

UNITED STATES DEPARTMENT OF TRANSPORTATION  
PIPELINE AND HAZARDOUS MATERIAL SAFETY ADMINISTRATION

**Carbon Dioxide (CO<sub>2</sub>) Pipeline Safety Public Meeting**

Des Moines Marriott Downtown

700 Grand Ave

Des Moines, Iowa 50309

Thursday June 1, 2023

DAY TWO

START TIME 8:11AM CDT

END TIME 5:48PM CDT

## PROCEEDINGS 8:11 AM CDT

MR. MAX KIEBA: Hello. Get going in a minute or two. So please find your seats. Is our webcast going? All right. Good morning, everyone here in the room and Des Moines and everyone out there virtually. For those that weren't here yesterday, I'll just go over some quick summary. A lot of good and passionate discussion yesterday and feedback is a gift. Again, I want to say thank you, even though I know it's sometimes tense and not always great feedback. There's still feedback. We're taking that to the extent we can and we're considering it. We've even had some emails and other discussions. We may have some follow-up later today. Possibly, some thoughts. But things that came up yesterday. Setbacks, a lot of frustration and setbacks versus safety and where is that belonging. Emergency response came up a lot. And there will be some panels today talking more about that. Plume modeling. A lot came up yesterday. So we'll talk a lot more about that in one of our panels today. A lot of questions on public health how do you categorize CO2 and all that. Does everyone hear me okay I get a lot of feedback. We're good. Online. Everyone online we had issues yesterday where if any speakers are coming up here, including on the mics, the microphones are particularly emcee try to talk directly into the mic because it's not always coming across virtually. So public health came up yesterday, too, so that may possibly come up in some of our panels later today on reporting and some of those aspects.

Couple of ground rules or again if anyone is new here today in the room, emergency exits are out here. If an evacuation needs to happen, just follow the exits and straight down. We do have some law enforcement here helping, but if anything gets aggressive to the point that we all need to evacuate some situation they'll help tell us where to go but generally exits out and down. Bathrooms are outside on this floor. If those are filled up or too many people, you also have the same bathrooms up and above. Please, if you have phones, please silence them. We had some phones ringing yesterday and a few people have asked -- just please remember to silence your cell phones.

If there is any media here, please keep it in this room. You are welcome to bring your equipment. You're welcome to do whatever you want here but the hotel asked us to keep us in

this room. They do not want media out recording in public areas within the hotel. If you go out there, you'll probably hear from possibly the hotel and possibly law enforcement. So just please keep it in here at the respect of the hotel and some of the other patrons here as well. Comments, appreciate those who yesterday that they were on the list and the list was carried over to today. We'll continue that list as well. For those that weren't here yesterday, we do have each of our panels will have Q&A time during each of the panels specific to the panel. But we also will have open question comment period where we'll go through a list of individuals that signed up like I said starting with the list from yesterday for folks that carried over. One random announcement, we did find one bracelet in a bathroom. We're not going to describe what it is. But if you think you lost a bracelet talk to Scott Bonhoff. If you can describe what it is we'll try to return it to the rightful individual. That's about it. So again thank you continue to come with your comments, questions. It is your constitutional right to explain your concerns, things like that. Definitely keep raising those voices and bringing forth some of your comments. With that, I'll hand it over quickly to Alan who will introduce our next speaker.

MR. ALAN MAYBERRY: Thank you, Max. Good morning, everyone. I appreciate you coming back. I appreciate those who came back. I think we lost a few. But we still have a good attendance today. So thank you again for being present here. Especially considering the inclement weather that's out there. It's my pleasure to introduce our first speaker to kick off the session today. And I he's one of the senior leaders at the pipeline has material safety administration. Happens to be also my favorite attorney at the agency. Our chief counsel, Osasu Dorsey. I'll kick it over to her and she'll give opening remarks. Osasu, over to you.

MS. OSASU DORSEY: Good morning, everyone, and thank you, Alan, for that wonderful introduction. For those who may not be familiar with me or the office of chief counsel at PHMSA, I have the privilege of leading a team around 40 attorneys and other professional staff responsible for developing and ensuring compliance with safety standards and regulations. Not just for the 3.4 million miles of hazardous pipelines but the 3.3 billion tons of hazardous materials that move across the country via truck, train, automobile and vessel every year. A career public servant I've worked in legal policy issues at several federal government agencies, focused on safety, security for all Americans. I'm involved with close to 600 dedicated

public servants at PHMSA, some of which are with us here today either in person or watching virtually, understand just how critical these topics are to our nation and protecting people in the environment.

Safety remains our top priority and primary focus here at PHMSA. This public meeting has underscored the breadth and gravity of concerns from the public. I want to emphasize again as Alan had mentioned, we hear you. Collectively and individually, you have shared extremely valuable feedback, raised important questions, and helped identify issues for PHMSA. Areas you have highlighted included but are not limited to dispersion modeling, emergency planning, emergency response, regulatory gaps, your concerns about pipelines that could be near your homes and businesses. And public notification.

But also many items that fall outside of PHMSA's jurisdiction that are within the purview of states, local governments and other federal agencies.

So in the time I have with you this morning, I thought I would expound a little more on PHMSA's existing authority to regulate the transportation of carbon dioxide by pipeline and to comment on our current effort to update these rules.

Congress has directed PHMSA to regulate the transportation of carbon dioxide by pipeline in its different phases. This includes when it's in a liquid or gaseous state. This year Congress is considering additional updates to PHMSA's authority and mandates. Last time they were updated was in a 2020 bipartisan law that included 37 new mandates for PHMSA to focus on, which PHMSA has been working hard on at record pace.

As has been noted, Congress has provided PHMSA with its current legal authority to regulate pipeline safety, but the law states that this authority does not extend to siting or routing of pipelines. As noted there's no federal of siting under current laws nor does PHMSA have authority to remove or moving pipelines, PHMSA can't take action such as issuing regulations and standards focused those areas. But PHMSA can and does establish more stringent safety standards for pipelines based on their proximity to populations and environmentally sensitive areas. For example, additional and comprehensive integrity management regulation do apply to each hazardous liquid or CO<sub>2</sub> pipeline that could affect populated areas in critical environmental areas. As another example of the enhanced safety standards that PHMSA has

recently established, our new automatic and remote shut-off valve rule finalized this year sets standards for the valves to more quickly shut off pipelines in the event of emergency. New requirements for immediate notification to emergency personnel and stronger requirements when pipelines are in close proximity to people.

To proactively address the anticipated increase of carbon dioxide transportation by pipeline and to implement lessons learned from the 2020 Satartia Mississippi incident, PHMSA is using regulations. We are working to develop a rule that will strengthen emergency preparedness, emergency response and other safety concerns specific to the unique characteristics of carbon dioxide, many of which were highlighted by some of you yesterday.

As has been noted, under the laws, under the current laws established by Congress, the development of new regulation does take time. Our agency completed three major rule makings just in the last year and our forthcoming CO2 rule is a top priority for us. PHMSA has been working at record pace under the letter of the law and we have historically had a backlog of regulations for which we have triaged with our limited resources.

After PHMSA's proposed rule is published, we will do everything we can to finalize the rule as soon as possible and we will continue to provide opportunities for the public to comment and engage. At each step of the way, your voices inform our work, and we are grateful that you have taken the time out of your busy lives with many of you traveling from far distances to contribute to our work to advance safety and environmental protection.

With that being said, I want to thank you again for coming to our public meeting and I will turn it back over to Max and Alan to move our program along. Thank you.

MR. MAX KIEBA: Thank you, Osasu. Our next panel, you talked a lot yesterday about definitely proud in the U.S. and others but there's a lot of interest to have interest on what other countries are doing. So we have a couple of folks, our panelists at least here in person, would like to come up. We have a few folks first from Canada, our Canada energy regulator Iain Colquhoun. And Johnny. And there's interest in what other groups do. Some cases Canada in this case might be more stringent than U.S. in certain aspects like emergency response plans, things like that, putting them out there. We thought it would be good lessons learned on what Canada is doing. We have Simon Gant from the United Kingdom health executive program.

He'll call in remotely. They're on leading edge. Some were talking about these aspects, talking about overall what's going on in the UK and other European countries as well.

To start with, maybe with our Canadian colleague. Iain, some intro.

MR. IAN COLQUHOUN: Good morning, folks, ladies and gentlemen, my name is Ian Colquhoun. I'm usually told to shut up. I already like you all. I'm Ian Colquhoun, I'm chief engineer and chief conservation officer for the Canada energy regulator. I began working career as apprentice in steel and tube making mill in 1963. The BSC in chemical engineering and Ph.D. in structural engineering I've worked as a structural engineer and pipeline risk analyst until I joined the NEB, now CER, in September 2010.

MR. TJ ALABOR: Good morning, everyone, before I get started I wanted to thank PHMSA to be here today. It's been a wonderful learning experience hearing from all the parties from yesterday's session. And there's a lot that at least I plan to take back with me from what we've heard here today back to our folks in Canada. So thanks once again. My name is Tejan. I go by TJ. That's what my family calls me. My background is chemical engineering. I joined the Canada regulator back in 2014. Starting as an engineer in the pipe integrity team. Before that I worked in the industry another 10 years in different engineering roles. Currently my role is the compliance program manager for safety at the CER. And what that entails developing the nature of inspection and compliance verification activities that our inspectors undertake to ensure the safe operation of pipelines and ensuring public safety.

MR. SIMON GANT: I'm Simon Gant from the UK HSE. I'm in the science division, fellow in the thermodynamics team. I thought I'd give a bit of an overview of what HSE the regulator does. So there's some discussion yesterday talking about how different organizations or different countries regulatory fit. UK regulators health and safety and both on shore and offshore pipelines and chemical, infrastructure like these and the platforms and discovering policy development consultation, and enforcement. Chemical safety board and they're combined together. About 2,400 staff. About 400 of those work in the science and research center, and there we talk about science topics ranging from major hazards like foreign explosion and health data analytics human factors risk work in that that's it.

MR. MAX KIEBA: Thank you. So initial starter questions perhaps for CER first. Can you expand a little bit more on the regulations in Canada that relate to CO2 pipelines, and particularly in cases where we do have cross-border pipelines, how does that work with those operators?

MR. IAN COLQUHOUN: I'll say just a little bit about the CER and touch on those points if that works. We only regulate one CO2 pipeline, the service valley pipeline. NPS, 12-inch. X70, maximum operating pressure, 20.42 mega pascals, this is 2,963PSI. And my colleague TJ will give you further details in this line. The line is 61 kilometers long. It's 38 miles. And it has operated at 72% SMYS since the 2000. Since the year 2000.

So we don't yet have specific rules governing CO2. We're regulated directly from the CER act and generally we follow our on shore regulations for hydrocarbon pipelines, which is incorporated in the Canadian oil and gas standard as Z 662. And therefore I must say we're here to learn as much as anything. And we are therefore grateful to PHMSA for inviting us to this CO2 pipeline safety public meeting. And we're extremely grateful as TJ said for the extensive feedback that we've had from you, the participants. Here's some general information you can see. We regulate pipelines across provincial borders, international borders. The total land for the pipelines we regulate is around 76,000 kilometers, which would be around 46,000 miles. And three-quarters of those, 75% are gas, and 25%, in round numbers, are liquids. We issue a certificate once we're approved and application to build the pipeline, and once it has been determined the pipeline can be operated safely, we grant a leave to open. That's a document that lets them start. The application involves a hearing with the commission, the commission of the CER, during which the company has to demonstrate that the line meets public need and convenience. As a consequence, the company has to apply to abandon the pipeline if it determines there's no longer a need for it. The company remains responsible for the abandoned line until it is physically removed. So I defer on that. I can do some –

MR. MAX KIEBA: Couple things that came up yesterday on emergency response plans, frustration that at least they're being told that some operators can't put their plans out publicly. Does Canada hear similar concerns or issues?

MR. IAN COLQUHOUN: We publish or publicly available. There is another aspect that I heard yesterday. Maybe along the same lines, in terms of engagement. That is a characteristic of the CER. Maybe just read from my notes here.

We have an indigenous advisory committee that forms part of our governments. This is what it does. It involves a big part -- it enhances the involvement of indigenous peoples of Canada. So IAC advises our board, CER board, and how to best enhance the involvement. And the peoples that are involved the indigenous peoples are the first nations the Emitte and the Inuit and they can ask that and get that kind of information.

