Mary started it.

You know, we all got together in Nashville back in October, and we -- I road tripped that meeting and noticed across the country how low the water level was.

All these large -- all these water crossings.

It's like, I'm thinking to myself, I'm wondering if pipelines are exposed, if people even know or if they're looking.

And maybe it's too late to do that physically now, but possibly with the LiDAR imagery and the satellite imagery, people can look because we know next spring it's going to be different.

>> Yeah.

>> And then it will be hard to tell.

>> A very good point.

One of the issues that came up was, it got dry and really wet, it was a cycling.

>> I know you said Brian, I'm with the PHMSA accident investigation division.

>> I knew Bill.

Before we break, and we are going to break, can all the PHMSA folks stand up, please?

I want you to know who you can ask questions of.

There's quite a few if you look around here.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

We have people throughout the room.

So please do engage with them, and I think we also have at least one state regulator in here.

Any other state regulators?

We got two.

Oh, we've got four.

We have a few state regulators in here.

And thank you, Bill Caram, representative of the Pipeline Safety Trust.

A few notable folks you want to connect with.

Let's break till 9:30.

We're running a little ahead.

Be back, we're going to start right on time.

Thank you.

[BREAK]

[MUSIC]

>> Ladies and gentlemen, we're about to begin.

Could you please move back to your seats.

>> Now it's working.

He had to come in proximity to the mic to get it to work.

Okay, so, we are moving into our next study.

By the way, this overall morning -- this talking about advisories and advisory bulletins and, you know, just these top hazards, as someone pointed out during break, this agenda is very tight and these are all strong messages, so it's implicit there, we're trying to send some strong signals here.

The next topic we're going to be talking about is hard spots, and NTSB recommendation.

Mary.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

>> Good morning, again, everybody, it's the holiday season, since it's 80 degrees outside, we have to make it 20 in here to make sure it feels like holiday spirit.

I actually have four layers of clothes on and I'm still cold so I can appreciate if you guys are cold.

The bright light setup, that will get us by.

Our next topic, we're going to talk about hard spots.

We're going to do some case studies, one case study and then we're going to talk about the NTSB recommendation and how we're addressing it.

For this presentation we'll work with Gery Bauman with accident investigation, so it's the two of us again.

We're going to do a case study for the Danville, Kentucky, incident that happened, talk about PHMSA's efforts to address these recommendations and then I'm going to introduce two speakers we have, ROSEN and PRCI are going to talk about hard spots.

With that, I'll turn it over to Gery, and he'll do the case study.

>> Thank you, Mary.

Here's a photo of the fireball that burned up 101 million cubic feet of natural gas.

This happened on the Enbridge, Texas, Eastern pipeline near Danville, Kentucky.

The total reported cost of this incident was $20 million, and the National Transportation Safety Board investigated this event, and PHMSA was a party to the investigation.

The NTSB report is available on the website -- on their website, and what you need to search for is PIR 2202.

Incident details, this was a -- I won't read the slide but I'll say that this was a hydrogen-induced rupture of a hard spot, a manufacturing defect on A. O. Smith pipe.

Historically the natural gas flowed from the Gulf Coast to the eastern seaboard.

Due to the development of the Marcellus and Utica shale, Enbridge reversed the flow of the natural gas from Ohio, West Virginia, and Pennsylvania to points south.

We'll talk more about this reversal and how it played into the rupture, but first we're going to look at the incident site.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

This is an aerial photo of the rupture.

The rupture resulted in one fatality, six injuries and the evacuation of 75 folks.

Five residents were destroyed, and 14 were damaged.

The rupture occurred at the red arrow there, and you can see it there just a little bit away from the railroad track.

A piece of pipe was ejected from the rupture site, and it landed where the orange arrow is located, about 400 feet away.

What we're going to do is take a look at the ejected piece of pipe.

This was the pipe that flew through the air.

It turns out the origin was easily located.

It was a crack in a hard spot, and remember, this is A. O. Smith pipe with a history of hard spots.

There are other vintage pipe manufacturers out there with hard spot issues.

I want to talk a little bit about the history of the hard spots with this particular operator.

Back in November of 2003, there was a hard spot that ruptured located near Moreland Kentucky.

This was the line section north of the Danville compressor section where the NTSB investigation was on the rupture south of the Danville compressor station.

In response to that 2003 rupture, the operator developed a hard spot ILI pigging program.

Then during 2004 and 2005, hard spot MFL tools were run in various line sections, and the hard spots were identified and/or removed or mitigated.

The LI vendor at that particular time did not identify the hard spot that failed at the Danville incident.

Again, in 2011, another hard spot MFL tool was run through that Danville section of pipe, and 16 hard spots were identified and these hard spots were remediated.

Again, the ILI vendor did not identify the hard spot that failed.

After getting this history lesson, let's look at the MFL raw data.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

What we have here is the data from the joint that failed.

You can see the girth welds on either end, and those dark blue areas.

Those dark blue areas that are circled are the hard spots.

The hard spot that cracked is shown in the two ovals that are below that centerline of dots.

The explanation for that centerline of dots is water dripping on the hot plate as it was moved down the pipe mill.

The current 5L standard classifies a hard spot of more than two inches in any direction with a hardness greater than or equal to 327 Brinell, and they call that a rejectable defect.

NTSB found the origin hard spot to be 5.85 inches by three inches with a hardness of 362 to 381, and that is Brinell measurement of hardness, and the plate was hard through-wall thickness from the OD surface to the ID surface.

The initial 2011 data analysis found 16 hard spots in that line section downstream of Danville.

A reanalysis of that 2011 data done in 2019 found 441 hard spots.

And when asked why the increase, they attribute it to significant improvements in computer hardware, software, and data analysis.

Now, we're going to have some lessons learned here.

The first one, in my book, is that older data can have new life.

The second one is, the vendor of the 2011 data was NDT Systems and Services, and they worked for other operators about the same vintage, performing 1320 miles worth of pipeline analysis.

If you are one of the operators that are relying on this older data from NDT Systems, there's an action item here.

Please consider these findings.

And then when you look at your data, please -- please look at your data quality and remember to verify the tool specifications and the tool capabilities.

And when you verify the data, remember that data verification involves more than just a few digs and a unity plot.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Now, let's see.

We've gone too far.

Hang on.

Here we go.

For the cause of the hard spot cracking, you need three things.

You need hydrogen from the CP system, you need a hard spot, a Martensitic type microstructure, and you need deteriorated coal tar coating.

As the pipeline ages, the coal tar coating does deteriorate.

Let's learn more about the flow reversal.

From 2014 to 2017, there was a flow reversal that shifted the station discharge to pipe with coal tar coating that was not designed for the higher temperatures.

There were different grades of coal tar, each with different temperature recommendations.

With the reversal, what was the suction side with its lower temperature rated coal tar became the discharge side of the compressor station.

The coal tar was subjected to a 30-degree Fahrenheit increase in the temperature, even with the addition of gas coolers at the compressor station.

Now, since 2017, the discharge section experienced a need for higher levels of cathodic protection, and this was an indication that coal tar was the breaking down.

There was significant coal tar deterioration, and the coal tar was the barrier to prevent hydrogen cracking.

With it gone, the hydrogen cracking could happen of the hard spot.

Now, in 2014, PHMSA published an advisory bulletin to consider the added risks associated with reversals, and I recommend you read it.

And there at the bottom of the page is the article that -- or the website that points to the advisory bulletin.

Now, we're going to talk about NTSB findings, and this one involves the PIR.

Now, I don't want to steal the thunder of Max and Steve, so I'll just let this -- defer this to their discussion later on in the week.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Now, these are the NTSB conclusions, and we can sum it down -- sum it up as three.

There was a hard spot and Enbridge underestimated the risk and the coal tar coating deteriorated.

NTSB made some recommendations to Enbridge, and it boils down to determine corrosion control systems effectiveness and consequences, study the consequences of any major change in operations in this particular case it was the reversal, and revise your integrity management program appropriately.

Now, NTSB made some recommendations to PHMSA.

The first one was to revise the PIR.

The second was to educate the pipeline industry about hard spots and this rupture.

And that's what we're doing right here today.

Now I'm going to turn the presentation back over to Mary.

>> Thank you.

Thank you, Gery.

I think one of the things, I don't know if you all noticed it, it was the line 15 -- line 10 -- which line was this?

15.

In the briefcase study we did, it was line 10, 15, and 25, so this is one of those lines in that same evaluation that we were doing on the land movement issue, and so when I talked about in my presentation about the corrective action order that was in place, the southern region did initiate the corrective action order based off the hard spot and that's the one that the southwest region amended to include the geohazard.

The work being done on hard spots is still being done by the PHMSA southern region.

In light of the recommendations -- the presentation disappeared.

Glitch number four.

I don't have any jokes or any quips to say so I can't pass the time.

[laughter]

That's it, okay.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

So what I'm talk to follow up on Gery is what PHMSA is on doing in response to the NTSB report that was issued.

One of my new roles for the engineering research group as the technical advisor was to prepare a response to NTSB.

First order of duty was to work through this one.

So first of all, to look at it, it was to go back and just evaluate the history of hard spots.

We all know that hard spots are a manufacturing threat, so just to kind of bring everybody back up to speed, and that there is hard spot magnetic flux leakage, tools that are used to detect hard spots.

Historically, from my part, we've always heard about A. O. Smith pipe and the issues with A. O. Smith pipe and hard spots, but I think we'll discuss later, it's not just the A. O. Smith pipes.

There are others that are subject to hard spots.

And there continues to be a history of failures including hard spots.

Again, I think it was one of the ones where we're trying to prepare a response to the NTSB recommendation, learning as much as we can about hard spots history, and so referring back to what we mentioned in the last presentation about data, going back and looking at some of the old data that was there.

I know personally I was involved in a few accident investigations and when there was an incident that was involved and it came back it was a hard spot, when tools were run, you'd go back and do another run and there wasn't another hard spot on the entire line.

So it's like, okay, you had the one hard spot that had a failure type of thing and then you run another tool and there's no hard spot.

That's where going back and reevaluating data, I think is kind of critical moving down this path.

So looking at what we're doing, PHMSA, from recent actions.

This is the NTSB recommendation.

The first was to advise pipeline operators of the limitations associated with hard spot MFL and the analysis to determine whether a hard spot exists, and then it's to say reinforce the industry practices when it comes to ILI.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

As part of that, in order to do that, what we -- what PHMSA has responded and what we are in the course of action right now of is to review accident and incident data regarding hard spots and the appropriate methodologies for detecting.

That's one of the things right now we're kind of -- I'm doing a data collection, working with folks in PHMSA and reaching out to others to get more data to learn more about hard spots and what has been done in the past, and so we can take and learn from what was being done in the past and what we need to do moving forward.

But it's also to look at appropriate in-line inspection technologies for different anomalies, including hard spots.

A big part of our response is to develop this course of action, and so I have mentioned working with -- I haven't worked -- reaching out to look at hard spots but a big part is communicating with ILI vendors to determine the available tools and technologies.

That's why we have ROSEN in here that will discuss some of the things that they have come across and continue to do that.

We're going to meet with other vendors and go through and see what's available out there and look at the way that they've been used in the past and what their planned uses of those tools are in the future.

Also I want to reach out to individual operators that have had issues with hard spots, that have hard spot management programs, to reach out individually with them and to see -- to you all to see what you build in your program, how you've adjusted your program and how you plan to do that moving forward.

And then the last is, and I think Linda had talked about it, we're talking about having another public meeting maybe in the early spring of 2023, so to come forward with what we've learned by that time, in 2023, to have those -- [no audio]

>> The TDC database is now searchable by anyone, so if you go to our website, you can see in the little red circled area, you can log in as a guest to sort of peruse what's available, and you -- while we would love it if you did the work there, we will also make arrangements to ship the samples to you.

Another topic that's come up time and time again is data, and consolidating data, looking back at data, the fact that it doesn't have an expiration date.

So one of our new efforts is in what we call the virtual technology development center.

And, actually, it started out from the NTSB report-out on the -- excuse me, Marshall, Michigan, failure back in 2010, asking in in-line inspection tools were as good as they

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

say, but the point of this is that, as data comes in and we collect the data, then we also have the data to mine.

So we're trying to advance through data as well.

Let's just jump right into the hard spots.

Based on some of Mary's comments, where to go, I would say first go to our compendium.

We have one on hard spots.