MR. TJ ALADOR: So back to your question, Max, to add to what Iain stated. So our requirements are that emergency response plans are publicly available on the company's website. We have that requirement. That is also the case for the Sures valley pipeline that we regulate. And just to confirm that, I checked that again yesterday at the hotel. It is publicly available on the website.

One thing we do with our compliance activities, from our emergency management team, is ensuring kind of oversight of participation in annual exercises. So there's that requirement where companies with their emergency management procedures and practices and sometimes commitments that they've also made into applications or maybe a condition or an order to have annual exercises together with first responders and if that could be the desktop exercise or full-scale exercise in and of itself. And there are learnings that are taken from that to improve either capability or response times. So actually in the next subsequent months we may be actually doing a similar type, either emergency management type activity with our Suez value pipeline and that would again go through the procedures, practices, how they're ensuring they're meeting their commitments that are in their response plan, and what are the takeaways and improvements. That continuous improvement cycle. One thing I will say is in when the company applied, and the order was granted to operate the pipeline, it's all on public record, was with respect to what's called the emergency planning zone for the pipeline. That is in the event of a loss of containment, what is that area for what that emergency will be in. Part of what they had to do was of course dispersion modeling that came up a lot yesterday, with respect to impacts from the event of a leak and what that would entail. So again, part of what



they provided on the public record is, based on the distance from the pipeline to the use, two measures, two thresholds. One's called the lethal concentration limit. That is the lowest concentration in air that is known to be lethal and what's called immediately dangerous to life or health. That's a 30-minute exposure concentration. And then in those, using those values, what would be that time, are there residences or structures in that area that could result in harm to people. That's publicly available and the company has to demonstrate that their response plans and procedures can work to prevent any harms in the event of such leaks that could, based on those lethal concentrations, that could cause harm or death to people in the event worst case scenario, of a loss of containment event.

MR. MAX KIEBA: Thank you. Similar question to Simon talk about the regulatory framework in UK. Iain talked about mileage at least in Canada. A lot of questions yesterday or outlook at least in the U.S. How is the outlook of mileage looking in the UK. If you can talk about other countries in Europe, to the limited extent you can, but at least talk about UK first and then go from there.

MR. SIMON GANT: Sure. slightly different from the Finite line basically the Liverpool area. They're planning on shore section of CO2 pipeline roughly 40 miles coast offshore to repurposed gas platform injected into gas reservoir. That on shore pipeline will be running gas phase and pipeline gas phase the reservoir, the offshore section of the pipeline be raised up in space compression so the on shore and that's planned to be operational by mid 2020s, which is pretty soon.

The East Coast project the other one that's been funded, CO2 from a number of different sources A short section on shore [inaudible] and offshore pipelines so [pipelines]. The pipelines safety act the UK. Includes both on shore and offshore. And the regulations [inaudible] appropriate design. division of safety systems, emergency arrangements and maintenance and those are within those regulations there's a category of pipelines designated as major accident hazard pipelines, currently CO2 is not [inaudible] as a dangerous fluid therefore not classified as major hazard pipelines. What I mean the development [inaudible] around CO2 platforms on the subject controls. But that status at the moment is on the active daily review -- the policy speak more about it. But there are general duties under those existing regulations that relate

to the design and location of the pipeline that take into hazardous potential of the fluids. Consider possibility of external damage consider using extra protection and those are the requirements. So that's sort of an overview of the regulatory position.

We are having discussions with the regulators across Europe to understand what their thinking is on capture transport and storage. The CO<sub>2</sub> storage side we have had some discussions with Norwegian regulator sources around to a terminal where it's been the pipeline and offshore. So they've asked their operators where they've got large stores of CO<sub>2</sub> 2,000 tons to do an additional risk assessment. They've been having some discussions about that and also things took a moment to assess what kind of inventory CO<sub>2</sub> represent in the hazard to some of the other existing hazards. That's the concentration. I should say as well thanks for inviting me to participate in the meeting. And online here in the UK by the it was useful interaction. So thank you.

MR. MAX KIEBA: Great. Thank you, Simon. Probably a follow-up question to you, Simon, first, a lot of discussion yesterday on R&D. And I know you're already part of the dispersion modeling panel coming up next, but is there any other R&D and gaps being looked at in the UK? The dispersion topic. CO<sub>2</sub> in general.

MR. SIMON GANT: Practice documents. too much of details of that. UK. And various technical panels. Practice guidelines on full working briefs and we have for myself and a few colleagues that are involved in that [inaudible] we run models around the pipelines. We pick up some work [inaudible] model CO<sub>2</sub> pipelines. There's some issues there on failure frequencies used in the risk model colleagues working on. There's other topics that are more on the dispersion side we can capture in the next session. I think they're also in Europe. There's a program of experiments the French] conducted recently looking at dispersion of CO<sub>2</sub> and that's about it for the moment. Thank you.

MR. MAX KIEBA: Thank you. And CER, I know that your PRCI applies to international pipelines as well. Any other R&D going on that you're aware of, Canada or elsewhere?

MR. IAN COLQUHOUN: I think that's the main source is that PRCI. That's where we look to and, of course, it's up to the companies to develop with what they have and for us to find out what that is but mainly PRCI.

MR. MAX KIEBA: Maybe this will be an opportunity, if anyone has questions, for any of the panelists both here in person and online as well. Not yet. They're working on it here. He's coming. One second.

MR. ALAN COSLOW: I think I'm on now. Down, down. Dr. Alan Coslow again. In following regulation between the difference between EU and I find that England and the United States is more similar than the EU is and the England and the United States have a allow companies to go ahead and then regulate after there's a problem where EU is more a prove that it will be safe before we allow you to do something. And I apologize, your sound had a high hiss at the upper end. I'm not sure I caught everything you said. But how is the EU addressing the CO2 regulation in terms of are they taking that type of attitude that asking the companies to prove it's safe before they allow the companies to lay the pipeline and transport CO2 or are they doing what the U.S. is doing more so of letting the companies lay line before we have good safety data.

MR. SIMON GANT: I'm afraid I don't know the full details of what each of in terms of regulation. All we know there's a huge interest in constructive CO2 pipelines in Germany Poland, other countries. There's gaps none of us have answered either in Europe or North America. So we'll pace those European projects. I think going ahead pretty soon. So I don't think that there's such a big difference between what's happening in Europe and other countries. If everyone is trying to move ahead with CO2 pipelines. That's all I can say, sorry.

MR. ALAN COSWELL: For the entire panel, and I don't know if this is going to be in the latter panel. So tell me and I'll wait. What's happening with sequestration of CO2 once you get it to the destination, and how far ahead are we in terms of sequestration?

MR. TJ ALADOR: We don't regulate the sequestration aspect we just regulate the pipeline transportation as long as it crosses provincial or international borders. So for the CO2 pipeline we do regulate, I believe that CO2 is used for enhanced oil recovery. But we don't regulate that oil recovery well.

Just to somewhat speak to your earlier or relate to an earlier question. So the commission as part of the adjudication, either in granting a certificate, can impose conditions which are requirements that companies must meet and protecting the environment and promoting

safety, ensuring safe operations that go above and beyond what maybe in a standard or regulation. So, for instance, if your gap is somewhere or, for instance, something may not be fully understood, conditions can be imposed by the commission. So, for example, I know there's a lady who spoke yesterday about the water well, pipeline being close to a water well and potential for a leak gate. And Travis talked about how, in his area, they had required the company to take a certain action. And that's an example of a condition. So if during the adjudication process, a landowner raises a concern, it's such that that's taken into consideration and the commission can impose a condition such as if your pipeline is within hundred feet of a water well, you must do XYZ. You must have XYZ in place. So conditions can be wide and broad or very specific. That's kind of an extra measure that the powers the commission has and those conditions are legal instruments so to speak.

MR. ALAN COSWELL: Are those conditions only if the pipeline crosses a provincial border if a pipeline is completely within a province, are you able to put those conditions on?

MR. TJ ALADOR: If it's completed within a province different regulator. It's a provincial regulator. In that instance we don't regulate those pipelines.

MR MAX KIEBA: And if I didn't mention it, Alberta regulator is on line listening virtually in the case of Alberta it would be AER, overseeing. Same thing as intrastate pipeline. And sequestration storage has come up. At least currently -- I'll look, normally lawyers get nervous, the sequestration currently we defer to EPA on that. There have been discussions in the future if we get to something called transportation-related storage where it might go into the storage and come back out. Almost like our on-the-ground natural gas storage that we do have regulations for, there might be questions coming up on whether PHMSA may have a piece in that as well. So that's way above our heads, even before we get to rulemaking. But it was touched on yesterday on reauthorization, so there's chances some of those discussions may come up there as well. Again, we don't currently do it from permanent storage, but there's a chance -- one part of CCS that's not talked much about is the U part. Utilization. There's a chance it might be utilized in the future. Might get to transportation related storage where we might have a piece in that. Hopefully that answers.

MS. CINDY HANSEN: Hi, Cindy Hansen. Shelby County, Iowa. Landowner affected by Summit carbon. My question is for UK and Canada. I know, TJ, you mentioned populated areas. Do you guys have a definition of what population is because most of us are rural. So it's not very populated. And then we also have large livestock confinements. Do you guys look at your livestock confinements when you're siting or when you evaluate the placement of these pipelines? And how in your countries is siting determined? Do you use what they use in the United States with eminent domain when landowners refuse to sign for these pipelines? Thank you.

MS. IAN COQUHOUN: I can talk to the population. We have a system very similar to the one that has been in the U.S.A. for a number of years of class location. Excuse me. Class one would be the class you're talking about. And it's based mainly on dwelling units. So it's up to ten dwelling units would be class 1. And then it goes on up to sort of municipal types, environments where you would have a class 4. You have the preponderance of high-rise buildings. I want to say we have made a change in Z 662 in the design section where -- and it's voluntary right now. But it will most likely in the next four years become mandatory where the companies have to do a specific population density calculation. And that population density calculation depends on the diameter and the pressure of the pipeline and the product that's in the pipeline. What else did you ask?

MR. MAX KIEBA: Who determines siting and the question of eminent domain.

MR. IAN COLQUHOUN: The last one, we have exactly the same rules that are here. I don't fully understand why that happens but that's how it is done. The eminent domain can be enacted and the landowner has to make the peace with the operating company.

And the siting. The siting where you put the pipeline?

MS. CINDY HANSEN: Yes.

MR. IAN COLQUHOUN: We don't describe that. But what we will do is we'll have a look at the route selection as presented to us and have been cases where we've required the company to do something about it. For example, it was a 36 pipeline near a casino. We did a risk assessment on that, discovered that is not going to be a good idea. Company had some options

but the option they chose was reroute the pipeline around the casino. Where we did not describe that, this was presented to us --

MR. SIMON GANT: I'm doing my best in some of the areas. I think California and Texas, in an area canvas, population density. So on the siting issue, to be honest I really don't know how UK. I think the pipeline my understanding there are standards around locating pipelines I may have got that wrong. Maybe some of those standards 279. Talk about expect them to include some consideration population density. It's not my particular area of expertise.

MR. MAX KIEBA: . Any questions on line?

PHMSA READER: There's a question from Patricia what is considered the kill zone I believe mentioned by Canada?

MR. IAN COLQUHOUN: I'll start, TJ can correct me. We don't actually have that concept. We do have a concept as it is called in US of A the potential impact radius. The problem in answering the question I'm pretty sure it's directed towards CO2 pipelines and we're really not mature in that stage yet where we can describe what that kill zone, potential radius is.

MR. MAX KIEBA: TJ talked about the different layers. The lethal-maybe that's it.

MR. TJ ALADOR: I'll go specific to what is in the record for this CO2 pipeline that we do regulate. So the company in the transcript this is all in the public record -- established a two kilometer emergency planning zone. Within that two kilometers on either side of the pipeline, the population -- the number of residences was established. Within the first 250 meters, that's about 800 some feet, there are zero residences. Within the next 800 to 1600 feet, that's the next 250 to 500 meters, there are two residences. From the next 500 to 1500 meters, another ten and then the 1500 to 2,000 meters so up to like about six, 7,000 feet, another two. Total of 20 some odd residences along the planning zone but there's the distribution barriers. So how that information was used was they used the this is information published by the national institute of public safety and health with respect to those concentrations of CO2. Something about lethal concentration, lower limits. Lower concentration known to be lethal within one minute that was a minimum of 100 parts per million. What the company determined from the dispersion modeling it will take about two reach that concentration in the event of loss of containment, it will be about 200 meters from the site of the rupture before you reach that

100,000 parts per million concentration and there are no residences around there. And for the immediate dangerous to life and health, 30-minute exposure at about 40 parts per million, that's about 117 meters in the event of a rupture, and there are no residences around there as well. That was part of the information that was helped to determine the emergency planning program for the dispersion modeling. That was done about 20 some odd years ago. I think as recently as seven years ago, thereabouts, we did meet with the company. We had stated that they had reviewed dispersion modeling and there were no changes warranted. The Sartaria incident happened about two years ago. And the next time we need the company to go over that other learning that they may have taken from that incident to go back to review either any assumptions that they made in the dispersion modeling that can be used to improve that and maybe changes in the population density based on the data they had in the past that continuous evolving process as well.

MS. KIM HEGEMAN: My name is Kim Hegeman live in polk county Iowa. For the emergency responses that are required in these plans, how are these monetized? Are these monetized in that the company maybe pays an emergency -- a department of emergency or something and then they distribute that money to the communities so that they can upgrade their resources, emergency equipment that they pay for training? Who pays for all this in the end in Canada and UK?

MR. IAN COLQUHOUN: Municipalities generally would deal with first responders. It would be raising taxes and municipality. In terms of damage, the CER uses the polluter pays approach. In that case, the company has to pay for damage. But I understand your question to mean who deals, who pays for the readiness of the population and of the services to the population. The readiness of the population, we require that the company takes care of that themselves. So they do their own investigations, their own communications with the population. And they have to pay for that themselves. It's part of the management system that we are requiring you to have.

MR. SIMON GANT: The UK this is an area I'm not so familiar with has its site. plants top tier site, emergency response plan that's discussed with the local authority and emergency services, accident at that site. And they do practice spills and things. But I'm not sure how that was all

funded. And I'm not totally sure of the situation with respect to pipelines as well. Or the scenario. Not so familiar with.

MR. JOHN STANFORD: John Stanford, Mahaska County my question is about the safety monitoring going on. Whether you have a regulatory requirement for smart pegging and pipelines and what kind of schedule, if you do, and requirements for installation for access ports and so forth.

MR. IAN COLQUHOUN: Specifically with the smart pegging, that is the primary inspection of the length of the pipeline. And we don't prescribe an interval, but we require in our inspections of the company, edits of the company, for them to explain to us how they determine that interval. The interval for running the pigs, for example, and would require them to have as part of their management system an identification of the hazards that they're looking for of the threats that they're looking for. And tying that to the inspection, then the controls that they put in place to prevent a failure.

MR. MAX KIEBA: Simon.

MR. SIMON GANT: I think that's similar to the approach of the performance based regulatory system we've got here in the UK. I think that would be a similar approach, and I would have to check with colleagues for sure. But I think that's the approach.

MR. MAX KIEBA: Anita, question on line.

PHMSA READER: Jackson Mills asked does the Canada UK require developer to develop assessment phase of the project and are these publicly posted?

MR. IAN COLQUHOUN: I'm sorry, what was it an assessment I didn't catch one word there. That one word.

PHMSA READER: Risk assessment.

MR. IAN COLQUHOUN: Yes, that is one -- there's a number of things that have to be done before leave to open can be given, for example, and the overarching thing to determine is whether the facility, the pipeline, can be put safely into service. And one of those considerations that we ask for is in fact a risk assessment.

What the company does for a risk assessment is up to them. But then it's up to us to criticize it if we don't like it.



MR. MAX KIEBA: Simon, UK. Requirements for risk assessments.

MR. SIMON GANT: To my knowledge, the two CO2 pipelines have been doing and there are some future second phase projects that are in the planning stages that are also doing risk assessments. And I think those organizations have been keen to share their approach with HSE. It's a connection CO2 is not classed as a major hazard pipeline yet. So it's those organizations are keen to treat the pipeline as if they were and to approach with HSE. Not directly involved with the discussions myself but I believe the information is shared publicly. I haven't seen any. But again I haven't maybe looked very hard for it. I know the pipeline -- I think the pipeline website. But detail looking there to see what risk assessments they've published or didn't.

MR. GENE SCHULTZ: Gene Schultz. I'm a family member of an impacted farm county, community in Shelby County, Iowa. My question is, when they asked for plume models in both the UK and Canada, do you ask for plume models under different conditions of weather. My understanding in Satartia, the plume model was based upon the best possible conditions of the plume model. And when it actually happened, it was probably the worst possible conditions for the plume model. So I guess my question is, do you guys require different aspects of the atmosphere, temperature, conditions, when you ask for plume models so that the worst scenario as well as the best scenario can be interpreted?

MR. TJ ALADOR: Short answer is yes. We can ask for information on anything we want to on. If I were to make that request of the company, for instance, I would want to know what assumptions it made and why. Kind of the rationale behind the assumptions. The data, the source of the data, the integrity of the data, for the inputs because you have a system where you could put in garbage you get out garbage. So how is the integrity and assurance of that data as well. Do they take into account topographic conditions, topography, layout of the land, things like that. We can ask for that. And the company has to provide that information with any supporting rationale behind why it used those inputs. And typically again if I'm performing that assessment, typically want to know what are those worst case credible scenarios and how their emergency response plan is built around that. I'll also look to want to understand if there's any uncertainty around the outputs. So you get a value, you get some numbers, how sure -- how certain are you about that? And based on that uncertainty, just put in place a

safety factor to address those uncertainties you have. So that's part of that back and forth discussion that would happen with the companies. It's just a matter of companies submitting something and we're seeing it's good. There's a lot of back and forth discussion to kind of understand those inputs, the outputs, and what those mean.

MR. MAX KIEBA: Simon, I know you'll go into dispersion modeling in the next session, but do you work on [inaudible].

MR. SIMON GANT: On that based approach [inaudible] different classes, wind speed, [inaudible] stability should be representative of the conditions. [Inaudible] should consider a range of issues. And typically for a pipeline you'd want to for feedback intervals of pipelines [inaudible] maybe 50 meters [inaudible] pipeline dispersion topic. But also want to consider a range of wind directions that's representative and a number of sizes not just [inaudible] but also [inaudible] representative to build an overall risk picture of that pipeline. If you think about the position in the pipeline, [inaudible] combination of wind speed, stability and say 12 different [inaudible] wind directions. Hole sizes and multiply those out you can rapidly get to hundreds of thousands of [inaudible] pipeline.

MR. MAX KIEBA: Thank you. I think this will be the last question because we do want to get into open comments questions. But go ahead, Bill.

MR. BILL CARAM: Bill Caram with the Pipeline Safety Trust. I had a question for TJ you mentioned you'll be revisiting lessons learned from Satartia and incorporating those into the dispersion modeling that the CO2 operator has used. If after doing that you were to find there were residences within the potential impact area at lethal concentrations or immediate harm concentrations, what would be the CER's next steps there?

MR. TJ ALADOR: So it will be the understanding how the company has taken lessons learned from Satartia used that to improve or update their model, so to speak. And if the results show something different, then it will be understanding, okay, next steps would be what changes do you need to make to your emergency response procedures, for instance, to kind of mitigate against any potential harms based on the outputs, any information that's come about from modeling. If there are any requirements, demonstrate that. The onus to come to demonstrate to us how we operate their pipe is in a safe manner to -- so the key is prevention versus

mitigation. Understanding any how operating conditions or parameters that they do have and their integrity management program around prevention is still sufficient based on the changes or they need to make any changes or updates to the management programs aimed at preventing any potential loss of containment events. Taking those learnings from the incidents and part of that continuous improvement on making improvements both on the prevention side and mitigation side. I know the company to demonstrate that the measures that they do have in place are adequate.

We can still also -- if we find that there are -- so through the CER act we have inspection officers are empowered to issue orders, the commission may issue an order in and of itself if it finds that there's any immediate harm or dangers from the pipeline integration to the public. An order can compel a company to take specific actions that may be outlined. I don't want to give a hypothetical, but it will be in such a scenario if there are actions that we feel that a company should take in order to kind of, due to any potential immediate dangers and protect of the public, we have the powers to do that, through the CER act.

MR. MAX KIEBA: Okay. Thank you for this portion. Thank you to -- Simon will be on a little bit later for dispersion modeling. Any questions to him on dispersion, ask him on the next panel. Thank you to Iain and TJ. They'll be around, too, if we didn't get to some questions and you'd like to ask them. So thank you.

[APPLAUSE]

Now an opportunity for open comments questions. I'll go back to the list that was carried over from yesterday. Glen Alden. Mike Tramentrae. It may not have been transcribed properly. Mike? Vickie Beck. Holly Smith. Sorry. Okay. Go ahead, Holly. I'm sorry. If you don't mind keeping comments to three minutes because we have a lot of folks that we're trying to get through. It's not going to be me, it's going to be the technology that's going to yell at you. But go ahead.

MS. HOLLY SMITH: We thank you for taking time to come to Iowa, the bread basket of the world for this conference. We appreciate the opportunity to visit with you. And we hope you learn to love Iowa as much as we do. On October 29th, 2021, we received a letter informing us about a proposed hazardous pipeline. The letter informed us that our farm was a targeted site.

First time we'd heard anything about this hazardous pipeline plan. We are extremely concerned about the proposal from pipeline companies that eminent domain could be utilized. This project is not for the public good or convenience, criteria that must be met for a project to be able to utilize eminent domain. It is all about a private company for private gain. We feel this is an attack about the right to own private property, a right written into the U.S. Constitution. The Iowa constitution and numerous party platforms. But I regress. Let me talk about the other concern: Safety.

My husband and I are lifelong Iowa residents. We were raised on farms and we're pleased to raise our family on a farm. We are fourth-generation farmers and ranchers and our children are the fifth generation. Our personal situation, let me tell you a bit about that. It targets 160 acres, or one mile of our land, and the land upon we live. This is pasture land. Not crop land. And it is home to 150 cows and calves that graze, live and grow on that land. The route of the proposed hazardous carbon dioxide pipeline runs 520 feet from our home. When the pipeline experiences a leak, will be someone able to come in and safely rescue us? What about the 150 cows and calves? Have veterinarians and animal science personnel been given the opportunity to provide care plans? Do they even know about this potential problem? Who will help them? Those cows and calves? And how will the disposal of all of those bodies be taken care of for the safety of us and our neighbors and our community? Our pasture, as is the case with many, is very hilly, which I am told heightens the chance of pipeline ruptures.

What about the wells and natural springs and ponds that provide water to our cattle? Will it be safe for them to consume? What about our water supply for us -- and we've heard about the impact of the destruction of tiling, defacing the land, some of which has never been plowed on our pasture. What impacts will that last and for how many years? And without being able to obtain liability insurance our family, our livestock, our livelihood will be destroyed. We'll be bankrupt. Based on choices for our land that we had absolutely why should our home and business be forced to -- what does this say about private property? Will it be your home? Will you be next? This room has veterans who put their lives on the hold and who went to war and watched their buddies die for our freedoms. What do you think they think of this situation? . And a few blocks from here is a person who could stop this project.

MR. MAX KIEBA: If you don't mind wrapping up.

MS. HOLLY SMITH: I'm just about done. A few blocks from here. She owes the folks who put her in office a apology bigger than life. The statement you made about coming to our farms we would love to have you and we'll let you see what the stars look like at night. We'll let you help deliver a calf, bottle feed a calf. Tend to a calf, 3.00 a.m., they're not on a schedule, and you're going to see why we love Iowa and we want to protect what we hold so dear.

[APPLAUSE]

MS. SHELLY MAYER: Good morning. Thanks for being here. I like red for multiple reasons. I'm a Nebraska Cornhusker. My family Dixon county Nebraska, northeast Nebraska. My family farm's been there for 99 years. My parents still live there. My dad moved from his upstairs room to the first story when he married my mother. So that's his big move of his life. The carbon pipeline sent navigator specifically along with what Holly was saying received his letter couple days before Christmas in 2021. Not a very nice Christmas present with the last sentence saying that they would use eminent domain. So when they say that they aren't sure they're going to do that, that was the first letter that my family received. We live in a rural community as well. And we are concerned that we're forgotten about like Jan Orr said yesterday. We're the collateral damage. We're the guinea pigs of the new operators who have never done this before. And we're very scared that these are being rushed through before the new PHMSA rules can be done. And as you know, human rush means human error. And so that's a big concern of mine that these will be put in the ground so that they can provide their stakeholders what they want and that's the tax credits. The last focus they have is on our safety.