We actually have one on PIR as well, but that's not included in today's presentation, but just for your information, it is there.

This particular compendium contains reference to over 50 projects.

I think the earliest date of publication I saw was 2008, but the subject matter is as technical as you can handle.

It goes really far into the depths of metallurgy, fracture mechanics, but it also takes a look at material properties, seams, defects, tools, ILI, NDE fitness for service, repair, welding, so you name a topic, there is a subsection in this compendium for you.

Within these presentations that are posted, these are live links, they're not just my fancy way of trying to identify something with an underline.

So you can get to the material.

So I want to talk a little bit about our research in the past five years, and not stand on my toes.

My calves are beginning to cramp.

So in these first two on magnetic flux leakage of small defects in line pipe and the calculation of field due to reluctance variation zone, we evaluated the MFL technique in detecting pipeline defects.

It involved obtaining data on the leakage fields produced by a wide variety of defects and evaluating the effects of uncontrolled variables that might affect that leakage field.

The program was divided into two parts.

The first objective was to develop a method to calculate the MFL for defects common to buried pipelines.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

To accomplish this, a series of four time sharing computer programs were written to model the MFL phenomena.

The programs can model the MFL produced by inclusions, voids, cracks, corrosion, and of course hard spots.

In the second project, the computer programs were verified successfully by comparing the experimental MFL signature to the results obtained using the computer model.

The next project, multiple in-line inspection technologies, many of you are interested in, and these are the combinations of technologies evaluated by collecting and comparing information on the capabilities of different technologies, and evaluating the operational requirements of each.

There's a long laundry list of results in this particular project, a few of which I'll mention.

Definition of important defect characteristics, evaluation of inspection technologies and determination of inspection technology capabilities and limitations.

Evaluation of inertial mapping and caliper capabilities and evaluation of technology combinations.

Based on those results, several examples of combinations of technologies were identified that can be successfully used to detect, locate the position of and characterize the different types of defects.

The result of this study also identified what in-line inspection technologies are best for particular circumstances and the conditions under which the technology would provide optimal results.

In the pipe defects detection study, the purpose of that particular project was to perform the study to determine the electrical and magnetic characteristics of three types of pipe defects that are in contrast to the surrounding pipe material, one of which, of course, was hard spots and stress cracks.

It is also the purpose of the project to develop an electromagnetic method to locate the defect characteristics mentioned in situ.

In our assessment of NDT needs for pipeline integrity awareness, we did this to reassess the industry's perceptions of NDT needs and to recommend areas of research pertinent to those needs. The project included two surveys.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

The surveys covered pipeline integrity issues, NDT technologies, and perceptions of both operators and vendors regarding the need for new or improved inspection capabilities.

The survey responses showed one of the four most important pipeline integrity issues was of course hard spots.

So a little bit there.

One of the more influential pieces that we've done in recent years is called NDE 4-11, it was the hard spot NDE evaluation.

One of the things that this project did in particular was manufacture hard spots, and they did that through a laser process, quick cooling with water, and they were trying to produce an MFL signal that was more conservative than the NDE counterpart and they did in fact do that.

This is a reliable method for manufacturing a defect and the reason of course that you need to do this is because there really isn't a lot of hard spot sample laying around.

If it's there, we want it, by the way.

>>> Actually, lightning strikes is a natural beyond the drunk drivers or other things, we see a fair number that happen when there is a project going on. And a lot of times, the failure could have been avoided through better communication, planning and has hazard assessment from the crew. Sometimes, things get slippery, but, in my experience, personnel do a pretty decent job of talking about threats in their tailgate safety sessions. Something that's pointing to a potential need to improve some of those. We've spent a fair amount of time talking about -- geotechnical issues. The one we can't do a lot about are lightning strikes. We do get a fair number of those. The geotechnical and, yeah, we have hurricane damage that causes a fair number of incidents and accidents each year. But, you know, it seems to me that the heavy rains and floods and geotechnical sub C Sub C -- things, I think Linda said it best, for those that can't speak to anything they're doing in that regard, they're way behind the curve. We're seeing failures happening with companies that know the threat and are attempting to deal with the threat and not getting there in time. That's, well, that's not good enough, right? We can be better, and we're working on it. for excavation damage, we've added gas distribution incidents into the table just for sheer Volume. That's where most of them happen. and for the most part, if one of these incidents or accidents is due to the excavation excavator, it's contributed to excavator practices. If the facility was not located, we're calling that not followed. Just, so you can keep track, that encompasses the majority of the excavation

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

damages. Sometimes, there are communication issues and maybe some procedural issues. for internal corrosion, we're seeing more of these type of failures than I would expect. We don't see nearly as many on main line piping as we do in the facilities. They're occurring on tank lines and relief lines and manifold piping that's difficult to pick at best. I think, the threat can probably be mitigated best by improved flushing and cleaning programs. But, assessment is pretty difficult. So, I think, you can target, because, they're going to incur no/low flow areas, where the stuff settles out and accumulates at the 6:00 position. You can get a better handle on how your facility is doing in this regard by prioritizing some assessment locations and starting to build up an understanding where the problem is worse. External corrosion, I can say the same thing. Again, being in this industry this long, I always thought we were better at external corrosion and managing the threat. I think with ili, we're typically pretty good at finding defects in pickable pipelines. the other thing though is that, if we're, you know, if we're relying on ili assessment to prevent external corrosion failures, we're missing the boat a little bit. we're not really getting to the problem, if you want to prevent external corrosion, then you have to start with your coding and cp, and understanding where your current requirements are on the pipeline. So, again, all the risk factors, all the products, all of the failures, that's five years of data with some buckets that are pretty big. If I had it to do over again, I would redo this slide and only include accidents with injuries, fatalities, over a thousand barrels or over a million dollars, just to see if it looks different. Whether or not it does, I don't know. We all have so many things to do, but that's one that I think, you know, we're trying to use this data to get to risk. How we can target our resources the best we can. We're making progress, but there's more to make. A few quick slides, I did not prepare this presentation, I'm doing it for a coworker. This slide discusses ruptures in liquid and emission pipelines. When I was looking at it, it didn't seem right to me, it's showing 148 gas transmission ruptures and 108 liquid and by in large, we have about 4: 1 more accidents than hazardous liquids than gas. That's probably attributable to the stringent reporting requirements for liquids. The other thing that jumped out at me, for liquids, overpressure was the third most frequent cause and it doesn't jive with what's in in my head. They're sub caused classifications, right out of the 30 day reports. All of the information is publicly available to you. Probably, you have other avenues, you know, with better granularity. Again, it's just things that help target where it makes sense to look. And again, one thing we're trying to do is make some ties between ili assessments and specialty assessments -- and specialty assessments. these show years after an ili run after an incident. It's difficult to draw a great conclusion without more analysis and evaluation. But, if it's happening soon after a pig run, it probably means the frequency, the ili frequency should be improved to give you time to get to it. That's a possible conclusion. If it's happening further down the road from the pig run, maybe your, maybe the corrosion growth rates aren't as conservative as they need to be or the ili accuracy isn't as good as it needs to be. I'm not

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

offering definitive conclusions, hopefully things that are thought provoking. Again, getting back to preventing external corrosion to begin with, close interval surveys. So, let's see, 2/3, maybe in general, 2/3 have had close interval surveys. and close interval surveys really should point you towards where you need to make repairs or corrections to the protection. Maybe that's better coating or hard to say. If you don't have close interval survey, you're missing a valuable tool for preventing external corrosion. So, I'm going to switch gears to some of the trends that I mentioned. And the first one is a map of relatively recent accidents where control room response was not the cause. And it will never show up as a cause. In many cases, it increases the consequences associated with the accident. We're quickly going to go through these. One slide, I forgot to take off, the operator name. I'm really going to spend the last bullet for each. The first one, Wichita falls, the -- the leak indicated an unintended shut down. Second one, in North Dakota, the controller started the pipeline following rupture indication and he quickly realized that was not the thing to do and stopped after five seconds. In Colorado, I think that the controller restarted the pipeline for eight minutes before he realized that was not the thing to do and shut down. In New Jersey, they really suspected it was a control valve issue. That's something we've, we would have heard more than once. The controller, well, a, they're not thinking leak first, b, whatever the experience is, it's not leaks, it's operational issues. It seems like they go to control valves more than anything else. Long Beach, California. Multiple restarts and shut downs while they're trying to figure out why the meter readings were not lighting up with each other. They never had a leak. I don't think suspected that they had a leak. They just kept on trying to figure it out. What they did have was an operational upset on the platform that got them some very watery oil. And they felt like that was messing with the meters. So, and in Louisiana, that was another one, they think they suspected a control valve issue. They started and stopped multiple times, trying to understand the issue before realizing they had a rupture and started looking for it. And again in Edwardsville, Illinois, the pump was only started for a short time, it didn't increase the Volume, it was that reaction of the controller to restart as opposed to, hey, we have a rupture and everything is telling me we have a rupture. There's so many, I don't have to go through them all. I'll relay that our new southwest region director, Bryan comes from a high organization. We reviewed the information with him a few months ago, he relayed their training in the organizations says that you always trust the instrumentation. I think that's good advice. I don't think that was what was done in the cases. That's probably a good place to start. So, and so, to kind of capture all of this. There's no connection between, nothing that we can tell between operators, their procedures and their controllers, every single one of these was a different control room, different procedures. Yet, they all have a commonality that the controller, for whatever reason restarted, you know, commanded the restart of the pipeline without really confirming they didn't have a leak. So, solution. before I get to the solution, let me also say, the role in inspection and enforcement, this is an issue

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

that's hard to pick off in an audit. It's hard to predict how someone is going to do something and maybe from an audit standpoint, if we spent time looking at the abnormal conditions and the personnel responses to the abnormal conditions, maybe we'll get closer to something where they may not do what you want them to do. Personally, I think the solution and probably it involves better training and utilizations of similarizations, I think we can do more. I think a lot is done related to training. If you evaluate or attribute what we talked about to training, it can certainly be better. I think there's a way to improve on that. One way or the other, get the controllers to think leak first. That hasn't been happening. Here, the ruptures occurred before they were mitigated. The ili was down grated on the excavation reports of the other anomalies. The pressure reduction was not adequate, not conservative enough, based on more like what they didn't know about the anomaly and it ruptured prior to repair. And there's a natural gas transmission rupture, pretty much the same thing, all though, you know, I don't know that a pressure reduction was taken, the anomalies reported were not actionable as reported. They were, I think the ili data was a little bit old, and it was probably, I think the first ili run through that pipeline, they didn't know much about corrosion growth rate and one of the things we're starting to see is the interaction of anomalies, individual anomalies. I think, until you know a lot about your pipeline, if, you know, I think mistakes are being made by looking at anomalies by individual defects. in fact, they may be interacting with each other. It could be because of lower level corrosion in between the anomalies or for whatever reason, I think we can be better, but, it's hard to say. I think, maybe I'm getting ahead of myself. Here we go. Anomaly interaction criteria is an area we want to pay attention to and make sure, until we know a lot about our pipeline, maybe we should take a conservative approach to, you know -- there's different thickness and length and specifications to follow. Are they adequate, maybe not. Maybe if we can prevent the failures by being more conservative, that's worth considering. Ili frequency. I've been calling it what I think as a just in time mentality. Where, if, I would probably do it myself, you know, if you can avoid $250,000 in excavation cost by running a tool a year earlier, I would imagine those are not mentioned to us, but, I think if we're finding that we're not pick -- pigging frequently enough, maybe we should shorten the frequency of inspection to make sure, and, the other thing that does, it helps build a better database of information. You get more reliability and corrosion growth rates and everything else. Out liars, the things that effect accuracy. We know for certain that, magnetic permeability affected ILI -- so, the ILI accuracy is -- we've seen the failures happen because of the lack of that. All right, changing gears, one more time. I'm going to cover some excavation damages, which occurred due to horizontal directional drawing. This first is Downtown, Canton, Illinois before it was blown up. Up. You can see, what they called the annex to the opri host is completely demolished. The big building is the old opri house, it was repurposed to specialty shops. This incident was due to a directional pour. I'm going to the next slide.