That's not ever been described to us in any of their meetings when people have asked they won't provide it. They say we'll take care of it, we'll take care of it. Never anything in writing. As it's been explained, we can't get insurance for that. So when they say they're going to take care of it they'll take care of it by getting their lawyers to make sure that we're sued if anything happens.

The reason we asked you to go to a dealership, ag dealership because of the large amount of equipment we have. It's not my grandparents' two horse operation. It's thousands pieces of equipment, bushels and semis not just for the fields but the county roads they get to get to the

ethanol plants that we deliver grain to. It's a big concern of our county roads that we struggle to get enough gravel on with our tax dollars. We are just very concerned that these new operators are going to try to dictate to PHMSA what the rules should be because if you don't do what they want, they will sue you too.

So I guess my last comment is that the stress and anxiety that this has caused all of us is going to kill us, too. And that hasn't been brought up because the mental health is part of this. And that's why we're so emotional about it. We've been harassed for two and a half years by these companies. Harassed. So that's why we're begging for help by you. Thank you.

[APPLAUSE]

MR. MAX KIEBA: And there will be some aspects that were talked about yesterday that we'll look into at least to the extent we can. 195210 came up, that's the pipeline location. That's a performance-based regulation. But we'll look into that aspects we could possibly improve in the rulemaking. There's also parts of that that kind of went into a depth of cover. One thing that isn't always handled clearly, but we always look at. It's one thing what the depth of cover is when you install the pipeline but are you maintaining that depth of cover. And in particular, yes, as you all said, this is really heavy equipment going on. What if you have a heavy rain? Things like that. So that's going to have other issues potentially with the heavy equipment going and other things like that. Those are one aspect of safety I think we can at least consider and look at.

With that, we're going to transition to the next panel. Dispersion modeling. It's probably good carry-over to the international. So I'll ask Mary to come up as our moderator, and I believe we'll have Simon back up among others here as well.

Hand off to Mary. Question for our AV we're having trouble understanding Simon. I'm hearing some feedback up here as well. So I don't know if we can work on that feed. But, yeah. That was the request up here.

MS. MARY MCDANIEL: Good morning, everybody, for those who weren't here yesterday, I'm Mary McDaniel, the acting director of the engineering and research division with PHMSA, and this morning I'm leading a panel on dispersion modeling. So I'd like to introduce our panel.

We'll go through the panel and let everybody tell us a little bit about themselves. We just heard Simon. Simon, I don't know if you want to say hello again.

MR. SIMON GANT: I've got a different microphone hopefully you can hear me a bit better now.

MS. MARY MCDANIEL: It's still about the same. You're a little fuzzy.

MR. SIMON GANT: I'm sorry about that. [Inaudible] my main interest is dispersion modeling in addition to my role in HSE actually UK [inaudible] dispersion modeling. Government [inaudible] match office and environmental and things and we recently hosted a webinar that's available online on this topic that we're going to be talking about today. Thank you.

MS. MARY MCDANIEL: They were asking, do you happen to have a headset that you could maybe try a headset to see if that would work any better?

MR. SIMON GANT: I'll try. See you in a bit.

MS. MARY MCDANIEL: Thank you. Next we have Paul Blackburn with the Bold Alliance.

MR. PAUL BLACKBURN: Good morning, everyone. I'm Paul Blackburn of the Bold Alliance. I'm an attorney, not a dispersion engineer, not a pipeline engineer. You might be wondering why would an attorney be up here to talk about dispersion modeling. Well, I think the answer is because one of the key questions is what do we do with it? And that's a policy question and a legal question.

And I think you heard from the gentleman from Canada talking about how they use the dispersion modeling. And it's important to think about it in those terms, too. That being said, I've reviewed a part of the literature, scientific literature, on dispersion modeling as well. The math is generally beyond me but it's important to see the conclusions and understand what the status is. And Bold has been working on its own dispersion modeling initiative. And we'll talk about that too.

MS. MARY MCDANIEL: Thank you. Next we have Jerry Fontenault --

Working on its own dispersion modeling initiative, we'll talk about that, too.

MR. JEREMY FONTENAULT: Work for an independent consulting firm. Modeling. We use these tools to help answer questions for regulators, operators or just general stakeholders to really make informed decisions about their projects just like to thank PHMSA for the opportunity to

be here it's really encouraging to see all the sharing that's happening here today I'm glad to be part of that. Just a little background. I've been involved with performing numerous CO2 dispersion modeling studies over the last 10 years. These studies have really focused on understanding the potential impact area around the pipeline. And then what kind of sensitive receptors are within that impact area. And then ultimately what's the level of impact those receptors might experience. In addition to that, I think, we have experience using current models to do this that I think are adequate but there are some significant things that I think we need to look for in the future and hope to get into some of those details here on this panel.

MS. MARY MCDANIEL: All right. Next we have Bill Caram with the Pipeline Safety Trust.

MR. BILL CARAM: Like Paul, I'm also not a pipeline engineer. Unlike Paul, I'm also not an attorney. So why am I up here? And I'm here, Amanda yesterday spoke about the pipeline tragedy in Bellingham Washington that's where the Pipeline Safety Trust was born. As we learned about CO2 pipelines, quickly became clear that this would be a big priority for the Pipeline Safety Trust, that this is why we exist, to prevent another pipeline tragedy from happening. As we dug in, we quickly found that this dispersion modeling was a huge issue. That needs a lot more research, needs a lot more regulations around it.

What I hope has become abundantly clear, however, is the limitations of that. Even with perfect modeling and determination of potential impact areas, with no setback requirements associated with those, what we're really talking about is an integrity management program, higher safety standards on the pipelines that could impact a community and residents and not those setbacks.

And another piece of this that I hope has become clear, too, and will become clear on this panel, is just how many variables go into an appropriate cloud dispersion model, and it's really up to the regulators and the industry to convince the public that these are going to be sufficient models to determine who's really at risk from these pipelines, looking forward to the discussion.

MS. MARY MCDANIEL: Next we have Chris Ruhl with our PHMSA Accident Investigation Division.



MR. CHRIS RUHL: Good morning everybody. Pipeline accidents across the country. We've got people located across the country to do just that. We tried to determine why accidents occur, but then also share lessons learned to try to prevent incidents in the future.

Before I was with PHMSA and the accident investigation team, I did 20 years with emergency response, in emergency response. Worked with dispersion models for both on the contingency side of trying to make sure that preparedness efforts were sufficient prior to incidents, but then also more real time when incidents occurred to make sure that we kept the public safe. And beyond that, I would just on a side note like to say I'm really touched by a lot of the stories about the century farms.

I live in -- in Oklahoma we call them centennial farms. We've got a farm that's been in our family since 1920. So touches me to hear the stories. Thanks.

MS. MARY MCDANIEL: Thank you. Simon, do you want to give it a test to see if we can hear you better.

MR. SIMON GANT: Am I any better? Can you hear me now, can you hear me now?

MS. MARY MCDANIEL: All right. With that, we can go ahead with the panel. I'll ask a few questions and you all can decide if you want to go down the route. The first would be, if you could give us your thoughts or your comments regarding the status of the current dispersion models that are available.

MR. BILL CARAM: Well, I think the fact that under the current regulations, and the current standards, the fact that Dunberry had not found it to be a failure on that pipeline says volumes about the current state. So I know there's a lot of research going into what models to use and I know -- I'm hoping that PHMSA is looking at this and the new rule that they're developing. But I think just the fact that Satartia wasn't identified as a potentially impacted community says that there's a lot of work to be done here.

MR. JEREMY FONTENAULT: I'd just like to say that when you look at the modeling tools, there are several publicly available or commercially available modeling tools that do a really good job at CO2 dispersion modeling and predicting the potential impact area. Many of these models have been validated using real world experiment data. And have shown high quality results.

But critical aspect when you're applying these models is some of the assumptions that go into that.

Whenever you're doing any kind of modeling you have to make some simplifying assumptions about some of these complex physical and chemical processes that happen when dispersion occurs. But it's really critical to make sure that you're making highly conservative assumptions when applying these models. Those are the worst-case assumptions, and that can include the pressure the pipeline's operating, full bore rupture, and certain environmental conditions, all these things are compounding effects that need to be factored in when you're applying those models to get accurate results. And we do have some experience doing that specifically looking back at Satartia, Mississippi incident. And some of those models we have used do predict that the city or the town could be impacted by full bore rupture release.

So if the models are applied with the right assumptions, they can do the right job.

MR. PAUL BLACKBURN: Let's take a step back here. What do they even mean by dispersion modeling? What they do is they use computer programming and lots of complicated math to figure out where the wind's gonna blow or how the CO<sub>2</sub> is gonna move after it's released, and there are a lot of factors concerning where the CO<sub>2</sub> moves after it's released. The first one I'll talk about is kinetic modeling, that's where the blast zone is around the CO<sub>2</sub> rupture. So for example the ADM project, Archer-Daniels-Midland project, the U.S. government did modeling for that and the first modeling they did was to figure out what the blast zone was. So this is the kinetic zone where anybody within that area would be killed, right? That's usually not what people talk about with dispersion modeling though, but that exists and that was done for that facility. That was just a six-inch pipeline. I think it was a thousand meters long, not much CO<sub>2</sub> came out, and the blast zone is relatively small. I think it was on the order of tens of meters, 15 meters maybe. Then there's simple modeling, it's relatively simple and the gaussian modeling. There's lots of names for it, but probably the most common one is PHAST all in caps. I believe it was developed by DNV, and that was the modeling that Denbury used and they did their modeling in 2011. There's a number of different kinds of models like that. It's all relatively simple. So Bold did use modeling to model the pipeline rupture that we see here, and we didn't release it because we misunderstood PHAST modeling lays perfect eggs. The models

that the output looks like exactly perfect oblong blobs because it's very simple modeling. It assumes that the air moves in a steady fashion at all altitudes and there's no turbulence and all the CO2 stays within this blob. If you rely on that it doesn't work and the pipeline companies seem to understand that the landowners just filed testimony in South Dakota by a pipeline modeling expert that we retained that essentially says that fast modeling they shouldn't have used that modeling. If you look at the roots of that modeling and you look at the modeling behind it and all the verification stuff, that it's simply not adequate to model a CO2 rupture and it should not have been used by Denbury even in 2011. Now the thing is we know Denbury used that because it was in the failure investigation. So they shouldn't have used it yet that's still being used by companies now. I think the writing's on the wall with the findings that it didn't work as well as what this expert is filing and we're gonna file this in more states, no doubt, that if companies use PHAST from now on, they're gonna be facing liability. So they're gonna have to stop using this modeling because it isn't sophisticated enough. Then the other kind of modeling is called computational [indiscernible] now lots of words it's much more complicated than PHAST. It takes into account turbulence, it takes into account the vegetation, topography weather therefore much more expensive, much more computer intensive. That doesn't mean it doesn't exist this modeling is not new it's been used to determine blood flows through medical devices and lots of industrial processes, complication dynamic modeling is not new. Now it needs to be adapted better for pipeline ruptures and that's being done over the last decades. Even though it's not perfect it still produces better results than the PHAST modeling. We need to realize none of these models are perfect -- because some of them just aren't gonna work, some of the simpler ones. So I think that's the background on the dispersion modeling, and Bold is working to develop models to recreate Satartia. It's the only extant rupture that hurt people and you may have seen the kinds of modeling that's been done, for example, on explosions at oil refineries which the federal agency does those models. They always try to recreate what happened. I think we need to re-model the Satartia incident and verify the models work and maybe some of the folks here have done it. And finally I'd say the other question is how should they be used and you've heard that Canada could make them public. The impact radius and the mathematics that are used for natural gas pipelines they're

on the federal register, anybody can figure out the potential impact of this. Yet we hear landowners saying all the time that the companies won't tell them what these models are. Well, we know it for natural gas pipelines we may not know it for CO2 pipelines and that's important. My folks live in mason city I think the pipeline there is small enough that they're not at risk, but we'd all like to know what the risk is and I think we need to stop treating citizens as victims and treat them as people who deserve to understand what the risks are, deserve to know what the information is, can figure out in advance what their evacuation plans are and are able to take care of themselves to some degree and then plan with the emergency response folks. So I think there's a lot that can be done here to improve them, but there's much that can be done right now to help people understand the risks and we need to do that.

Thank you. [Applause].