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

Sometimes, we worry about the big pipelines. You know, we're making sure, watching the critical infrastructure. This was a 1 inch service line. As far as I can tell, it was damaged on the initial bore and opened up on the pull back. It was about a foot away from the foundation wall of the annex. And gas filled it up. They smelled gas, the crew did, they Called the gas company, they didn't call 911. The gas company was on site and the gentlemen who died just completed squeeze off of the service line and isolated the leak and stepped back a few feet and the building went up. So, one fatality, 12 injuries, and 2 hours. It took two hours. Nobody was -- evacuated and no gas detector was taken inside the building. It could have been different. This example is Durham, North Carolina. and again, I think these pictures really tell the story. You can see what it looked like after the explosion. in the upper right, you can see what it looked like before the explosion. And again, after very soon, very soon after. This was excavation damage to a 2-inch main. and again, two fatalities, five injuries and $20 million in damage. This one took an hour to ignite. I think that's what we believe. But, you know, you take a look at that drill rig, there's a lot of this going on. They're everywhere. The guy in Canton, I think, somebody from there forwarded something. He put his drill rig up for sale on Facebook marketplace after that accident. Anybody can buy and use them. They're out there. They're out there and most of the time, you're getting locate requests, but are you doing anything more than going out and laying painted flags. Usually, locate will tell you if they're doing hdd. When it comes to trenchless technology, there are common elements, they're typically in congested areas and a lot of utilities are in the ground. Sometimes, you don't know what got hit, a main or a service or what. Gas migration, it doesn't have any place to go besides the bore hole. It will follow the path of least resistance. A lot of times, that's the foundation wall. Especially with concrete and pavement and everything else. The release isolation increases greatly. You don't have a good place to squeeze off, necessarily, especially if it's all pavement. You got to have the valves and know where they have and can't be afraid of losing them. If you're going to lose a few hundred customers, so what, isolate the leak. Those guys spent essentially two hours trying to get down and squeeze off the 1 inch service line. They could have shut a couple of valves off and only lost 10 customers. So, with regard to excavation damage or hdd, more than 50% can be eliminated on the initial bore and the pull back. That's not new to anyone in the room, I'm sure. Evaluate 1 calls for hdd. Know where they're crossing you and who's doing the work. That's yours truly trying to set you out. I was at a meeting earlier this year, I heard somebody from the industry say, there's nothing more we can do. And I'll say, bull on that. There is. It's not free, but it can be done. I think that's a good place to start. Preplan the emergency response so that you know, if you have work taking place in congested areas, you don't drill yourself. How would you attack this if it got hit? I think that could be helpful. Treat every single crossing, knowing that lives are in the balance. Give it the importance it deserves. Train your personnel on the special concerns with hdd. So, and I touched on it a little bit. Many of the high

consequence failures show ineffective emergency response. I don't have the exact numbers. I think you can look and finish the data and find out there are approximately 80,000 leaks due to excavation damage each year and we have about 50 reportable incidents. What's the difference? It's bad luck or whatever. Why are the consequences so bad? Sometimes, you know, the excavation damage isn't always the story. You know? It could be the emergency response. So. Know it, understand, do better. And something that I think I see because I've been around for a while. natural gas, in particular is pretty darn safe to work around. Does that breed complacency? Bad habits? It's hard to say, if you do something the wrong way enough and it never costs, it never rises to your attention, you'll keep doing it until you learn that wasn't the right thing to do. So, and my message to the industry, use your cgi's and isolate a safe distance from the release and you can prevent injuries and fatalities. That's that.

>> You tell the story that scared the guy and he put it up for sale on Facebook marketplace, his behavior may be more admirable than the person who bought it. What are you doing Arnold -- around 196.

>> I'm not the guy to answer that question. Question. I can try. Our state programs and community liaison folks, they're working on the excavation damage enforcement and getting out there with the training. You know, I used to do probably 20 excavator meetings a year for a lot of years. You know, I think increasing education and awareness, you know, I believe, you know, 30 years ago the big thing was getting people to call before you dig and ten years ago, getting to hand dig within two feet of the Marks. When you get better with each of the things that rise to the top, we'll need to improve communications. That's my thought.

>> Yes, we have a question online. What does cgi stand for?

>> I'm sorry, it's combustible gas indicator. It's the tool, it's the gas measurement and instrument used by gas personnel to determine whether or not gas might be building up in a building or for surveying where gas might be migrating underground, that kind of thing.

>> Thank you.

>> Linda? [indiscernible]

>> So, on the 196. We have a number of actions. I'll face you guys. So, we have a lot of actions going on with 196. The primary thing is to determine state adequacy, states have enforcement for compliance with state a 11 laws. Right? It's on them to take enforcement. If the state program is not what we consider adequate. If it doesn't have the sufficient criteria, then that Falls to PHMSA. We have a motivating factor to get all states adequate. We've when -- I'll tell you that the fallout is different. It's different for a

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

small company in Alaska to receive a federal enforcement action. Because, the numbers are a lot better than they would be for a state. There's a huge motivating factor for not only excavation companies, but to states to move the ownership of enforcement to the state. That's what we want to promote. The other thing to talk about with excavation damage, we know there are companies. You've seen it. If there are cable companies here or online. Fiberoptics. Who's seen them and they just trench, trench, trench. The logic was we'll use duct tape and tape it up. Does that work for pipelines? No, but you can see where that's going on. I'm going to ask, John may have information on what they're doing in Minnesota. Does that answer the question, does that help? It does, okay. The answer is coming up.

>> Yes, certainly, there's a 196 element for the states deemed inadequate as far as the programs. I would say, what's specific to the hdd damages, a lot is happening and that's where the states come in, some states, when we're talking to pipelines, we'll be out there investigating the damages and we see things with the potholing techniques and daylighting techniques and obviously, there's the flip side where things aren't Marked in an accurate fashion and you're looking at the piece of the infrastructure getting damaged and we have the why. And we have the emergency response provisions that the states aren't looking up on as well.

>> And I have one more item. Sorry. Sorry. So, one other thing, when you see a bad actor. Let's say you're in the state of, what state are you from? Texas. Okay. If you're in the state of Texas and you have an hdd contractor you see that's going through and causing all sorts of problems. We see the contractor having issues. They get done with the project and they move to Oklahoma. Who's from Oklahoma? Okay. What can Oklahoma do? Feds can't blacklist a contractor, they can't say, watch out for John's hdd. Because they're a problem. You know, it might be where you say, this company was causing an issue. You can't blacklist or black ball, people have a right to learn from mistakes, there are some companies and you see that, right? Where they just move on to different areas and carry their problems with them. So, I'm not suggesting that, but putting it out as an observation.

>> Thanks, Linda. We're going to get John up here and we'll talk about NAPSR
[applause]

>> Good afternoon, everyone. I'm the deputy director of the Minnesota pipeline safety and the chair for safety representatives. I wanted to thank PHMSA for having me come here today. As I was looking at the agenda, we have action packed stuff in here. Focusing on accidents, we'll also look at the section 114 initiatives and the inspection of those. I thought, with my time here, I would talk about what do we do as states and what is NAPSR and we'll talk about excavation damage and what's our role and what's our role

with inspections. A little bit about NAPSR. We're -- there there there's a bunch of NAPSRs out there. We were created in 1982. That's the national voice of the safety regulators. We represent 52 state agencies. We have 75% of the pipeline work force. A lot of that, being focused on gas distribution piping. We have oversight of 2.000000000 miles of pipeline. That brings the national gas to the home and using it for heating and cooking and all of that stuff we need day-to-day. And we have oversight over transmission pipeline, must of that is the intrastate pipeline we have in the respective states. Most of us have hazardous pipelines and Liquefied plants and propane gas systems and underground storage that we regulate and a number of states act as interstate agents where we do interstate inspections and inspections in the state. Some is taken care of by different agencies and we're all committed and focused on underground prevention in the states and working with the operators to make sure they're safe when digging around underground utilities. We'll show a couple of maps to show the NAPSR regions that we have by the number of operators that we see. Looking at the distribution and transmission assets we're working with and conducting the inspection on annual basis. We broke it into a various region. We're meeting as a region and group. Bryan talked about, when you have an accident, you want to make sure you're taking the lessons into your shop and making sure you're getting those to other folks to learn from. This next slide looks at the private gas distribution companies that we oversee as states. The next one, looking at the municipally operated gas systems regulated by the states. When we're talking about the gas transmission through the state lens, many of the companies are operating gas transmission lines. the lpg's that we regulate throughout the states and the gathering. We'll probably see changes in the next year on the behalf of the states. That's the lay of the land as far as 2021 was concerned. As NAPSR, we're involved in the committees out there, many of the groups out there, having educational conferences such as this. We have 40 various committees where the NAPSR community is involved with. We have about 80 of the members involved in the various committees. Obviously, like most of the committees, we're focusing on regulations, standards and technologies and best practices. I believe these slides are being made available to you. We have hyperlinks in there, you can follow that link to see where the NAPSR folks are involved. And another thing to think about as we're getting here today, is just the relationship between PHMSA and the states. We're out on a day-to-day basis making sure that the companies in the respective wheelhouses are following the regulations. We're involved in the regulations and rulemaking process. Obviously, PHMSA, when it comes to entrusting the assets, states can do that as well. they'll have more entrusted assets. You may not know that many of the states are funded by PHMSA grant programs.

>> A little bit on the funding piece here, just, again, about 80% of the funding, or up to 80% can come from federal grants. We have programs for gas, underground storage and

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

the work we do. for Minnesota, we utilize the one call in the states. As for grants, there's a listing of requirements we have to follow as the states. So much like the pipelines have regulations, we have to follow regulations and grant guidelines. You can see the reporting on annual basis, where we're out reporting the inspections and the number of qualified inspectors and the investigations we'll conduct. I'll get into those stats as well. we're also evaluated. We have a PHMSA inspector come out to the shop and they're looking at processes and procedures and they're looking to see that the staff is qualified. I'm going to start talking about the roles of the states. I'll get to the last bullet first. We're going, it's important to to remember, each state differs. We're all out there doing education on a day-to-day or annual basis, we're conducting education with excavation contractors. In Minnesota, we're doing that in the string months before everyone starts digging, focusing on best practices. Especially educating folks on how to stay safe. We're doing education with the pipeline operators, and we'll focus on pipeline safety regulations and we get education on new practices and technologies that the operators are using in the states. We're conducting the inspections and we're looking at compliance and plans and practices. When we need to, we're utilizing the enforcement processes to address noncompliances. We're out there doing investigations on a routine basis. Some states, we may have more reporting criteria, maybe it hasn't reached the level of a PHMSA report and there's not property loss or fatalities or injuries. It may hit on the respective states, looking at the people and property and the environment, how do we protect the people and how the operator can impact that in a positive way. I think a big thing you may notice is the staffing we have. In our shop, we we're about 20 people. Some states may have two or three people. In our shop of 20 people, that's our group, that's the folks that do the enforcement and the folks that worked on interpretations for regulations. Those are the folks that do the education and response -- respond to accidents and incidents. Sometimes, you have one to two people doing the investigations. Based on how the states are set up for that, the respective state may or may not have jurisdiction over lp or over damage prevention. It may go into a different agency at the state. And I know, specific to our organization, we're part of the department of public safety and some may be part of the utility's. Funding is another piece. Some states may receive general fund appropriations. We also have the document I've linked to as well. If you want to learn more about the stringent regulations or the overall scope of how the different states differ, you can find that there as well. a little bit about inspections, we'll touch on this later. Obviously, we're doing inspections like anyone else, it's part of the safety process. You have the regulatory requirement and under statutes, we have compliance inspections. on behalf of the state, we're out there doing that with the operators. Some of the guidelines require for all of the plans, programs and procedures that the operators have, we have to hit that at least every five years. We're out looking at the operator oq plans, emergency response plans and o and m procedures and we're looking at the control room management plans. Lots of