MR. SIMON GANT: Yes. So the last speaker was right to say that there are some limitations with PHAST because it seems that and CFD models should in principle be [indiscernible] in that Sartia incident. One of the really critical things with any model that we use is to check that it gives you realistic predictions because it can be re-configured in so many different ways. Different use say with CFD software can give different results. So it's really important to validate that model that's developed in the CFD code against reliable data that's relevant to this scenario of interest like the CO2 pipeline release. And that's a gap that exists at the moment that hasn't been addressed and we think it's really important, but we talk about validation we're talking about experimental data for releases that share characteristics with similar interests. So there isn't good data available for CO2 releases on slopes and there isn't really other comparable data from chemicals that exhibit similar characteristics. So dense gases like chlorine and so on. It's an issue that we've recognized and lots of other European and North American dispersion groups have recognized and we're really keen to address that and initiate a program with experiments where we would do some CO2 releases on slopes to understand what would happen and to be able to have a data set that you can then test models against. So in the UK we've had discussions with the DNV on [indiscernible] it's been used for previous CO2 release experiments those tests and they're doing further work. I recognize that there are some limitations with PHAST, but there are software programs out there that have a CO2 model

in it but they've said they'd like to do some further work on that model. Anyway, this program of experiments would involve DNV's experimental and -- that's got some really good terrain with suitable slopes, grass land slopes just a starting case to do some experiments on it, to provide validation data and without the validation data -- there's always uncertainties in the results of these models. So it's really a necessary step.

The other issue I wanted to mention so CFD it sounds great, but the cost is really quite significant. Usually a single simulation can take between an hour and a day to run even on high performance computers. So like I mentioned earlier in the previous session, if you don't do risk assessments and you've got [indiscernible] you want to look at weather connections, wind directions, haul sizes, pipeline routes, you're talking about hundreds of thousands of calculations and that's not really doable at the moment with CFD. So the thing that PHMSA should be commended on this that they initiated a with Texas A & M and they're currently working on a machine learning approach that is trying to speed up these simulations. So the machine learning approach would be trained on CFD calculations on a range of conditions and it should run pretty quickly. So you have a sophisticated model that will run quickly. The challenge there is this work is gonna take some time, a year or two maybe and [indiscernible]. So it's one approach, but I wouldn't want to put all my eggs in that basket, if you'd like and also it'd be good to consider other approaches. So in this webinar that I mentioned, there were some presentations given by guys at [indiscernible] we've got a model developed that's used more in defense type applications and there's another presentation there as well by the Department of Defense and there may be others. They're very keen to come up with a solution for this, but it is a gap at the moment. We really don't have models that can run within a few seconds or minutes and give results with terrain. So just to say that's a gap that exists at the moment.

MR. CHRIS RUHL: I think the only thing I would add is -- so my team was responsible for building the investigation report that's been referenced in the discussions today and within that report, it actually -- it has two figures. One that shows the operators predicted the impact and also one that was conducted by NOAA which was directed by local responders. So I would just say that in terms of the operator, we know that CO2 went beyond what was predicted. Also, the NOAA

report indicated that the CO2 would impact way beyond where I think they saw impacts, but both were modeling efforts and the other thing I would say just dispersion models is not something that's new, it's something that's been around, but we continue to try to tweak it to get the most accurate modeling available so that it goes in real-life situations. To that point, the model that was done after the event in SATARSIA utilized the current temperature, the current wind speed which is something that the models prior to release -- so when we talk about assumptions, those are things that have to be built into the models. So those are just a couple of items I wanted to mention. Thanks.

MS. MARY MCDANIEL: I don't know, Bill or Jeremy if you want to add more since we're talking about PHAST and the computational models I don't know if you had any comments that you wanted to add regarding using those two different models.

MR. BILL CARAM: One thing to bring up is, in PHMSA's consent order with Denbury on the SATARSIA incident, they asked Denbury to go back through their length of pipeline and identify all areas that -- all population areas that were within two miles of the pipeline and conduct the more sophisticated -- I don't know if they specifically asked for CFD modeling but more sophisticated than PHAST for sure, to maybe identify areas that were missed in the way SATARSIA was missed. I'm not sure if that's conservative enough from the public's perspective, but I think there's potential there for maybe a path forward where we could identify the areas where we do need that more sophisticated modeling used.

MR. JEREMY FONTENAULT: I'd just like to add instead of talking through pros and cons of specific modeling packages and things like that, I think one of the key things to think about is what information goes into those models and again coming back to some of those specific assumptions that go into it. So being on that highly conservative side is important, but you also need to consider a range of different types of release scenarios and conditions within the pipeline, environmental conditions, seasonal, wind, air, temperature all these different variables when you're doing these types of studies and also consider a range of thresholds. So these thresholds are designed to understand the level of impact when someone's exposed to the CO2 and also the amount of time they've been exposed to that CO2. So there's lots of

different concentrations you can look at and it's important to consider a range of those to understand the full magnitude of the potential release.

I just want to follow up on something about the CFD modeling that people have been talking about. I agree with a lot of the statements that have been made. There are CFD models out there that can do a really sophisticated approach to understanding the risk of CO<sub>2</sub>. It requires a high level of expertise to run, they're very time-consuming, but more specifically they're very site-specific and when you're looking at risks along a very long pipeline it's just not practical or even possible to do that type of modeling on that scale. So that needs to be a key area of focus figuring out some of these more basic dispersion models and how do we factor in that terrain to get more accurate results but be able to do that at scale that we need to for these type of pipelines.

MR. PAUL BLACKBURN: Well, I agree that they are complicated and there's limited amounts of modeling that can be done. But for example let me skip for a second to the oil industry. For the line three pipeline in Minnesota yeah they can do modeling for where oil spills go in water, right? But obviously trying to do modeling for every single water cross in Minnesota which is where I live, there's lots of water there. You could be doing modeling everywhere. So what they did was representative modeling and they picked some representative sites and they did nine models and they didn't do one for lake -- and we did one for the St. Louis river. So it was a perfect, but then we had to figure out whether that modeling should be public and we published it and because it's just representative, it's just to help people understand -- give them some understanding we can't get perfect understanding but we can give people some sense of the risks. A lot of the land in the Midwest is relatively flat is anybody surprised by that and a lot of it's [indiscernible] land. So for some places it could be possible to do representative modeling and is it perfect? No but is it better than not knowing at all? Yes. On the other hand we also know for example one of the facilities is in PEORI Illinois that's a 158,000-metric ton emission site. Probably a six-inch pipeline coming out of that it's across the street from other commercial sites. It's three blocks from an environmental justice neighborhood and to talk about this we all know CO<sub>2</sub> runs downhill, but the dynamics are more complicated than that. The river there runs to the southwest. So what if there's wind and the environmental justice

neighborhood was uphill but what if the rupture is upwards and the blast from the CO2 carries it upwards and it blows straight to that neighborhood which is three blocks away. I don't remember how far it is, but a few hundred yards. It's a six-inch pipeline so all of this has to be modelled by pipeline size. But places like that when you have thousands of people living within a distance of that pipeline, maybe they gotta suck it up and do the expensive modeling and put the computer time in. Other places, we can just get a better sense more generally. I think there are ways of dealing with the limitations and yeah nothing's perfect, but we need better than not. And the community in PEORIA we need to have more information so you understand that.

For example, we don't talk about evacuation plans that's something that people new to these pipelines maybe should have the opportunity to figure out for themselves or with the advice of their local emergency planners. But they won't be able to know that unless they understand where the potential area where that CO2 could blow and again not perfect information but better than just simply having secretive company files where none of you know anything.

MS. MARY MCDANIEL: Chris did you want to add anything else? And Simon I think you had -- so the next question I would have to the panel and it's come up where folks yesterday it was mentioned if there is a leak what are the different options for them. So I wanted to see if there was anything that you all were aware of regarding intrusion modeling about CO2 going into buildings in the area.

MR. SIMON GANT: I'm aware of some tests that were funded by national [indiscernible] and they did do some experiments where they directed CO2 on stacked shipping containers to look at infiltration rates into the buildings. There was also an experimental program you can find online called jack rabbit where they did [indiscernible] chlorine it's a dense gas and they instrumented shipping containers and some other cabins to look at infiltration rates and there was a detailed study done. So there is some information out there. I think the challenge is often characterized buildings that you've eventually got so the exchange rates with your home and things like that because it can depend whether you leave your window open or not. So characterizing that variability in modeling is a challenge. Yeah, that's it for me.



MR. PAUL BLACKBURN: Yeah, I haven't seen anything about [indiscernible] inside of buildings, but I have seen dispersion modeling in Los Angeles to determine pollution from automobiles within urban spaces. So some of the modeling at least that can be determined roughly what the concentrations would be in an urban setting in buildings. The buildings can be modelled topographically just like the landscape can. So we'd at least know what the concentrations of CO2 might be outside the building and that would be a starting point to be able to model then what would happen inside the buildings. We know at SATARSIA the next morning at six in the morning I believe they looked at the CO2 concentrations inside of people's homes and they walked in with the detectors and we had as high as 25 parts per million 12 hours after the rupture started. So there is some data about that. Again, not a lot but this is the gaps we have to deal with. I think it's telling that a lot of this research is happening in Europe and in China, because I think their population densities are higher and there hasn't been the same concern because most of the CO2 pipelines in the U.S. are in west Texas and more remote areas of the U.S.

MR. BILL CARAM: I know there's been some preliminary research done on this that has shown that homes can provide some protection of CO2 and I think there's gonna be a discussion about this on the emergency response panel later today. I think it's too early -- I'm waiting to see the results of a lot more studies done, but one concern that just comes to mind is that I would assume that disadvantaged communities are not going to have the level of insulation and sealing of their home in the way that wealthier communities do and I would want to be sure that these studies are looking at the whole range of level of insulation of the home too, to make sure that the disadvantaged communities will be protected as well.

MS. MARY MCDANIEL: Simon, I guess for you in the UK, do you have any special considerations that you all are doing.

MR. SIMON GANT: Site specific we're very keen with this proposed plan like I mentioned to do experimental work on CO2 releases, to validate models and are keen to work with other partners on projects including modeling groups and we've had discussions with a number of them already and organizations. So on the infiltration side, I think the approach that tends to get used in risk assessment work because we do modeling ourselves for not CO2 but for other

substances and typically it's just an air chain that gets used, but you'll recognize that there's limitations with that. So yeah, having some experiments or even if you could put some kind of obstacles or instrumental buildings would be useful.

MS. MARY MCDANIEL: And I guess I just wanted to state again Simon mentioned that PHMSA is sponsoring a current R and D project with Texas A & M university to look at the potential radius and it is to do the computational model. So that just kicked off in the late fall of last year and it's gonna run through 20 -- I think through 2025. So it's just kind of kicked off but gathering data sources to look at various terrains, temperatures, all the different information we've been talking about. What I'd like to do is if you all have specific questions for our panel, we can open it up to that.

MR. DEAN KLUSS: Dean KLUSS from Wayne county, county supervisor. I find it absurd that we know which modeling is best and the federal government is willing to spend billions of dollars in tax credits and PHMSA, you're a federal government agency and the department of transportation. If we know it's best, why don't we do the modeling? We can send a man to the moon. We can figure this out.

[Applause].

MR. THOMAS CRAIGHTON: Hardin county emergency management coordinator and my question to you and I know we've got emergency management coming up later and our response and emergency response, but my question to the panelists as far as plume modeling because the only modeling that we currently have available, that I know of, is our ALOHA modeling and my question to that is we have a few inputs into that, but where does that modeling fall into all of this, in the PHAST and all of those things? Once this happens, then we're responsible for that and we have to figure out what we're going to do with that, but if our models are not accurate, then we're screwed. And in emergency response, we typically are responding in minutes. So we have to go with -- I typically use a 70/30 rule if I have 70% of the information I can rely on, then I need to react because I don't have time to wait for a hundred percent. That's just impossible to do. So where does our current response modeling fit within the discussion of dispersion modeling that you guys are talking about at this point?

MR. CHRIS RUHL: Great comment. I think I can probably talk a little bit about that based a little bit on my past experience. So ALOHA is a product that's used in the response community I think it's something that the EPA provides. I think that through the years, ALOHA had a number of updates, which include using real-time temperature and wind speeds so that you can really try to formulate it. But the intent of those are for folks such as yourself to make decisions based on evacuation, should we shut down roads, shelter in place, et cetera. So I think that continues to be a valuable tool. I think the modeling -- and that's part of the reason why I talked about the different uses of dispersion modeling for purposes the primary discussion is the front-end of that pipeline operators have to be to understand what the impacts are. The reason why that's important to you is, you need to be able to use that information for pre-planning, you need to understand first of all that there's a pipeline that may be going into your jurisdiction and we'll probably talk in the emergency response section a little bit later about all approaches and contingency plans. Whenever you look at your community generally you're probably looking at where all your hazards are, they come into the environment and how you're gonna respond to those. I would tell you that ALOHA is a good tool. It's used across the country for real-time situations. What we're talking about here is something that's more on the front-end where a release is not ongoing. The one thing I would say about the ALOHA model and those real-time models is, you kind of need to know which some of the members have talked about is what's being released, how much is being released, how long it's gonna be released so even that model can give you some sense of accuracy.

MS. MARY MCDANIEL: Simon, did you want to --

MR. SIMON GANT: Yeah I was curious to know with the local emergency responders where this group the IMAC group that does emergency response modeling work, it fits into the defense [indiscernible] with a response time of 10 minutes. You can give them a call they'll get a result back to you as soon as possible and they run that 24/7 it's in the U.S. and it's -- so I know that group and they had something like 2,000 requests per year and they can update things as things come in and they're using the H pack modeling software, which in theory should actually be able to account for some of these terrain effects as well. I was just curious to know whether you know about that or not.

MR. CHRIS RUHL: Simon I would say great comment and I believe that's the tool that the folks in SATARSIA used.

MR. THOMAS CRAIGHTON: Let me clarify, because I really cannot understand him well from where I'm at what model he talked about and is it available in the U.S.

MR. CHRIS RUHL: Yes, it's available in the U.S. and the model tool that he's referencing, the group -- basically through your state emergency response, you should be able to get the contact information so you can use that.

MR. THOMAS CRAIGHTON: And what's the name?

MR. SIMON GANT: I think IMAAC and the group is DTRA, reach-back and they run the model for you. They give you the results so you don't have to run the model yourself.

IMAAC? And we'll take it as an action item and share it.

MS. MARY MCDANIEL: And we had somebody that signed up specifically to talk -- Jon Tack had a question for this panel.

MR. JON TACK: The state of Iowa has developed a LiDAR elevation data set it's highly accurate and publicly downloadable. My question would be could your models that you described accept that data and would it be helpful?

MR. JEREMY FONTENAULT: If you're talking about some of that CFD, the complex fluid dynamic type modeling that can account for terrain, data like LiDAR elevation models would be key input to that to be able to understand the movement. Some of the other models that don't factor in that terrain couldn't account for that, but yes.

MS. MARY MCDANIEL: I understand we have an online question.

PHMSAM READER: Yes. Alejandro is asking, considering CFD model input drives results, how does an operator predict weather conditions the day of an incident to run a model which correctly predicts dispersion, what efforts are being done to validate CFD models?

MS. SIMON GANT: I could tell you that IMAAC that I mentioned would take into account local conditions and they have got automated systems for importing weather data and terrain data local for the site. So that emergency response modeling should be able to deal with that. On the validation, this is the issue I was talking about earlier that we're lacking. So that does it for me.

MS. MARY MCDANIEL: Does anybody else have something?

MR. PAUL BLACKBURN: I have to say there's been talk about conservative assumptions and the real-time models are great, but if you're in a house and the pipeline ruptures near you, you need some basic information about potential risks. You don't need perfection. As I said we can do representative modeling that gives people a sense of conservatively speaking of what the danger zone is and then people can act on that. And I imagine that's true for emergency response people too. The first thing they're gonna do is stick their finger in the air and say which way is the wind blowing and we can get more data, but this is minutes and lives that could be on the line, right? So we don't need perfection, we need some representative modeling so that people have a general sense of what the risk zone is for different pipelines and different sizes. And as the computations get more powerful that would be great but when we're talking about people in their houses just trying to figure out what's going on. The gentleman from Canada one of the things they commit to doing is an emergency alert system through texts and emails. You can buy online on Amazon CO2 detectors so there can be alert systems and then people just need to know if they're roughly within the danger zone and be alerted to it and get out of there. It doesn't necessarily need to be -- I don't need to know exactly how many parts per million I'm breathing in I just need to leave is the way most people would feel about that.

MS. MARY MCDANIEL: So Jeremy we're gonna wrap it up with you I'm being told we need to move on. So I'll let you go ahead and comment.

MR. JEREMY FONTENAULT: Just one comment related to that. When you're doing modeling from the planning perspective, I think it's critical to account for all the range of those weather and environmental conditions. So a lot of times we'll look at seasonal highs, lows, surface conditions at the time of the season whether there's crops on the ground all things that impact dispersion. When you're doing that from a planning perspective I think it's important to look at that full range to be able to understand the problem.

MS. MARY MCDANIEL: I want to thank my panel and I think we're gonna switch over to you and we can go into general questions but --

MS. DENISE KLUPE: A clarification though if I have it for a specific question for the panel and if they leave I won't be able to ask that question. They'll still be here.

Then everyone else won't be able to hear it necessarily. It's a short one Denise [indiscernible] I've heard multiple times that the modeling is expensive. What I thought as an individual was expensive for that company, it's a sneeze. So I'd like to ask clarification of how much when we say the expensive model, is it really because -- pipelines have multi-millions of dollars. So I'd like that clarification when we say expensive.

MR. SIMON GANT: I did [indiscernible] where I worked out if the simulation took one hour to run and you had a hundred on the pipeline and as I mentioned before four scenarios, four hole sizes, a range of wind directions and every 50 meters, I think I worked out if your simulation took an hour it'd take 44 years to do the simulations. So if you through enough computers at it, you could reduce that to, say -- I don't know, say a month. So there's a cost there to do that and I haven't done how many dollars that equates to in computers, but that's significant I guess.

MS. MARY MCDANIEL: Jeremy did you have something.

MS. JEREMY FOUNTENALT: I don't have any real experience with the costs of the CFD type modeling but just kind of a rough estimate I would think just to run a single site, maybe a range of scenarios, you're probably talking hundreds of thousands of dollars maybe when you start applying that along an entire pipeline looking at hundreds of locations, it grows exponentially from there.

MS. DENISE KLUPP: Okay but again --

Which is rough range cost is --

What I heard is medical devices and other ones are doing it so other companies are doing those types of things. So again if we talk about it in hundreds of thousands, what's a life equivalent to?

[Applause].

MR. PAUL BLACKBURN: And I would add we can do representative modeling so it doesn't have to be everywhere, all the time. So this is something that's more of a practical question and we do know one company that knows how much it costs, Denbury knows how much it costs. So

why don't we know from them what it costs and they did it and they afforded it, but then they're a \$4 billion company and their fine was 2.8 million. Well, okay how much would they have saved and who knows what their liability is gonna be for this spill?

MR. MAX KIEBA: All right, thank you. A lot of good discussion here that might apply to the emergency response panel later. And I will say the question on cost comes up but those are the sort of things we do consider in our rulemaking and we're looking at ways to improve that, but some aspects we do have to look at from a cost benefit analysis. It's not always an easy answer. So with that I'll go to open comments, questions. Is Dorothy here? Dorothy Sulfkin?

MS. DOROTHY SEKUS: Hello. I'm Dorothy from poke haunts county. I first want to express my appreciation to PHMSA for coming to Midwest Iowa. You know, we people in the Midwest think that Washington lives in a bubble and they don't really know what goes on in this area. We also are pretty skeptical of some of the policies that come from Washington and especially now with our Biden administration. They don't seem to be listening to us. They have their own agenda and we are very thankful that you have taken the time to come to Midwest Iowa and listen to us, our voice, and express our concerns about this hazardous pipeline and the safety factors. We live on the edge of a small community. Navigator pipeline has proposed a pipeline going a mile through our farm, in the middle of the farm. This pipeline is within 1200 feet of the community. So of course, we are very concerned about the safety, not just for the community but acreages that are near there. We are willing to listen to guidelines on the setbacks and what the first responders are expected to do in these kind of situations. Another thing that we are concerned about are the drainage tiles in our areas. We had navigator come to our county meeting and they had a group from Texas and they had no clue, they did not understand why we needed to have so much drainage in Iowa. Of course, Iowans know how important the drainage is. Our community is in a low-lying area and we've had for years had problems with water in the basements flooding, in the streets, ponds in the fields and we had a main, but the city decided it was time to upgrade this. So it passed to do an upgrade, which cost millions, and it went through our entire farm diagonally. And we went through this, this is where the pipeline wants to go where this drainage tile is. And of course, farmers like many of you we have put in a lot of pattern tiling and we do not want a construction pipeline to disrupt

this main and our pattern tile and we're just very fearful of that. So we are looking for guidelines as to how far down below the main these pipelines will be laid, if they're going to be trenched, if they're going to be bored, how all that is going to fit in.

The other thing, the pipeline companies are not getting the easement signed voluntarily. So they're wanting to go to our IUB and have eminent domain, take our land to put a pipeline in that we do not want, we do not need, and it is just a money-grabber for the people that are [applause] wanting the pipelines. And if the IUB permits this to happen, that's gonna open up a whole new can of worms and we'll just have all kinds of pipelines that want to come. So PHMSA has their hands full deciding how you are going to evaluate and regulate these pipelines, the CO2 pipelines but then all these pipelines that come in the future. So we want you to take this very seriously and look at all the angles before making your recommendations. And then I have one final thing. I want to send a message to Governor Reynolds and our legislatures. We want them to listen to their constituents.

[Applause]

We have heard the last two days that this pipeline is too risky and there are too many unknowns to have it crisscrossing across our state. We also do not want to have a fear tactic or having money dictating for our people to sign the easements. We do not want that and we do not want eminent domain. We don't want the pipelines, we don't want their money. We want protective and preventive land and we want to have most of all the safety of our individuals and our livestock. For over 200 years, we have been the bread basket of the world in the Midwest, and we want that to continue and we do not want to have it disrupted by a hazardous pipeline. Thank you.

[Applause]

MR. MAX KIEBA: I can at least talk about what we can control and what we can't control. Some of that's come up over the last two days. So definitely things that we can control is the upcoming rulemaking so please it's been mentioned a few times, if you have questions or thoughts on that, definitely submit it on the docket.

Some questions came up the last couple of days some statements about our statutory authority. So those are things that Congress tells us what we can and cannot do. So siting



those we don't have the statutory authority to do it we'll actually get in trouble if we step too far in that lane. There's another process called reauthorization if you don't know every four years our programs were authorized and Congress tells us what we can and can't do including different mandates. Sometimes it is looking at different statutory changes and things like that. So if you're not aware there's a vehicle in process where you can reach out to typically senators it could be the Congress that you could reach out to. To your comment about Washington isn't listening if anyone doesn't know we report to at least three main committees there's the house C and I Senate commerce a few others I'll definitely say a lot of congressional staffers both sides have been trying to listen about this and figure out what can and can't be done, including consideration of reauthorization, things like that. So again that's another vehicle you can do if you don't like the statutes that we do or don't have, that's a vehicle you can follow up with. Pipeline Safety Trust they're aware how to do that vehicle, yes industry also provides input but you as the public you also have the ability to try to reach out to some of those leaders. Again that's just another vehicle available to you. Hopefully that helps.

Julie Glade.

MS. JULIE GLADE: Hi, good morning. My name's Julie Glade.