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

different plans to look at. I know, it's specific to Minnesota, we aim to get out to all of the operators each year, we're looking at those plans on annual basis. We need to hit one to two to stay within the five year compliance cycle. We're looking at the procedures that the operators are using and the training and qualifications for the operator and and we're watching them perform covered tasks in the field to make sure that the technician qualified and they understand the plans and procedures they have to follow. We're looking at their facilities and looking at the reck stations and meters. Making sure they're in compliance and being maintained. One of the stats that we use for the grant is an inspection day. Think of that as a time where a trained, qualified inspector is out doing compliance reviews or maybe doing an investigation. Each state inspector is required to -- in 2021, states accrued 24,000 inspection days. and if you'll look at the buckets, they're the different inspection types. The standard comprehensive bucket is a routine o and m procedure and records and things like that. Obviously, getting out on design packages for construction work, we're going to the field to observe welding, fusing, pressure testing. Looking at how the material and compliance is in the code. How are they transporting the material and is that bolted to the building like it should. The construction practice is not only in compliance with the regulars, but the operating procedures. We're looking at integrity management and the distribution plans at the distribution operators. We're looking at operator qualification and damage prevention. That's specific to the pipeline side. a little bit on enforcement. This is a break down of what was identified in the last year, 12,000 violations identified by states in 2021. The compliance actions are the actions to remedy the violations and sometimes, civil penalties fall into that as well. Sometimes, civil penalties aren't received at all. It depends on the consequences that resulted from that violation happening. Specific to investigations, you know, you heard a lot about the transmission and hazardous liquid investigations. The states are looking at the accidents happening. Certainly, we're looking at, you know, the compliance and the first thing, maybe I'll back up a click, I think many folks are familiar with PHMSA's aid group, the accident investigation division, they have a team focused on the transmission accidents and they're linking with the states in real-time, if we had a state reported house explosion or maybe an excavation damage with an injury. We're working in real-time, communicating specifics about the accidents. All of the states have an on call person or process where, if we have something that, you know, meets the reportable criteria at the federal or state level, there's a notification going to the group and we're taking steps to get out and contact the operator and getting out to the site. You'll want to make sure that the operator is making the area safe. That's looking at the distribution side, we're talking about gas migration, if we have a release of gas, do we know where it's going. If it's an open trench, gas is going up, that looks different than a directional drill where gas can be leaking into sewers and conduits. How do we make the gas get shut down, we have highly populated areas where the operator needed to know, I'm going to squeeze here and there. Sometimes, it's

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

getting the electric pulled and doing evacuations and things like that. After we look at making the area safe, we'll look at why did this happen? What was the cause? Failure, like we heard in the examples, not potholing or not accurately located. It can fit into some of the buckets, a lightning strike, you know, a bad fuse, we had the soil sub subsidence and looking for that to release. Sometimes, it's something out of our control and it can sometimes be controlled. Figuring out why it happened. Certainly, we want to make sure, how do we take steps as operator and the the industry to make sure we don't have these happen again. We want to learn from them and prevent them. Just another drill down on the inspection days we're accrued by states last year. We're looking at the accident and incident types. Focus areas, maybe specific to the upcoming year. obviously, you've heard about some of the focus and rulemaking. That's coming down the pike as they say. NAPSR wants to be involved in the rulemaking process, again, the rule that we have, being regulators, we we're interested in the rulemaking and what's going to come out and how do we regulate that. Funding, we look to stream line the processes and the inspection processes, making sure we're able to see as much as possible with the limited time we have. We respect the time that the inspections take and we want them to be efficient for all. we may have a improvements. You can find those on the website as well. If you're looking at the agenda, we're seeing new terms. Renewable natural gas, hydrogen injections into the distribution systems and the Carbon pipelines we're seeing, they're new things coming down the pipe for all of us. We're interested in focusing in the regulations, looking at the technologies out there to ensure that we maintain safety that we have now and that we can maintain the adequate level of safety as well. Are there any questions? I would be happy to take those. Those.

>> We have an online question. It's from Cindy, it's multiple questions. As a landowner on the proposed Summit CO2 route, Summit is refusing to release any risk analysis or safety information stating they're operating under the federal guidelines. I thought PHMSA said that the CO2 regulations needed to be updated. When is that going to happen before the Iowa pipelines are approved. We'll have our land taken from us via eminent domain if this is approved. Is the government going to help us in the area of safety?

>> Yeah, thanks for the question, this is Alan may bury. I can tell you, we're very much focused on CO2. This is a topic we'll have tomorrow. One, we have an active rulemaking going on now for CO2. We're assessing the gaps, perhaps, you've heard, we do regulate over 5,000 miles of cocoa pipeline -- CO2 pipelines. We're looking at other ways that they're operating and ready to change the code to reflect that. with that said, as we see issues on the pipeline, we have overall authority to act if there's an issue. We'll do that. And we'll be out there enforcing as these projects are developed. I can assure you of that. We're taking a look at how the public meetings are going and assessing the types of communications that's occurring as well. We're aware that some of the confusion that's

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

out there and we'll address that as well. Hopefully that helps, thanks for the question again.

>> Other questions?

>> Good afternoon, thank you. I'm Gery Kenny. Can you give us more detail about the interface with, let's say, day-to-day day, the interfaces with PHMSA and the various state representatives.

>> Sure, first off through the lens of the inspections. for many of you if you may not know, PHMSA has a training qualifications division. It does the training for the federal and state inspection staff. We bring someone new in and build out the knowledge base for the inspectors to do the work they do. We may get into the inspections themselves. I talked about the evaluation process and the inspector is watching us what we do and they're looking at the processes and procedures. Maybe we found something, we're one of the sticky spots in the code or maybe it's not a complete black or white area. We may be looking at interpretation and we'll look at the rulemaking and standards group to go through and request an interpretation on something. Maybe specific to, you know, new technologies or something we may see. We may check in with the engineering group, you know, trying to say, we're seeing new technology in the state, have You seen it at the federal level. Sometimes, we're kicking around the complicated sections through NAPSR as a whole and the technologies and through PHMSA as well. and especially on the accidents and high profile incidents and we're tag teaming on the plans. We're thinking about how to get this up and running safely again, having that discussion as well. Next question? Any other questions? Thank you. Go ahead.

>> Sure.

>> Don't want to Steal the floor here. Following, long Beach, California enacted a series of regulations covering interstate hazardous materials. PHMSA, do you think you can come at me on this one. Seemed to be a little bit more, I won't say prescriptive, but in regards to the integrative management programs, it seemed to be more onerous. in the states themselves, that's California. Everybody knows about California. Within the states themselves, do you see a wide variation on the interstate pipelines with regards to, with respect to the regulations themselves?

>> Sure, I think there's probably a couple of different layers there. First and foremost, we're talking about 192 and 195, that's the minimum standards. That's important to remember, it says in the book, these are the minimum standards. Through the rulemaking process, everyone's input, that's the minimum, right? Intrastate, the state can decide if there's the appetite for it and if there's an accident that happened or whether or not you need to add on to the minimums with something stringent. If you

look at the state programs with some more stringent pieces being applied. often, you may see a link to an accident that happened in the state that prompts the change. [indiscernible]

>> Yes, the document slices and dices the stringent. I think we have time for a 15 minute break right now, we'll come back in 15 minutes. [15 minute break -- resuming at 2:35]

[Please stand by]
>> Ladies and gentlemen, we'll begin in just a few minutes. Can I ask you to move to your seats, please.
>> Again, ladies and gentlemen, we'll begin in about one or two minutes. Please move to your seats.
All right, guys. We're gonna kick off the second half of the investigation forum. I want to introduce our next set of speakers and just to really express some appreciation for those that have dedicated their careers to pipeline safety. So we've got Bill Caram, the executive director of PST, and we've got Sara Lyons of NTSB, and we've got Rob Burrough, the eastern director for PHMSA.
>> I've been here at the trust for about two and a half years. I'm new to pipelines in that time. So generally, and I think today is no exception, when I'm in the room talking about pipeline safety I have the least amount of experience in pipelines of anybody in the room. So I'm learning every day, thanks to a lot of you in this room. I just try to bring that perspective. The public also doesn't know a lot about pipelines. So I appreciate you hearing that perspective today. A little bit about the trust. We were formed in the aftermath of a pipeline tragedy in Bellingham, Washington, in 1999. A quarter million gallons of gasoline ran through the creek of our town. It eventually ignited and it ultimately killed three boys, and the families of those boys and the community of Bellingham came together, learned a lot about pipelines in a really short amount of time and formed a watchdog organization. And part of the settlement with the Olympic pipeline operator, the judge really listened to the community and the families of the boys and asked the criminal penalty part to be set aside as an endowment for what became the Pipeline Safety Trust. And you can hear the judge's award that day it's not even David and Goliath, it's more like Bambi and Godzilla, and we actually have a Bambi and Godzilla display in our office to remind us of that. But she did encourage stakeholders to listen to us and I think that's been true, and it feels that way today. Thank you again for having us.
So our mission is to promote pipeline safety through advocacy and education, increased access to information, and partnerships with residents, safety advocates, government and industry resulting in safer communities and a healthier environment. And what I'll talk about today, before I get into focusing on accident investigation, is just what that means to us and how we implement that. So usually what I would do if I'm meeting with just PHMSA or just NAPSR or just the industry I'd have two circles and show our shared goals, but with so many here and so many on the live feed, we really have a lot of different stakeholder groups represented and I'm sure I'm missing some stakeholders or rightsholders in this, but I try to focus on that shade in the middle where we all overlap and that is safer pipelines and zero incidents. We want to put the Accident Investigation Division out of work, we want to put the pipeline safety out of work. So how do we work to accomplish that mission? There are certain things like Pipeline Safety Trust has a

representation on both advisory committees, G pack and L pack. We always submit comments on rulemakings and get involved in the process as much as we can, but we also have some set programs in place. One of those is the state website transparency review. Each state represented by NAPSR as Jon talked about, their state pipeline safety program has a website and we go through that each other and we rank that on best practices and its transparency and we release that review. And we've been doing that now for ten years and I think it's been one of our most successful programs. After ten years and I encourage you to read the report that's on our website and you can really see the progress that most states have made. It's pretty dramatic over ten years. I see Alex from Wisconsin here in the audience and just last year Wisconsin made huge, huge progress in transparency. And a lot of the feedback we've heard from the state program managers is, these are changes they've wanted to make and were told no for various reasons and having the Pipeline Safety Trust has held them accountable and get permission from their bosses to offer more transparency and overrule the lawyers on some things. So that's been successful. We also hold an annual conference that we just had two weeks ago. Unfortunately I came down with COVID just before and had to miss my own conference, but I see a lot of faces here in the room that were there. And we really the goal of that conference is to get all those stakeholders you saw a couple the media were talking past each other and when we can all get in the same room and look each other eye to eye and listen, some progress can be made. So that's the goal of the conference and I think it's been successful, though we certainly have a long way to go. We also started a state of pipeline safety blog series. We hired a data manager earlier this year, who's been doing a lot of data visualization for us and you know the PHMSA website has a treasure trove of data that hasn't been examined to its full potential. There's so much there he didn't know how to get his armed around it at first so looking at it state by state was a step to do that. And so we're eventually gonna get to all 50 states he's been doing one a month and just slicing and dicing all of that PHMSA data and drawing some conclusions. We got a lot of feedback from some of those state managers about some of those could use some context or things like that. So we've started working directly with the states on those blog series and it's been really, really successful. We've learned a lot and it's been really helpful for our data manager too. We also for the public, I think we all forget we're in pipelines every day and if a member of the public has very little pipeline experience. I was just there two and a half years ago. It can be overwhelming to get your arms around different types of pipelines, who regulates what, how they operate, what kind of risks are we talking about, what is integrity management it's a lot. So we've had this series of briefing papers that kind of walk people through all the ins and outs and the A, B, C's of pipelines. It's been a while since they've been updated, so we've been working on that over the last few months and you should see the updated briefing paper soon. I still think even though they've not been updated in a while, it's still a very worthwhile resource and worth sending people to, but I'm looking forward to launching the updated briefing papers as well. I will say we have expanded our staff over the last year and we've got eight employees now and I think four of us, five of us are working on this update of the briefing papers. One person wrote all of these Rebecca CRAVIN our program director and it's remarkable how much work it's taken five of us to update what one person did years ago. So a little shoutout to Rebecca. We also in that same vein have kind of specialized guides. We have a land owner's guide that's been enormously popular. We're looking to update that as well as soon as we're done with the briefing papers and we also have a guide for local governments where oftentimes we'll hear from city or county government, where a franchise agreement or an easement is coming due and they don't really understand

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

what their levers are or how all this works. So we'll work with them directly but we also have that guide. We also have a guide to rulemaking which personally I find riveting but it's not our most popular guide. So I don't know that we'll be updating that one. We have a couple new programs that we're excited about launching in 2023. One of these is thinking about how successful that state website transparency review has been and how do we use that model in other areas of pipeline safety. So we're looking to do a state 811 program review where we will look at best practices. I think there's broad agreement on most of the best practices that a state program should have, and so we'll work with all the stakeholders in coming up with that list, get a lot of input from the public, from the industry, and from the regulators of course. And we're gonna look at each state's program and see which of those best practices they follow and which they don't and give them a grade on that and hopefully that will encourage states to adopt more and more of those 811 best practices. So we are really in the very early stages. So if there's anybody who would like to offer some input or get involved in the development of that program, I encourage you to reach out to me.

And then finally, also the statewide transparency review, we're gonna look at doing an operators transparency review. The API recommended [lost the audio] ways to incorporate those values into an operator website. So we'll come up with what a perfect operator website will look like and we'll take the top X number of operators in hazardous liquid, gas transmission, et cetera and rate those websites on that and hopefully drive some improvement. So we have an ongoing list of all the improvements from the public perspective that we have for PHMSA on how to be a better regulator, enforcer, inspector all those roles that PHMSA plays. I've presented those to PHMSA leadership and they've been brave enough to ask for the feedback oftentimes. So I'll offer some in a minute here about accident investigation, but just more broadly, they really do break down into these three categories, be a stronger regulator, enforcement and accident investigation, collect and share information needed to make good safety decisions, transparency of data, collection of data, and prioritize the public stakeholders as highly as the industry. And while we still have lots and lots of recommendations on how to improve, I think what's important to remember or recognize is that really PHMSA has been making strong progress in all three of these areas. So I want to acknowledge that.

As far as accident investigations specifically, our recommendations would be to make all the investigation reports public. That website has not been updated in a while. The accident investigations on there are pretty years old. It was great that the Satartia report was released and made public. I also want to commend AID on that report it was really well done and yeah, it exceeded our expectations for a report. Another thing that we would like to see from the public side is when it is a PHMSA investigation, to really take charge of the incident site or at least institute some transparency in recording requirements on operators. Having the operator maintain control of the site and pipe, which I know is a bit oversimplifying but I do think there's a lot of improvements to be made on transparency here. And then finally, it's employing some sort of public information officer and it's often focused on the EPA or Coast Guard but the public has a lot of questions on the pipeline itself and would love to hear from PHMSA. So even if they're really brief statements, just having a point person that's public after those incidents would be really helpful.

Yeah, so that was really on accident investigations. I'll just take a minute to talk a bit more about some of our priorities, a lot of which will be covered over the next couple of days. Certainly methane mitigation, methane leaks is a big one. I think we're looking at a culture change where on the liquid side, if there's an issue on a pipe, an operator

doesn't discharge the liquid out of the pipeline into the ground around to clear the pipe. If there's a small leak, it gets fixed, because it is viewed as a pollutant. And we've learned a lot about methane that we didn't know 10 years ago and certainly more than that, but now we do know and I think we need to start viewing natural gas and methane in the same way or in a similar way as we view liquids and that small leaks are not acceptable and we really need to minimize any kind of venting or blowdowns as much as we can. We've come out with a couple white papers this year, one on CO2 pipeline safety and one on hydrogen pipeline safety. The hydrogen paper is relatively new, just released ... remote shutoff valves near HCA's or in HCA's on existing pipe. Of course public engagement, seeing 1185 get implemented effectively and seeing the industry work hard on public engagement. Geohazards, I really appreciated that session this morning and looking forward to everyone continuing to learn there. And of course, just generally transparency, that's one of our big pushes on everything, is just getting everything out in the open and transparent to the public. So that's about it for me. That is my contact information. I always have an open door, feel free to contact me any time and I'm curious if there's any questions.
>> Bill we have a couple questions from Linda Owens. The first question: Does the Pipeline Safety Trust agree that pipelines are the safest mode of transportation by volume and that the partnership between PHMSA and the industry trending in the right direction?
>> Yes I think it's a complicated question, but if we're just looking at the failure rates by volume and mileage and things like that, pipelines are [lost the feed] partnership between the stakeholders is incredibly important. My background before pipelines was with an environmental nonprofit. So I think of things in an ecosystem and I see pipeline safety the same way with all the stakeholders I had in those circles, we all serve our roles and we all depend on each other and that includes the industry, the regulators, and the public, tribes and everyone else.
>> Thank you. Question number two: Pipeline safety is a continual process. Can you explain why the Pipeline Safety Trust claims the oil and gas regulations are insufficient and continually enhanced.
>> What was the second part of that I'm sorry?
>> Sure I'll read the whole question again. Pipeline safety is a continual process. Can you explain why the Pipeline Safety Trust claims that oil and gas regulations are deficient in several documents versus continually enhanced from industry and public stakeholders.
>> From our point of view and from our founding, every incident is too many incidents. Yes, there are many ways to get to zero incidents. We probably can't get there by regulations alone, but I think we stand to believe as long as there continues to be incidents, especially ones where people die and are sent to the hospital and destroy ecosystems, that the regulations are insufficient.
>> Thank you.
>> Anybody else? Okay, thank you so much.
>> We've got one more.
>> So Bill, we talk about the importance of various rulemakings and strengthening rules and guidance and overall safety, right? And we often go out with proposed rulemakings that are fairly technical in nature. There are standards that are very, very technical in nature, and oftentimes I wonder from the public perspective, you can weigh in on the intent of the rule but how does the public how do they make comments that help with the technical piece? Because it generally ends up being industry and the regulator, right? And it's like that third leg of the stool is missing, the people that would

challenge with a different part of the technical piece. So my question is are we doing an okay job? How do we pull in people that might not necessarily agree with us since we have a different perspective on technical matters.
>> That's a great question and it's one that we spend a lot of time thinking about. There really are some structural disadvantages, not of the fault of anyone. It's not industry's fault and it's not PHMSA's fault that there are these structural disadvantages to the public engaging in the same way and we see it on the advisory committees, where it's just really difficult for members of the public who are passionate and care to engage in some of these really technical issues to the level that the industry and the regulators are able to. So I think a lot of our work is to try to educate the public and bring them up to a level that's kind of enough to get them to effectively engage. I mean, that's pretty much what most of our work is around, is trying to encourage better engagement from all the stakeholders, and for the public that involves educating them and being a resource to them. But I would also say there are some things that PHMSA as a regulator could do to help the public along too. This meeting incredibly important topics and I'm really glad we're having it, but it is in Houston with not a ton of public notice and not a lot of topics that would necessarily pull the public in. So it really is built around industry, and again I understand why there's a lot of work to be done on the regulation side that is really technical and the folks here from PHMSA and the industry are the ones that can answer those technical questions, but I think when we're setting priorities and those kind of bigger picture things, it's important to build some of these events around the public as well.
>> Bill I have one more question from online. The question is from Jeff McCall. The Pipeline Safety Trust has a link to the DMV eightinch rupture video on their website but does not link the GYP culture of the results and why the rupture was performed. If it's a little too confusing we can ask the person to restate it.
>> I think I understand what they're getting at. The reason we have that video on the website isn't to educate about the actual test. It is to just give folks a visual. Again, that's really for reaching out to the public and showing them what a rupture on a CO2 pipeline can look like and it can really open their eyes and make them interested to learn more. But I'm gonna write that down about seeing what the results are and see if that is worthwhile to link that as well, but I didn't do it really because the purpose was to just give a visual to people so it wasn't so conceptual, the idea of CO2 pipelines.
>> Thank you.
>> Any other questions? Okay, thank you so much.
[Applause]
>> All right. Next we have Sara Lyons from NTSB.
>> So I realized yesterday I was starting to lose my voice so I have my herbal tea. Thanks to PHMSA for hosting this failure investigation forum. It's great to have a place to get together. Let's talk about accident investigations. My name's Sara Lyons I'm a mechanical year by background. I have about 19 years of experience in different safety significance industries. I started out in aerospace and I worked for PHMSA in the pipeline industry before I moved over to the nuclear industry and then started pipeline again with NTSB.
So about three and a half years ago, I joined the NTSB as a pipeline accident investigator and since I joined, I served as investigator in charge on six different pipeline investigations and I got to work with lots of different stakeholders on those investigations and through other safety advocacy activities, PHMSA, state regulatory agencies, pipeline operators, fire departments even manufacturers, because we have a collaborative approach to the factual development of our investigations [lost the feed]

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

response operation center or ROC and it's staffed by watch officers. They monitor reports from the national response center, from DOT, internet, media, local and national news and they actually receive accident reports directly as well. When the ROC's alerted to an accident that the NTSB might launch an investigation into, they'll call our oncall duty officer and we'll collect additional information to see if we need to alert our leadership to make a decision on whether to launch an investigation and that's normally done based on preliminary information, because time is of the essence. In the pipeline area, our duty officers work closely with PHMSA's accident division and that was a decision that was made before my time actually to work together to collect information, so we don't overburden incident commands and pipeline operators that are very busy in these moments right after an accident occurs. So we may request additional information through PHMSA's aid group or someone on scene or at least getting that onscene account can be really helpful to inform the best decision that can be made with the preliminary information that's available at the time.
So for the pipeline mode, our pipeline and hazardous materials division serve as duty officers. We have a pretty small staff right now we have five investigators between hazmat and pipeline and we have two vacancies. We share duties for hazmat and our hazmat investigators often launch pipeline accidents investigations as well. With pipeline we typically investigate significant injury to the environment or any other accident our board decides is catastrophic or involves problems of a recurring character. Once a launch decision is made, we have a go team that travels to the site [lost the feed] and to be a party, you have to be involved in the accident and also able to provide qualified technical personnel. Each NTSB investigator typically heads a working group in their area of expertise are on scene working with the party representatives and they actually prepare a report that our parties get to review to confirm that it's accurate before it's released in the public docket. Parties don't participate in the analysis phase of NTSB investigations. However they're invited to submit their proposed probable cause, findings, safety recommendations and all of that becomes part of the public docket. After an investigation's closed the NTSB continues tracking safety recommendation, progress and participating in safety advocacy activities, such as this meeting today. Although we have a small pipeline safety staff, safety advocacy is an important part of our mission and it's supported by our board members and staff throughout the agency. For example, last year board member Michael Graham and our hazmat investigator Rachel [indiscernible] were featured in the residential pipeline detection public service announcement video that's linked on this slide. And a couple weeks ago, I watched parts of the Pipeline Safety Trust annual conference which I wasn't able to go to New Orleans either, but I was grateful that I was webcast because I was able to watch parts of it and it was very informative. Our chair Jennifer HMOgave an address and she talked about learning from past experiences working together to improve safety like we're doing today. She stressed that it's not just learning from the major tragedies to achieve our safety goals, we need to thoroughly study lower consequence events and learn from past mistakes but also determining what went well. So today I'm going to discuss a couple of our recent accident investigations. I'm gonna focus on lessons learned and how previous experiences could've helped prevent or mitigate them. The point here is to demonstrate the power of information that's generally available to us if we take the time to openly discuss, share and study it in ways that can be most effective. I'll also point out a couple of observations, my own personal observations of things that went well. So I'll start off with when I used to work for PHMSA I studied accident investigations as a majority of my job. So I was pretty familiar with many of PHMSA's database, but as a NTSB employee my first exposure was with Merrimack valley I was assisting towards