Sorry. Again, thank you for coming to listen to us. My name's Julie Glade I'm an affected landowner in Wright county Iowa and I'd like to tell you just a little bit about my story and please know that this is a story that's being re-played in countless counties across the Midwest. It's a story of how pipeline companies are willing to put our lives in danger for their own massive personal gain. After attending the meeting at the Wright county board of supervisors earlier this year it became clear to me that summit carbon solution reps are using unsubstantiated claims of safety to get landowners to sign voluntary easements. At that meeting summit's director of compliance and safety expert stated and these are his words, the plume modeling showed that 100 feet from a CO2 pipeline rupture that it would be critical to human safety. Out to 300 feet is borderline and at 300 feet, there should be no hazards. When we disputed these claims during that meeting they responded with you can do your own research, you can have your own opinion. The burden of proof should not be on us the landowners. We didn't ask for this. These statements by summit reps show a total disregard

for the lives of the landowners living next to their pipelines and by their own admissions not living near themselves. In the independent plume study that I have if a rupture should occur near our homes 600 feet from the pipeline we would have minutes to don our contained apparatus. Stations are also 20 miles apart on our section of the pipeline. There can be no trust of summit's claims of safety they claim the pipeline is safe with no proof of their own. These companies are not gonna do the right thing if they're not made to do the right thing. My concerns [indiscernible] hazards panel discussion where when I learned that corrosive impurities will be increased carrying CO2 from multiple sources but crack arresters should take care of that. I'm sorry but that gives me little comfort. Have studies been done to prove that crack arresters work with highly pressurized CO2 will we be able to turn on the tap water and know that our water is safe. All the 3d modeling and research sounded great until you realize it's not gonna do us any good unless someone hits the pause button. It makes us feel like second class citizens. I hope you understand that people's lives are at stake here. Your job is to do everything in your power to keep us safe. That's what we pay you to do. Please don't take this lightly. In the strongest language possible, please issue guidance to impose a moratorium on all CO2 pipelines until safety studies are complete. And also, they need to clearly state what local governments can and cannot do to protect their citizens, and please expedite plume studies. We started working on that last fall. I'm with dean from my county we don't have years to wait for dispersion studies. So thank you very much.

[Applause].

MR. MAX KIEBA: It is fair to say that fracture control is on the list it's something that Pipeline Safety Trust brought up. We do have existing code sections that talk about a fracture control plan but there's an acknowledgement that maybe that needs to be beefed up a little bit more to specify. I think it's fair to say that dispersion modeling is on the list as well. I don't know if it's talked from a code section there are parts of our liquid code that looks at an overland spread perspective. So we do have existing regulations now that inspectors do look at, but we have to take it a little step further. Again dispersion modeling, I think it's fair to say we're considering it and then fracture control as well.

With that, we've all been here a while. I think we need a little bit of a break and I personally need a bio break, but let's go with 15 minutes. Be back at 11:15 Central Time. Thank you.

[15-minute break]

MR. MAX KIEBA: Okay. Everyone, we will get started on our next panel.

So our next panel we'll hand it off to John Gayle to take it from here. Thanks, John.

MR. JOHN GAYLE: Good morning everybody. My name's John Gayle, I am the director of standards and rulemaking of Pipeline Safety Trust. One of the things we do is we manage the publication of rulemaking, but I think there's some information I need to share before we get into the panel and that is my weekend plans. I didn't think it was very relevant, but I think it is now. I'm actually going to a farm in Iowa this weekend -- not just any farm but my brother-in-law's farm. Actually, I'm supposed to go also to a consignment auction of farm equipment. Now, my nieces want to go to Kings Point, a water park. So we'll see who wins that battle.

So the purpose of this meeting, as you saw on the website, is to inform the rulemaking decisions. So we've already discussed things like geohazards, crack arresters, the issue of gas versus liquid and critical CO<sub>2</sub>, et cetera. So this panel is to discuss conversion of service, leak detection, reporting considerations, and basically impurities. So what we're gonna do is, we're gonna talk first conversion of service and leak detection, and then we'll talk about the other issues, if that sounds good.

And on our panel we have Mark Piazza. Mark is a senior policy advisor at API working on pipeline integrity and safety matters. Prior to joining API, Mark worked at Colonial Pipeline Company in positions of asset integrity and regulatory compliance. Prior to joining Colonial, he was part of prci. Mark has a diverse background in pipeline safety issues from many different perspectives and positions that relate to the topics being addressed at this meeting.

Also on our panel is Mr. Paul Blackburn. As you've heard before, Paul is an attorney with Bold Alliance and has worked on pipeline management for over a decade, and before that worked in a variety of roles in energy development and environmental advocacy.

Also on the panel is Alex Colletti, and she's the lead on the CO<sub>2</sub> rulemaking that we're currently working on at PHMSA. She's also worked at the National Accident Investigation Board. Alex

has a degree in chemical engineering from Washington University in St. Louis, Missouri. So with that said, what I'd like is Alex, if you could -- if you could give us an overview of what conversion of services is, that would be great.

MS. ALEX COLLETTI: Absolutely. Before I get too far, can everybody hear me okay? All right, I'm gonna speak up. How's that, better?

So conversion of service, it's kind of a weird phrase. First off before I get too far, thank you for letting me speak today. As John mentioned, I'm the project leader. So it's really important to me to hear what you have to say. So conversion of service is when a pipeline that was built for another purpose is converted to part 195 service. So an example would be a natural gas pipeline that was under part one A service that was converted for carbon dioxide service. Our regulations for conversion of service fall under 1955 and they're kind of extensive. I'm gonna walk through it real quick because we have limited time. The first thing that an operator has to do is they have to notify PHMSA and they have to do that 60 days before they start the process. If they don't it's not gonna happen. Then they have to create and follow a whole set of procedures in order to accomplish that conversion. First thing is reviewing the design study construction operation and maintenance history of the pipeline itself to determine if the pipeline is in satisfactory condition for operation and perform more tests if they need to. The second thing is they need to visually inspect the pipeline for physical defects and operating conditions which reasonably could be expected to impair the strength of the pipeline. The third thing is to detect all known conditions and then the fourth thing is to determine the MLP or the maximum operating pressure and reestablish the pipeline's integrity. In addition to those base requirements, they also have 12 months to comply with the corrosion control requirements within subpart 195 and they have to maintain records of the conversion project for the life of the pipe. Lastly, operators converting pipelines have to comply with all parts of 195 sections that don't invoke the retro activity clause which includes qualifications and a quick 10 seconds on that.

MR. JOHN GAYLE: Thank you Alex. Mark would you mind giving us an overview of the leak detection.

MR. MARK PIAZZA: Conversion of service can you hear me okay? Conversion of service the other issue that's come up in this meeting is the number of miles of pipe that will need to be constructed to meet some of the emission reduction goals that have been set. I think that surprised a lot of people. Conversion of service, we've got super critical and liquid CO2 pipelines that operate at higher pressures as we've heard throughout the conversations over the past day and a half. So converting existing pipelines to manage those types of pressures is probably not gonna be something that happens frequently. It's primarily gonna be conversion of gas phase CO2 using existing systems. So I just wanted to clarify that point and all those requirements still need to be met, but I think on the conversion side it's primarily new build-out for super critical liquid systems and any conversion would be primarily gas CO2.

So getting back to leak detection which I will get to, sorry, just a background I don't know how many of you are familiar with API and our programs. API was formed in 1919 as a standards development organization with a whole series over 800 standards, recommended practices that relate to pipeline safety, personnel safety, material, manufacturing specifications, et cetera, that are a key part of maintaining pipeline assets and making them operate safely. So I just wanted to make sure everybody had the background and perspective. Those recommended practices we work with PHMSA, we work with Pipeline Safety Trust, public interest it's an open process where we want to get input from all the stakeholders that can help support pipeline safety and pipeline operational reliability. So I appreciate PHMSA organizing this meeting and giving us the opportunity to hear from the stakeholders, including the public on some of the key issues that need to be incorporated and considered in developing these pipeline safety recommended practices.

So on leak detection, we do have several recommended practices now that relate to pipeline leak detection for both gas and liquid phase and in addition to the existing regulations for natural gas transmission in part 192 and liquid pipeline operations in part 195. There are requirements for leak detection. These recommended practices supplement those requirements and help provide additional guidance on how to implement programs. They deal with things like computational pipeline monitoring which is where the pipeline control rooms monitor conditions on the pipe and then they also deal with developing a leak detection

program for an overall pipeline system more of a framework for how to develop and implement a leak detection program.

So we're constantly updating our recommended practices. They go through revisions once every five years, re-evaluated and the whole idea there -- and we talked about this with the PRCI panel and the R and D issues, it's continuous improvement. We're always learning, we're never gonna stop learning, we're always trying to push the needle and raise the bar higher. So we want to update and modify based on lessons learned, research that's conducted, et cetera. So those are pieces that are continuing to be worked and developed and applied consistently by our companies. Back to PRCI, API is a member of PRCI. We participate in their R and D programs. The goal for API and our standards development process is to take the research, make sure that we're closely tied to that, and use that research as the basis for modifying recommended practices and regulatory reform and continuous improvement in our program. So we also work with PHMSA very closely on their R and D programs and make sure that that information, those results are incorporated into our standards and updated as necessary.

I think the key issue on leak detection right now, the concerns we've heard about rupture and CO2 pipeline ruptures, technology right now, control room operations, pressure monitoring, all those conditions that were raised as concerns, we believe that the industry has an effective process for at least detecting the ruptures. All the other things like dispersion modeling we're gonna hear more about emergency response on the panel coming up this afternoon, but the technology for identifying that is there. It's effective and operators use it in conjunction with PHMSA regulations and recommended practices. What we're focusing a lot of our time particularly with PHMSA and the PRCI R and D programs is on the small leaks and leak detection. So that's a key focus right now from API's perspective. We're pushing PRCI programs very aggressively and trying to get things done in a timely manner. We've heard that as a concern on additional technologies, including external leak detection that we have technology out there now. You heard I know there was a comment yesterday a reference to satellite technology that's out there was also a reference to aerial patrol and the patrolling of pipelines as the primary method. Remote sensing is now being placed on the aircraft that have the capabilities to detect small leaks coming out of pipeline systems. So those are things that

we continue to push forward on through the R and D programs and make sure that those elements are incorporated into the recommended practices that we develop and update on a routine basis.

MR. JOHN GAYLE: Thanks, Mark. Paul any comments on this topic on leak detection and conversion of service?

MR. PAUL BLACKBURN: No I think I'll hold off there's some overlap on some other things we're talking about.

MR. JOHN GAYLE: Alex any further comments on this area? No I will see what questions we get. Well, a couple questions for the panel before we move on to the next area. What are some unique considerations that should be taken into account when doing conversion of service for a CO<sub>2</sub> pipeline and that could be of any phase, what measures do operators take when performing a conversion of service for CO<sub>2</sub> pipelines?

MS. ALEX COLLETTI: I can take the first stab at that I'm sure Mark will have plenty to add. As Mark mentioned, one of the key things that we see when we're looking at what conversion pipelines are really eligible to convert for carbon dioxide service. It's really only in the gas phase and that's due to the operating pressure. So if you're looking at the operating pressure of a natural gas pipeline that's lower than a carbon dioxide pipeline especially when we're talking super critical phase. So really the only pipelines we foresee being converted and used for carbon dioxide service are in transporting gas phase. I don't see foreseeing anything other than a new build. When you're talking about conversion of service, there's some key factors that you have to keep in mind. Sometimes an operator might not know the full operations history. So I hate to use the analogy of a car sometimes when you're buying a used car, you get the sales pitch that they give you and then you drive it and you find out it's a little different. So there's some tests that can be done to fill the gaps in that knowledge. Some of it is the documentation, you can look through that car's history to see what you've got. Same thing for a pipeline, but there's other things that you can do to really ensure that integrity if you don't have those records or if you just want to double-check. So some key areas let me make sure I cover them all. The pipeline integrity is one of the big ones and when we say pipeline integrity we're talking about really the ability of the pipeline to transport safely without defects that the

operating pressure's designed for. If we don't have that complete information operators can perform things like inline inspections to take repairs that's needed they can also perform hydrostatic spike test it's an increase in pressure held for a period of time, it depends on the test it could be four hours, it could be eight hours and then spikes to a higher pressure and what that does is it looks for cracks and crack-like defects. And then other things that you can look for in terms of the cathartic protection you can look through and get a sense of is the cathartic protection working as designed. Lastly the coding condition when you're putting a pipe in the line if it's properly coded. Think of it like paint on the outside of your house and there are certain tests that can be done on the outside of the pipe, walking along the pipe, alternating current and voltage gradient or DCGB and those can give you a good sense of the coding condition. So if you're running all these tests you can get a good sense of what the actual defects and anomalies are and that can help the operator make decisions in terms of where repairs are needed and where there might be some gaps in the records.

MR. JOHN GAYLE: Thank you, Alex.

Paul?