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

the end of the investigation. But one of the things that the NTSB did in this investigation was take a close look at previous accidents. I'm sure you're all somewhat familiar with the Merrimack valley accident it involved overpressurization and it resulted in one fatality, 29 injuries, damage to 131 structures, an estimated cost exceeding $1.5 billion on the last estimate. The NTSB determined that the probable cause was the operator's weak engineering management they did not plan or review sequence without first locating [indiscernible] mines to the new main. Contributing to the accident was a low pressure natural gas distribution system designed and operated without adequate overpressure protection and I'm gonna focus on that contributing cause today. So in the NTSB's report for Merrimack valley, we noted seven previous overpressurization accidents that were investigated by the NTSB. There were seven other incidents in PHMSA's database. At the time of the Merrimack valley accident, there were 14 previous incidents in the public record to learn from and they're shown on this slide. Of these, only four would've met PHMSA's definition of being a serious incident resulting in fatality or injury requiring hospitalization and only four others resulted in severe damage to multiple properties. So for somebody to up front gather all this information because we have to be cognizant of the fact that it's easier to look back at the database once an accident has occurred and identify incidents that were related to that accident, but to be able to do it up front it would've been necessary to look at the potential consequences of overpressurizing a low pressure system, a hazard that was known and welldocumented at the time and for quite a while prior to the accident. Studying these 14 accidents, we would have found that they were experienced by different operators. All 14 were experienced by different operators. So if any of these operators or any other operator had looked just at their own experience, they wouldn't have had a lot to go on. When all these accidents are studied together as one data set, it becomes apparent that they all resulted from a common cause, not the same common cause but from a common cause such as flooding lightning or human error. It's important to plan for common cause failures because they can significantly increase safety risk. Common cause failures can negate the facts of redundancy which was a common feature of [indiscernible] present in many of these accidents. They're often addressed by using a diverse system or component such as a relief valve. When the information is gathered and presented in this way, it provides compelling evidence that change was needed. Change that could've been identified or even addressed prior to the Merrimack Valley accident. Instead, the accident occurred devastating the community and resulting in several NTSB safety recommendations, some of which are shown here and many other actions by regulatory agencies, government leaders, industry groups, and other stakeholders. Although the broader reaching safety recommendations were to PHMSA, I'd like to acknowledge that although PHMSA has a very important role in advancing pipeline safety, it's the pipeline operators who have the primary responsibility for and who are most able to ensure safe operations. Because of this important responsibility pipeline operators take on every day, I've been encouraged by the progress some companies have been making voluntarily to implement and mature their pipeline safety management systems. PSMS provides a framework to identify actions so they can be taken before tragic accidents occur and this is one of the areas that I follow for the NTSB, is PSMS. So I get to participate in some industry workshops periodically to see a little bit of a window into what companies are doing and perhaps a larger window for those companies that are involved in our investigations, because we do normally look at PSMS nowadays as part of our investigations. The next accident that I'd like to discuss occurred in Farmersville, Texas, on June 28th, 2021. This accident killed two men, it left five surviving witnesses, two of whom were also injured

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

while loading a gauge pick. The NTSB determined the probable cause was a leaking main valve that allowed gas to go into the launcher where it created a flammable [indiscernible] contributing to the explosion and its severity where the operators' procedures and training practices, it did not prepare workers to recognize and safely respond to abnormal operating conditions. I know Brian mentioned abnormal operating conditions as a focus of study in their area as well. So about a week prior to the explosion, workers completed the first in a series of pig loadings. When they noticed the main line was leaking and the flare did not extinguish as they expected, they adjusted the valves and did not have any issues with the flares during subsequent runs. The accident occurred during the sixth pig loading, so they were successful five times in the days prior to this accident. On the day of the accident, a worker opened the oneinch valve that allowed natural gas to vent from the launcher to the flare tip where it successfully ignited. As natural gas pressure in the launcher decreased and natural gas flowed to the flare tip, the work crew observed the flame die down and it took them about seven minutes to photograph the pig, open the launcher door and load and insert the pig. The explosion occurred before the insertion tool was completely removed from the launcher. After the accident, we invited the manufacturers for both valves that connected the operator's transmission system to launch our investigation and they graciously the main line valve was found to be leaking. During disassembly, we observed that its surfaces were scratched, which is shown on the right. We also studied the flammability conditions and the study found that natural gas concentrations within the launcher, it was about a hundred percent after the flare was extinguished and natural gas went out and air would've entered near the bottom. An explosive mixture would've developed but would've dissipated within a few minutes if no additional natural gas was introduced. Because additional natural gas was introduced by the mainline valve leak, a thin layer at the top of the launcher would've remained in the flammable range. Once the pig was introduced, the concentration between the launcher door and the pig would've decreased as shown in the bottom figure, while the concentration between the pig and mainline valve would've increased. However, we couldn't preclude the possibility that there was also a flammable mixture between the pig and open launcher door, because the pig may not have formed a gastight seal and we could not confirm that in the investigation. Therefore, the ignition source could've been present either in front of or between the pig and the mainline valve, including the flaring system. The operator had not experienced any previous pig launching or receiving incidents. However, there were several previous incidents experienced by other operators, two of which are summarized here. Both of these incidents on the slide involved a leaking valve that contributed to the pig being ejected from the launcher after it was loaded, similar to the Farmersville accident. There was also a receiving incident that was investigated by PHMSA the year prior to Farmersville that resulted in a fatality. In that investigation, PHMSA found in part that the lack of adequate sitespecific procedures, insufficiently placed pressure gauges, and a leaking valve caused that incident. PHMSA also found the fact that the operator did not consider launching and receiving pigs as a task to be a contributing cause. However, the operator whose assets were involved in Farmersville did not require their staff to be and this position was consistent with industry guidance and API 1161 and also GBTC 381.1. So as part of the Farmersville investigation, we tried to get clarity on what the requirements were, we talked to PHMSA. Their answer was consistent no matter who we talked to, they were like [indiscernible] were required. And on the industry side, it was not as consistent. So we asked for a letter of interpretation on the rule and they very clearly indicated in the letter of interpretation linked on this slide that launching and receiving pigs is a covered

task according to their regulations, regardless of what's contained in industry guidance. So the Farmersville investigation took about 16 months to complete and one of the things that went well was the operator's willingness to take on and complete safety actions in parallel with our investigation. I always encourage our parties to do this. It's kind of a difficult mentality when you're in the middle of an investigation, but to think of not what did I do wrong or where there might be fault because the NTSB does not deal in fault but instead to think of, is there anything I could do that would help prevent an accident like this? Is there anything I could've done better? And so going through the investigation just continuously thinking, well, is there anything I could've done to help the situation. So this operator began immediately after the accident, they suspended pigging operations on all of their inservice pipelines and continued until they had standardized their launcher and receiver designs, developed and finalized new procedures and established a new covered task for pigging operations. They also continued working on their PSMS and established a new management of change procedure. In this case, they were able to complete these safety actions while maintaining our information withholding requirements, because we are usually pretty strict about that, but we do have some flexibility through the IIC for our parties to be granted flexibility if it's needed to make a safety improvement. So in this case, they didn't need that and they formed a team that was outside of our investigation who used publicly available records including our preliminary report and other information they otherwise had access to. They met with us periodically, our party coordinator for the company did, updated us on the safety actions they were taking, discussed their approach, they listened to our suggestions and provided supporting documentation for all of the work on the slide. And we were ultimately able to credit the work in our report which had no safety recommendations. In our party submission, the operator also proposed the development of industry best practices for the safe operation of launchers and receivers when inserting tools and devices to perform maintenance activities as a safety recommendation. It's a good idea to advance safety broadly. We've seen more pigging reports through NRC's in the last year since Farmersville but since the regulatory requirements that were clarified in this investigation, the NTSB did not pursue it as a NTSB safety recommendation. So it's something that would be good to do. Some more details on these postaccident actions are available on our public docket, but the operator would really be the best source of detailed information on the changes that they made.

The next accident that I'd like to discuss is a 30inch diameter pipeline rupture that occurred in Danville Kentucky. It was caused by a manufacturing defect coding. The natural gas fire was reportedly under control at 2:56 a.m. about 92 minutes after the rupture and about 37 minutes after the segment had been isolated. This accident resulted in one fatality, six injuries, and evacuation of over 75 people. So I wasn't on the investigative team for Danville and our ICC Alex COLETTI now works for PHMSA but I did get some recommendations that came out of it. The investigative team identified non used to assess the PIR and PHMSA has PIR as one of the topics tomorrow morning. So conceptually the PIR intends to identify areas where people or property could be significantly impacted were a failure to occur. And this isn't my interpretation, this is what the regulation says that PIR means. It does not define an area within which all people are expected to perish if a worst case occurs it defines the area where people or property could be significantly impacted. In practice, as I'm sure most of you are aware, the PIR is defined in the federal regulations which is shown on this slide. In 2003 the NTSB commented on a notice of proposed rulemaking arguing that an adequate and uniform safety margin should be applied to all pipelines. The NTSB also

suggested that the effects of horizontal jetting along the pipeline be explicitly considered and these are some suggestions that could've helped to address some of the uncertainty associated with this equation. So the Danville accident destroyed five homes and damaged 14 areas. This is an aerial view of the site postaccident indicating the location of the pipeline rupture, homes that were destroyed and homes that were damaged. There's evidence of horizontal jetting on the east side of the rupture near the vent in the pipeline. The destroyed homes extended slightly outside of the 633foot PIR and the damaged homes extended about 1100 feet out. The deceased woman was found just outside of the PIR, because she tried to evacuate from her home and perished on the way. She was about 640 feet from the rupture site and there was an offduty deputy sheriff who also happened to be a firefighter that attempted to rescue her and was unable to do so at that location because of the intense heat. So this slide summarizes some of the other accidents that the NTSB has investigated and the PIR associated with those accidents calculated based on the regulation today. So Edison predates the PIR regulation, but we just use the same methodology. So as you can see from the slide, NTSB investigated accidents dating back to 1994 have demonstrated that the PIR equation does not always define the area where people or property could be significantly impacted. I'm not going to review the circumstances of each of these accidents today, but I did want to highlight that these previous accidents could be used to inform our understanding of important concepts like PIR. The NTSB's pipeline investigation report for Danville discusses assumptions about the impacted public that are inconsistent with available data. For example, the public may not be able to withstand the heat intensities without fire resistant clothing which we wouldn't expect they would have and the current equation assumes that a person would take five seconds to analyze a situation, decide to evacuate, run for 25 seconds at 2.5 meters per second about six miles an hour before successfully finding shelter. It doesn't account for the challenges they may be presented with and the challenges that were exhibited in some of these previous accidents. For example, they may be injured by the initial exposure have family members to attend to, they might be elderly, sleeping at the time of the accident or simply not know what occurred. Finally in the time that I had to research this topic, I wasn't able to trace back the initial location of each of the injured victims. However, this information especially for the seriously injured would clearly be valuable in understanding the appropriate limits. For my last couple of slides, I just want to take a look at some of the data in PHMSA's database that they maintain. So we all know pipelines and actually there was a question in Bill's presentation about pipeline safety. We know now from his answer and from our knowledge that pipelines are the safest way to transport hazardous materials, but there's still room for improvement. Regulated gas transmission and distribution systems experienced about 631 serious incidents between 2002 and 2021 and hazardous liquid systems experienced 42 during the same time frame. Of course, it's important to think of these numbers in context. For example, gas distribution systems have the highest number of serious accidents each year, but with over 2 million miles of gas distribution system piping, the failure rate is on the order of one E to the minus five or about 000001 serious accidents per mile per year for 2021. While the failure rates are low, this amounts to 260 deaths and 1101 injuries across the different systems shown on this slide according to the data that's reported to PHMSA. These serious accidents devastate families, which is why the pipeline safety community is working towards the goal of zero incidents or perhaps for zero serious incidents. I was recently asked by an industry representative when the NTSB was gonna tell the industry what to focus on, what actions are needed to achieve this goal. As you can imagine, this is not our role. We have some of the information to add to the pool of knowledge from

our investigations, background and experience. We put a lot of energy into making sure that our investigations are accurate accounts of what happened and we open the supporting documentation up to the public. But many of the accidents these accidents are investigated not by the NTSB, but by PHMSA, state regulators or pipeline operators. We may all know that pipelines are the safest method for energy transportation. The information contained in PHMSA's database can be a powerful resource, especially if some of the data quality issues are addressed by merging this information with other available sources, such as NTSB, PHMSA, state and pipeline operator investigative reports, to inform decisions on how to improve safety even further to eliminate these serious accidents. That concludes my presentation. I'm happy to answer any questions that you may have.
>> I think last time we had too many questions.
>> Everything that you presented is on gas pipelines. Do you respond to hazardous liquid pipeline incidents as well?
>> We do. We have an open investigation at wards ville Illinois that was a crude oil spill we don't respond to liquid accidents as much, but when there's a serious liquid event, something like that we would normally launch.
>> Do you then have a set of criteria, your board have a set of criteria or your management have a set of criteria for
>> I mean, the criteria is what's in the institute and it's pretty subjective. I had it written down earlier but it's like substantial damage to the environment. I mean, it's kind of a judgment call each time, what's known at the time that they're making the decision, how bad is it, what's impacted, unusually sensitive areas impacted, what's the community around the failure, what's the availability of staff. I mean, there's a lot of considerations that go into the decision.
>> And this is a bit more pointed. 2015, the NTSB did a safety study and in that study, they came to a conclusion that while the integrity management rules were doing a good job at addressing external, internal corrosion it did not significantly impact the number of incidents going on in high consequence areas. Looking at what you had today that was seven years ago looking at some of the statistics that you were putting up there today and also referring to Mr. Caram's I'm not sure if it was your presentation at the trust or your data analysts had done some work and identified that significant incidents within HCA were not decreasing that much, does the NTSB still hold that there's a lot more work to do in that particular regard?
>> I mean, I'm not really prepared to answer that fully, but I will say the comment about continuous improvement I think in integrity management there will always be additional work to do and safety improvements that can be gleaned by continuing to study our available information more and make those improvements. As far as the specific recommendations out of that study, I'd have to check on where we landed with them because I don't follow those and I don't want to misspeak on them.
Do you have anything to add?
>> Can you hear me?
>> There's a delay.
>> Okay there we go. Thanks for bringing that up. So one thing we did is we looked at incident data, significant incidents within HCA's and outside of HCA's and as you mentioned, the idea would be if integrity management programs were working, we'd see a downward trend in incidents inside HCA's they'd be going down faster than outside of HCA's or maybe rising slower depending on where the trends were. And depending on the type of pipeline that's not what we saw. We did see that. So like on hazardous liquids for example the rate was actually going up inside HCA's and going down outside

of HCA's. It's a pretty simplistic way and we were surprised that there wasn't better progress.
>> It's such a complicated question right because HCA changes so just looking at those trends I feel like you have to do a deep dive to come up with a real answer. Did you have something to contribute?
>> This is Andy Drake I'm the vice president of integrity for [indiscernible]. Great question and great observations. I appreciate your comment about continuous improvement that's what this is really about moving forward to drive towards our goal of getting to zero. We talked about this this is the exact question with the Pipeline Safety Trust and one of the interesting things that's really here some of the criteria's changing. So we're actually gathering more data than we had in the past. Some of the criteria particularly around manufacturing flaws so as we start to look towards things like methane methane releases are unacceptable to society so we're starting to track methane. So you're starting to see a surge with manufacturing [indiscernible] that are causing EVS systems to go off. Well, we didn't track systems because it's supposed to be doing in the context of safety it's not doing what it's supposed to be doing when you add the criteria of methane release. So all of a sudden you're getting a new family of data it's making the data look like it's coming up, but when you start looking at other causes they're really not going up if you reconcile it, they're not rising. So I'm not so quick to say those programs aren't working it's just the dynamics. I think that's important is continuous important we keep learning, we're looking for new sources of failure and new opportunities to improve and I think that's really the point of the whole MSPS effort so that helps us understand what is the trend and what are we doing about it and the prioritization. It could sound very alarming that somehow IM is causing an increase in integrity management incidents, but that's absolutely not the right conclusion to draw. Thank you.
>> Real quick, Andy. Is there something about HCA's aren't those incidents happening inside and outside HCA's so shouldn't it affect both trends.
>> I think they are happening inside and outside HCA's but the problem is they weren't there before the data wasn't there before so now it's new data coming into the HCA's. So the population is bigger does that make sense.
>> It does, but we were looking at the difference between the rates of change in incidents inside HCA's and outside and if it's affecting them both the same, then it shouldn't have an effect on that measurement.
>> Yeah, I think again I don't know exactly why there'd be a difference between the rates in or outside of HCA's currently the criteria has changed.
>> Questions from the online audience from Christina: Developers continue to build pipelines near people's bedrooms 25 to 50 feet from active lines. Shouldn't there be more rules on setbacks for this industry as well as more integrity management rules?
>> What do you think, Linda? I mean, I don't really have anything to add to that from our investigations right now, but maybe PHMSA has something to add.
>> I have a lot of opinion about that. I've gotta say the disclaimer, PHMSA is not in charge of citing our colleagues at FARP do that. I think there's a value in setbacks and additional protections and I think we have that guidance for informed planning alliance that looks at things like that, how developers can work with industry, with developers, with local communities to make good decisions about how close to build the pipelines. I think it's a notable question. I don't know that we can solve that here, but maybe we can note related to the [lost the feed] simple answer but it is a challenging question.
>> Thank you.
[Applause]

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

>> Thank you Sara. We're gonna lead into Rob Burrough.
>> So the last time I presented at a meeting like this, I opened by singing a song lyric and I know Linda is hoping that I do it today but in finding an appropriate song lyric and in the tone of the three sides, I didn't think it was appropriate. So I apologize for not singing today. I don't know if I need to do a quick definition of what incidents and accidents are, but from 191.3, you can find the definition of an incident, release of gas from a pipeline, underground storage or a leak from an LNG that results in a death or damage. Property damage I think it's $129,300 or unintentional loss of over 3 million cubic feet or an LNG or something that's deemed significant to an operator. In 195.50 reporting accidents, it's unintentional explosion or fire release of five gallons death or hospitalization, property damage greater than 50,000. So I'm gonna go over more part of my introduction. I pulled data from the five regions, cases that were issued that were related to incidents and accidents and it's nice to see in general that the data that Brian presented earlier and the data that I'm going to present correlate very well. So it's nice that independent data inside PHMSA actually matches up. So I'll talk about a quick overview of some cases that we've issued or asset types and the cited codes that happen most often and maybe a question or two.
Yep, this is what I just talked about. Related to incidents, accidents only in cases of the past three years and the goal was to promote awareness, share with industry and the public and have an opportunity to learn some lessons with the goal of avoiding similar circumstances going forward. I'm sorry it looks a little better than I thought it would. It's better on that monitor there. So you can see some of the we start with incidents reported, that's everything and then we get a subset of that, which is significant, which is fatality or hospitalization, greater than $50,000 in $1,984. It's a wonderful year. HPL release of five barrels or 50 barrels of other hazardous liquids and releases with unintentional fire or explosion. And then the next column down is the serious subset which is fatalities or injuries requiring hospitalization. And just a general note on those gas distribution incidents which were fire first and then caused a gas release are excluded from that data.
Types of cases: Main types, the most common case that we issue is a notice of probable violation. We also have notices of amendment that come out from incidents or accidents, warning letters sometimes letters of concern. We also have a few other things in our book of tricks, corrective action orders and emergency orders, but we won't be talking about those because I'm talking more about codes that we cite and those are more related to hazardous conditions or immediate corrective measures that need to be taken in the case of CIO. There's also an emergency order, which is very rarely used it's used very sparingly. It's when the administrator finds an unsafe condition or practice or combination of the two that causes an imminent hazard. It's basically PHMSA slams the button and shuts down the facility and that's why it's very sparingly used.
NOPV's you can find more information in the section 190.207 for specifics, but an NOPV can include a proposed civil penalty, proposed compliance order or a combination of both. If it has neither of those, it's considered a warning item and is not adjudicated, but it generally alleges a violation of pipeline safety regulations. So it can be from parts 190 to 199, general pipeline safety laws from U.S. code 49 U.S. code chapter 601, an order from PHMSA such as a CIO, a compliance order, order directing amendment, safety order, consent order, special permit. Let's see. We can and we have issued NOPV's that seem to be operators may think they could've been an NOA. We have broad discretion in deciding what enforcement action if any is to be taken against a particular issue of noncompliance and sometimes if the inadequacies we can and do issue NOPV because sometimes they're causal to an incident or accident. NOA's a little

bit more if we determine that the operator's plans or procedures are judged to be more serious or inadequate, PHMSA can and should proceed to an NOPV. There's some gray areas and it's up to the determination between our legal counsel, the investigator, inspector, me, Linda, other directors on what we decide to do. Some examples that may be seen as more serious than inadequate, maybe plans or procedures that are not in place before the initial operation of the facility. They are not available to the contractors or workers, so they have no idea what the procedures are actually supposed to be. They omit a specific requirement of regulation or reference standard or they contain a serious procedural or technical error or omission that increases the likelihood of an incident or accident occurring or they just haven't been implemented at all.

Warning letters are used or warning items if they're in an NOPV. They're used to notify an operator of one or more circumstances or conditions that are not in compliance with the regulations but are deemed not as serious. So lower risk items in general may get a warning letter or warning item. And letters of concern are not used often, but personally I've used them. The eastern region, my region, regulates or enforces the underground natural gas storage program for the nation and since it's fairly new regulation, we don't we want to get information and share with the operators what we're looking for and we don't want to without proper notice hit you with an NOPV. So we'll do warning letters or letters of concern to notify operators of areas they need to improve.

So the data that I collected and reviewed, there were a total of 33 cases. There were the five regions in each case some had multiple items that were found in them. So 112 total items and as would be expected with incidents and accidents, the majority were NOPD's.

This slide shows where in the enforcement process a lot of the cases are. The good news is that the majority of the enforcement cases related to incidents or accidents that had been issued recently or closed. I think that's 13 NOPV's are closed and two of the NOA's are closed and LOC's, letters of concern and warning letters are closed upon issuance. So those are closed as well. So we just have a few that are either just noticed or we're in discussions with operators or are awaiting an order.

Going into different types of systems or assets: Obviously we have the natural gas systems, hazardous liquid, LNG and underground natural gas storage. Natural gas transmission is fairly selfexplanatory, it's covered in 192. Incidents can occur anywhere in the country and involve fire or explosion, direction of pipe from the ground, damage to property or the environment, injuries or fatalities. It also includes H2 in the gaseous state. We currently regulated 1500 miles of H2 pipeline. Hazardous liquid transmission oops I skipped one. refined products or crude oil or H two in a critical state. We had 5400 miles or so of CO2 lines regulated under Part 195. I believe Linda mentioned earlier or maybe it was Allen we have statutory authority to address concerns or authorized to. We're currently in the development of CO2 regulations now. LNG, regulated under Part 193. Let's see, Brian's there in the back right? He's the director for the southwest region, they are handling the inspection and enforcement out of that region. Engineering division is also heavily involved. They help with review of applications submitted to FERC for the construction of LNG facilities and assist in that manner. And underground natural gas storage, so if anybody operates an underground natural gas storage facility you may have seen a letter with my name on it. It's inspected and enforced out of my office in the eastern region in Trenton, New Jersey. The main code citation there is all 192.12 and it also includes the incorporation by reference of two API recommended practices 1170 for salt caverns and aquifer reservoirs.

This is just a little slide showing types of cases based on the type of asset. You can see hazardous liquid has a decent amount. Yes?

>> [Inaudible].
>> Yeah, this is the total items and yes roughly 70 are related to hazardous liquid. This will be where I start talking about what sections of code that we've been citing more often than not, especially in NOPV's. I think from Brian's presentation earlier, some of his top risk factors related to integrity I think he had threat identification and assessment methods, preventative maintenance, procedures not being followed and design and construction were some of his top 5 or 6. I think you'll see a similar theme. [Lost the feed] so that's the majority of the items are related to O and M and procedures in general. Then there's general reporting, not getting prompts timely reports, or PHMSA missing on the 30day reports, things like that. Some general items, I can talk a little bit more about that later. There were eight of those on LOC's relating to underground natural storage, three of these were on LNG, one was on a class location definition, another on a gathering line, but the majority of O and M is a failure to follow procedures, which sounds familiar. Then reporting it can be the noting of certain incidents, 195.50 reporting accidents, 195.52 immediate notice of certain accidents and 195.54 accident reports were those 19 items. For the integrity management, 11 items there, 195.452 were discussing the HCA's baseline assessments, preventative and mitigating measures. 195 addressing potential threats, 192.37 continual evaluation and assessment were some of the most common findings. The main takeaway in general from this presentation O and M procedures, you can have the most thorough wellwritten procedures, but if you don't train on them or you don't follow them when abnormal conditions occur, then bad things can and sometimes do happen. Sometimes procedures are necessarily vague just to kind of mimic the code and can lead to confusion in an emergency and can contribute to an incident or accident or the consequences thereof. And reporting, another main takeaway we understand that data is sometimes not immediately available and you're doing your best in the first moments when you do find out something went wrong, you're not quite sure. Call anyway, let us know. Courtesy notification goes a long way. I'm sure Chris would agree with that. I definitely do. If you're waiting hours to see if an employee gets released from the ER instead of getting hospitalized, or if you estimate $128,000 of damage, that's your estimate so you don't notify or file your report, there's no reason for that. You can always update the information within your 48hour update. So it's best to share with us, get us on board and we can be out there. We're not going out always to look for just enforcement [lost the feed] damage prevention, public awareness arena 196.103, what must an operator do to prevent pipeline we had six items just in general, design and construction of breakout tanks, pressure testing just in general the requirements of that. Corrosion, external corrosion relating to interference currents and internal corrosion leading to an incident or accident, and OQ in training, 193. So it was an LNG OQ and 195.505 was the OQ program. So here's kind of a general list of the items that were cited and their code sections, the general code areas. You can see there's 112 total items. And just kind of breaking it down by gas, liquid, LNG, and underground. It kind of makes it plainly obvious the O and M section on hazardous liquids, the procedures. And then for LNG and underground, the data pool is a little small, so ... and that was it.
Does anybody have any questions?
>> We have a couple of online questions.
>> Okay.
>> First question from Will [indiscernible] I have noticed that PHMSA's enforcement procedures is there a standardized procedure or
>> Each individual case is handled by a specific region that responds. There are internal practices being put in place and have been put in place. We're working on

getting more consistent across the country. So yeah, we have found that we're not totally in line sometimes and we've been working on fixing that.
>> Thank you. We can take the question from the audience.
>> Hello. My name is Sara Leone, program manager at the Department of Energy presenting tomorrow on CO2 transport. A really interesting panel. I just had a broader question for either the speakers on the panel, two questions. One is, have you all looked at a geospatial perspective of where incidents are happening? I saw in some of the presentations the numbers, but is there any sort of leading indicators or any sense of information to gauge from doing a geospatial view of where incidents are happening, likelihood, probability. I'm thinking of it as using existing data from NOAA on monitoring subsea currents on the sea floor and how that can impact pipeline integrity on the sea floor. That was probably too indepth, but is there any sense of doing a geospatial view of where accidents are happening? It seemed from the presentation there were a few incidents in Kentucky, so I just wanted to ask that question first.
>> So on PHMSA's side, all the incidents that are reported to PHMSA, we do publish maps that show we call them heat maps, just in terms of where incidences are occurring, and there's a variety of different ways that you can look at if you choose to, how you want to look at that data. So I appreciate the comment and think there's probably additional things we could [lost the feed]
>> Any thought on comparing across international approaches? So looking at failure investigation reports globally across the border to Canada and comparing the recommendations with what's proposed from PHMSA and other agencies?
>> So I think that primarily the accident investigation group is looking at stuff within the continental U.S. and other territories. I do know that PHMSA, at a general level we do communicate with our partners, both north and south, and I think your point is to try to harness what we're learning on both sides of the border to effect pipeline safety in a positive way. Linda?
>> Sorry I keep coming up here, but we meet with the CER, the Canada Energy Regulator quite frequently and we will exchange information about incidents that occur across the border, because a pipeline that crosses the border doesn't know where the border is. So if a pipeline has a problem in the U.S., it probably has a problem in Canada and vice versa. So yeah, we do work with them quite frequently. And on the mapping issue, something that actually predates Chris so he wouldn't know about this. On our mapping system, we have FEMA data layers that look at flood risk that can overlay on top of that. And I know Chris, his team's got a huge effort in looking at equity, disadvantaged areas and overlaying that on the map. So there are a whole lot of options you can use for your mapping.
>> I'll add one thing on the international coordination too. There's an effort between API and the Canadian study group, as well as PHMSA and CER on standardizing the reporting metrics, so we can at least get a sense to compare apples to apples.
>> For the NTSB, we have counterparts in Canada [lost the audio] in other countries, but we do have some.
>> One more question from the online group. From Chris: A few years ago PHMSA proposed to increase the property damage accident reporting threshold for hazardous liquid pipelines, adjusting it for inflation. Does it still plan to do so?
>> The short answer is yes. There are plans to do that, yes.
>> Just a quick one to Linda. Are these additional layers going to be made available on the public view of
>> To be honest, I thought they already were, but we'll have to get with our mapping people. You know, time evolves and different things come on, so we'll have to talk to our

mapping folks.
>> You can add HCA's to it while you're at it too.
>> So HCA's are identified by individual pipeline operators. Now, we can identify certain information and provide that and we do provide it for operators to use, but they have to do their actual calculations and determine the HCA's for each individual. And if we were to put that information on our maps, we would have to require every operator to submit that information digitally. So it's a challenge. I'm not saying it's impossible, but pros and cons.
>> All right, thanks Rob.
[Applause]
>> All right. I'm gonna invite Alan Mayberry to come up and give us some closing comments. I want to thank all the panelists and all the participation. Thanks, guys. Alan?
>> Thanks, Chris. I'd just like to thank you for participating in the meeting today. I just wanted to provide a few wrapup comments. I think the afternoon session was a lot more exciting than the morning session. I think it took us a while to get going, but there was a lot of good interaction in the afternoon. Usually it's the opposite, but we kind of hit the ground running earlier in the day. Let me just go over a couple of things and then I'll get into summarizing where we are.
First off, we've had consistently about a hundred people in the room today. So thanks to those people who traveled here, who are here this week inperson. And we had about 360 average on the webcast and another thing is just a reminder that the presentations and the recording will be available on the PHMSA website. So this will be available if you missed it or for those of you who are turning into the webcast if you're multitasking you can always refer back to the recording or the presentations. So why do we do this, why do we do events like this? And this I might add is the first public meeting we've done since right before COVID back in sugar land Texas where we had a public meeting on a variety of issues, but there are a number of reasons we do it. One is to establish a public record on the topics at hand, topics that are relevant for the day. They're important topics from a national perspective that we need to talk about. We need to show what we see, the information that we see. We do it for transparency and we do it for providing communication to our stakeholders, whether it's the public who participated today thank you very much or the industry which probably has the largest presence today. Those of our government partners that we work with both at the state level and the federal level. It's important for us to maintain the dialogue. A lot of times these help inform rulemaking and typically they're a more effective way for us to get data than say publishing advanced rulemaking. A lot of times we can cut to the chase and go to the proposed rule stage by just having a public meeting which helps us get the information in a little more timely fashion. The focus this week is on a variety of topics as you've seen on the agenda. Today the focus was on things that broke. Naturally, the focus is on okay what went wrong, but I will say there are some things that are going right and even in the aftermath of what went wrong. I just want to say a couple of things about that. In the aftermath of an accident, and one thing we really didn't talk about, is that it's extremely important to maintain that communication with the stakeholders, whether it's myself as the regulator or my team that's been represented here today, it's important for the information to be received by us because we need to disseminate it within our stakeholder community. It's important for information to be provided to the public, extremely important because they're on the frontline and they're impacted by accidents that do happen. So I commend to you today to just remember that. I know there's a lot of good work in play related to a standard that Bill you mentioned it maybe

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com

a couple of others mentioned it, a new PR 1185 related to public engagement and I think that'll be a great model to follow as we engage the public, whether or not it's for things that are going right or things that happen when things aren't going right. But I've found firsthand and I know for a fact that in the aftermath of a failure, you can turn it around fairly quickly if you really lean into it and engage with the stakeholders who are affected by it. So I commend to you that aspect there that we really didn't cover too much today. A lot of the folks today and for the public participants, I appreciate your bearing with us. There was a lot of technical talk, a lot of jargon, a lot of acronyms, but if you have any questions please reach out to us related to that. Also I might add and I know Bill referred to this, our website has a wealth of information on a lot of the things we've talked about today. In the morning we hit the ground running, talking about geohazards first up and a number of examples that were brought up, both on the liquid side and the natural gas side related to failures involving geohazards. I can tell you that's an area of focus that we all need to have and I can assure you as a regulator we're gonna be looking at it as we go forward. It's an area we need to focus on. Most recently, I was on a location of an incident that possibly involved this aspect related to issues of outside forces acting on pipelines. It's an issue that we need to deal with today and please take heed of what you've heard and take action, at least address it within your company if you're a pipeline operator. We also talked about flow reversals and possible the guidance we've issued in the past and also advisory bulletins. I've not seen in a while the number of reversal projects and changes of commodity that have occurred, but it's quite a few and as we've looked to just the energy portfolio of the country, certainly a lot of reversals have been involved. I think we've known that for some time that's why we issued guidance a few years ago, but it's important to note the challenges with doing so. So please take heed on that as well. And PRCI, we've talked about some of the good work they're doing there related to geohazard research and she mentioned something about getting help and sharing knowledge, which really is the other aspect of what we're here for today is to share knowledge and that's a common theme. If we're looking to so we look to pipeline safety management systems, we're sharing information that's critical, especially very quickly in the aftermath of these accidents to help in other words, help each other out.

Just lastly on the topic of the geohazards. Just pay attention, whether you're a gas operator or a liquid operator, please pay attention to what you've heard today. Then we talked about after the break, about hard spots. That's still an area that we're learning. There are a lot of factors to consider to address the issue and certainly we need to be really mindful of as we look to the future, especially as we look to transport things like hydrogen. And just staying on hard spots, one other point on that that I thought about related to that, let's say you've done an assessment and you've determined that hard spots aren't a threat to your system and you did an assessment a while back. Think again. You probably do need to reassess your assumptions that eliminated that as a threat. And Linda wrapped up the morning on anchor strikes and external forces, but the moral of the story there is just to be mindful, whether you're in the gulf of Mexico, the gulf of Alaska, the Mississippi River, the threat of anchor strikes or other external forces acting on pipelines that are out there. Then after lunch we kicked it off looking at accident trends and I just wanted to note that, again, there are numerous examples of different commodities involved in the accidents that were shown today, but regardless of what you transport, I think there's a lesson learned in all of these. Certainly while we talked about the number of accidents that occur in each say corrosion or involving incorrect operation, be mindful that the consequence of an accident can vary greatly by cost too. For instance, the decisionmaking in our control room is critical for reducing

the consequence of a failure once it happens. So certainly that's been attributed to increased severity of accidents. We talked a bit about horizontal directional drilling. I was glad to see a few examples on distribution systems. We didn't leave you guys out, but the issue related to HDD of distribution systems or around distribution pipelines is not limited to them. You can have the same issue if you're a transmission or liquid operator and we've seen that certainly.

And then Jon Wolfgram thank you for being here from NAPSR. You're always so great in providing comments you're very concise and I appreciate you mentioning funding and that's something we're forever interested in, making sure that our state partners and we couldn't do it without you and that you're adequately funded and we really appreciate what you do. Then I'd like to recognize Bill Caram and I appreciate your partnership in pipeline safety. I know we have a call every month where we talk about issues of the day and we just appreciate the communications and feel that's very important to at least keep you aware of what we're seeing and the twoway communication I've found is quite valuable to us. And we share your concern related to future priorities, related to and it was a focus at your recent conference related to hydrogen and CO2 pipelines. Similarly within NTSB, Sara I appreciate the partnership and you did a great job covering the accident at Merrimack valley, Farmersville I know you focused on natural gas, but I've worked with NTSB very closely on the Marshall Michigan spill as many of our team and we'll continue to work closely together. My homework item for you, stop stealing our people okay? Just kidding. No I'm not kidding actually. Anyway, the beauty of our relationship is that we have worked together, maybe directly together in the past. So I think that really has helped us work even closer in more modern times. And Rob I appreciate your covering of the enforcement incidents that we've seen and the Primm Ron enforcement and just the various tools that we have. So my challenge to you and wrapping it up, is please take this information back and use it to your benefit to improve safety. To the extent it can help you as you do your daily job as an operator in particular and as you justify projects where you need funding to make safe improvements, please make a compelling story, use information that we've provided here today and this week to help you tell that story. Because I know the challenge you have and the challenge and the competition for funding. So my hope is that you can take some of this information and use it to that benefit.

So with that, that's about all I had. Again, I want to say thank you for the webcast participation. I appreciate the questions. We probably have more questions in the webcast than here in the room, but we'll see you back tomorrow. Tomorrow, we look a lot to the future. We talk about hydrogen, a little bit about CO2, we also talk about the potential impact raised that was talked about a little bit today, but we'll have more of a discussion tomorrow. And like Linda had mentioned earlier this morning, there's some topics that we expect to have further dialogue on in the coming months, in particular related to risk modeling, risk management. I think this conversation is helping seed the discussion that we need to have at a future workshop related to how we address interactive threats which goes to addressing the geotechnical issues that we've seen really deal with interactive threats, but we need to do a better job of finding the needle in the haystack. So I think this next workshop that we plan we'll address that more robustly, as well as CO2. I think there's actually more discussion out on CO2 as well. So with that, I will call it a day. Again, thank you and thanks to all the speakers. Thanks for coming here to take time out of your day job to be here and thank you all for participating today. With that, the meeting is adjourned. Thank you.

[Applause]

1126 16th Street NW, Suite 250
Washington, DC 20036
202.509.9795
info@ovsmedia.com