MR. PAUL BLACKBURN: So let's talk a bit about conversion of service and what that means. The primary example that we have in the west -- this is probably not gonna affect Iowa so much, so you all can breathe a little easier on this, but the primary projects that have been proposed for conversion of service which would take an existing natural gas pipeline that runs from southeastern Iowa through Nebraska and it basically feeds natural gas into most of the upper Midwest and central Midwest. I live in Duluth and my gas comes through these pipelines. So they want to take these pipelines stop using it for natural gas and then reverse the flow and instead have it collect carbon dioxide and ship it to Wyoming. As folks have said this would not be super critical in dense phase form it would be in gaseous form. The reason -- these pipes are not strong enough to operate reliably and safely to move liquid slash super critical CO<sub>2</sub>. So they would keep them in a gaseous state after the conversion. I think the thought in the room with CO<sub>2</sub> pipelines is that some of these regulations currently don't apply to CO<sub>2</sub> pipelines at all. PHMSA's regulations apply to super critical CO<sub>2</sub> pipelines exclusively and PHMSA gives the authority to regulate CO<sub>2</sub> pipelines gaseous CO<sub>2</sub> pipelines but they decided not to. So the



point they raised there's a big jurisdictional gap here. If trail blazer is converted there's no legally applicable safety standards for that pipeline, full stop. That's it. It's up to them voluntarily. Now we understand that one of the reasons that PHMSA wants to do its rulemaking is to extend its jurisdiction to gas pipelines and to have regulations for them. And that's a really important thing to do, but the question for the folks in Nebraska is should they be allowed to move ahead with this conversion if there's simply zero federal regulations applicable to it. And the states can't jump in for legal reasons, it's jurisdictional to the feds and the feds have decided not to regulate it and the states can't either. So the states hands are bound to regulate CO2 pipelines as well. So that's the really big question with conversion. Otherwise I would expect the industry is much more clear about that too I would expect a lot of the conversions will be down in the Gulf Coast because there's like a billion oil fields there and they're gonna want to use existing pipelines or whatever they have so they don't have to rebuild them and that's probably where most of the conversions will happen is down in the Gulf Coast. Again I think it'll be interesting for PHMSA because there could be a wide variety of aging pipelines and that's pipeline central for the industry, trying to keep track of all these pipelines and then doing all the conversions if they're gonna start using them old pipelines in large amounts. Again, until there's actual honest to goodness safety regulations that apply to CO2 pipelines, I don't think any of them should be converted.

MR. JOHN GLADE: Thank you Paul Mark.

MR. MARK PIAZZA: Just a couple things. I agree right now there's a gap in the regulations for gas phase. I think that's a big topic of the reauthorization process that's going on right now. I think the second issue is, we talk about it all the time any conversion of service is gonna be fundamentally almost like a baseline assessment for a new system. Looking at your preventative and mitigating know what you're putting in it and make sure you meet the codes and the regulations and operate it safely. I think we know that that's paramount for any operator that's gonna operate their line safely. And then the last point is we have to discuss the issue of conversion of service within API and some of our committees, technical committees and we're looking at developing recommended practice that would provide additional guidance on conversion of service. Some of the unique characteristics that need to be considered and

factored into any conversion of service including a lot of the things we heard like impurities, like coating, like ensuring your PC systems are effective for the materials being transported.

MR. JOHN GLADE: Thank you Mark. Go ahead Alex.

MS. ALEX COLLETTI: I just wanted to add one more comment I appreciate Paul's comments and I wanted to make one slight note. The states can choose to regulate gas phase if they'd like to. The way it works for state versus federal, the states can go above and beyond federal they cannot be more LAX than federal that's the distinction there. The big thing I can say for a fact that our group is certainly looking at the phase discrepancy, but I can't say more than that.

MR. PAUL BLACKBURN: Yeah, I agree that for entrust pipelines which is more complicated it's whether it's connected an interstate pipeline system, but the federal courts are very clear there's a gap where the federal agencies have jurisdiction but they elect not to regulate some specific aspect of a policy matter, the federal courts are very clear that the states cannot step into a gap like that. It's different if it's a statutory jurisdictional gap but where it's a regulatory gap the federal courts say the states can't jump in and fill that gap. So it's strictly a court jurisdiction and it's pretty clear. So with regard to gaseous CO<sub>2</sub> pipelines and regulation of them and interstate service, it's up to PHMSA or nobody.

MR. JOHN GLADE: Thanks, Paul.

Before we move on to reporting and impurities, I think we would be amiss if we didn't talk about reauthorization. Could someone on the panel discuss the current state-of-the-art of authorization of CO<sub>2</sub> pipelines?

MR. MARK PIAZZA: I'll address that. Thanks John.

So right now we're primarily in the phase of evaluating what would be an appropriate order for CO<sub>2</sub> pipelines. I don't know that that's been addressed and solved. It was a big topic of conversation back in February. The DOE sponsored a workshop on CO<sub>2</sub> pipelines and CSC systems and that was a big topic the use of odorants and identifying a proper material that would be compatible not only with the CO<sub>2</sub> product stream but not present any integrity issues like the other impurities that are being introduced into the pipeline. So I think there's a PHMSA project it got referenced several times that's looking at that CO<sub>2</sub> pipeline safety and it does address odorants for leak detection and I think there's other work being done either soon or it

may be part of DOE's program recognizing that that is a big issue that needs to be addressed in a prompt manner.

MR. JOHN GLADE: Thanks, Mark. Anyone else on the panel want to talk about odorization? Paul?

MR. PAUL BLACKBURN: Was it odorization or just contaminants in general?

MR. JOHN GLADE: Just odorization right now. Moving on to the second part of the panel we're gonna talk about impurities and reporting. Paul would you give us an overview of the reporting requirements currently. That's reporting for accidents? Accidents and I would say annual reporting, yeah.

MR. PAUL BLACKBURN: So federal law requires that pipeline operators report accidents and they also call them incidents too and that's 49 CFR Section 195.50. And the way this process -- it's been going on since 1986 CO2 pipelines have been only regulated since 1994 although there was one spill in 93 although it was right at the end of December where it was pulled into the database. PHMSA's predecessors gathered this information. The data has gone through three different phases the early phase didn't have as much data and then they changed the rules in 2002 and more data is required and they changed the rules again so more data is required in 2010. So there's actually three separate databases. They're very different from each other so they couldn't combine them. And the reporting requirements is basically if a spill results in an explosion or fire death or injury, or financial injury more than \$50,000 or the lower level triggers are more than 5,000 gallons of product is spilled, then the operator is supposed to file an accident report. However, there's also the maintenance exception. So if it's a spill related to maintenance they're working a pipeline and something happens, then they only have to report the spill if it's more than five barrels and it doesn't get into water sources and it doesn't leave either the right-of-way or the pipeline operator's property. Then the question is how does this apply to carbon dioxide pipelines and I think this gets into the leak reporting question. So for example, how would a pipeline operator know if they spilled five gallons or more, right? Because it evaporates when it's released. So these regulations make sense with regard to liquids because in gasoline pipeline leaks it makes a puddle on the floor and they can at least eyeball it and see how much is there. It's harder with gas and with CO2, because again

CO2 just evaporates. Also, the exception for example for leaving the property well, all CO2 is gonna evaporate and all of it's gonna leave the property so how does that exception apply to this? Or flowing into water and generally speaking CO2 doesn't flow into water. So this is an example of where there's a problem with the old regulations. They were really written for oil pipelines -- for petroleum pipelines and other things that are gonna evaporate entirely. So there's some ambiguity there. The other thing of course is that right now CO2 only applies to super critical pipelines. Well, we've heard that PHMSA believes that and for good reason I think, that the pipeline system is then subject to CO2 that the whole system is subject to federal regulation, but in terms of the specific reporting requirements, reporting requirements says that carbon dioxide as defined by the regulations is super critical and that they only have to report spills of carbon dioxide, which could be interpreted by a company to say well, unless the CO2 is in a super critical state therefore it doesn't have to be reported. I'm not saying that they do that, but that's a loophole that they in theory could use and they could go to court and say well, your Honor this is what the law says and we didn't report it because it says that would that be enough to justify their internal reporting to let them tweak that. Also, like I said how are we gonna know it's five gallons or more or five barrels or more and how are they gonna measure that? And in terms of enforcement by PHMSA of these reporting requirements, where's the evidence? It all evaporates. I mean, with oil you typically get hazardous waste process that they have to run through and if they had oily rags or if it's a bigger leak so there's a manifest on all that. So there's evidence. Natural gas there's typically more odors and these true with an oil pipeline if there's a leak they have to shut it down, oil refineries that are affected by the shut down. With CO2 the only people that know about that pipeline's operational status is typically the pipeline operator and the [indiscernible] which may be the same company. So it's not like the public's ever gonna know and again especially at night if you had a big spill in west Texas at night, how's anybody gonna find out, what's the evidence that there was a valve that failed? PHMSA would have some access to that information, but all I'm saying is there's a potential here for pipeline operators to simply not track what's happening with accident reporting and to not report. It's four and a half gallons, it's not five gallons or it all stayed on site and it's less than five barrels are they gonna eyeball this or is it well, we've got

a little bit of leak let's just -- I think we all understand there's fugitive leaks and the remote sensing for fugitive leaks for CO2 pipelines, that's important for people who are concerned about climate change but also it's important from an industry perspective of how much CO2 is gonna be delivered and how much is gonna leak out through fugitive emissions. These are all questions that are new for this industry and is gonna need to grapple with in terms of its reporting standards for accidents and leaks.

MR. JOHN GLADE: Thank you, Paul. Mark any thoughts on the reporting requirements?

MR. MARK PIAZZA: Nothing really to add further to what Paul had stated. I think there are challenges with CO2, no doubt about it, quantifying the amount released is more challenging. I think PHMSA's current form 7,000, there are a series of CO2 pipeline releases that have been reported that are in the database, but yeah I think the challenges of effective measurement and estimating quantities can be challenging, no doubt about it.

MR. JOHN GLADE: Thank you. Alex?

MS. ALEX COLLETTI: I was gonna say, you were correct it is intrastate is what I was thinking of. Intrastates have the right to go up and above regulations but interstate not so much. Before we get back to what we were talking about I wanted to bring up another kind of reporting called safety related conditions reporting. So safety related condition reporting is a report to PHMSA when a certain kind of defect or anomaly is detected before a failure occurs. It's a great way to see a leading indicator and it's a good tool that PHMSA uses to track some of these worst anomalies so we can make sure that they're treated all the way through. There are six categories of them again so sorry for the fast talking. The first one is corrosion of a degree that weakens the pipelines -- the second one is unintended movement or abnormal loading so that continue earth quakes that has to be in fact that it impairs pipeline surface. The third one is any pipe damage that affects the pipeline serviceability so that can be a broad Category 4 is any malfunction or operating error that constitutes an emergency sorry that causes the pressure of the pipeline to rise above 110%. So that could be a failure of some kind of equipment, a regulation that causes it to go over 110% of that maximum operating pressure. Five is a leak that constitutes an emergency and then six is any condition that could lead to an imminent hazard and requires a 20% or greater reduction in operating pressure or requires the operator

to shut down the pipeline. There are exceptions to when these reports are required. They are not required for conditions that occur more than 660 feet from a set of triggers. Those triggers include homes and roads. So essentially if there's a home and road within that 660-foot radius they're required to report it. There's a couple of other conditions if it's past that, not so much.

MR. JOHN GLADE: Thank you Alex. Alex would you mind touching on the issue of impurities in the CO<sub>2</sub> stream? What are the type of impurities we're dealing with and what's the risk of a CO<sub>2</sub> pipeline from these impurities.

MS. ALEX COLLETTI: So there's a lot of different chemicals that can be present in a carbon dioxide stream. It depends a lot on the source of the carbon dioxide it even depends on the end use of the carbon dioxide whether it's gonna be used in a commercial facility or whether it's gonna be injected into the ground for sequestration or EOR. So there's a few that I would put at the top of my list for importance and those are water and hydrogen sulfide. Water can react with carbon dioxide to create carbonic acid which causes corrosion. So restricting the content of the water should be a first priority when you're considering the contaminants in a carbon dioxide stream. Another big one is hydrogen sulfide. I'm sure you've heard stories of it it's very toxic poisonous and restricting that is great from a health perspective. It can actually make a mixture less corrosive oddly enough but the health considerations far outweigh the risks. There's a number of other components I'm gonna check my notes, but we've got oxygen, methane, carbon monoxide and again it really depends on where that carbon oxide is coming from and which streams there are and where it's gonna end up.

MR. JOHN GLADE: Thank you Alex. Mark would you mind touching on what operators are doing to address this issue?

MR. MARK PIAZZA: Thanks John. I think water's the key. It's pretty similar to existing natural gas pipelines, where water -- the presence of an impurity in and of itself doesn't necessarily create a corrosive condition. The water presence is the key factor. I think the other key thing to mention here is one of the elements that needs to be considered and the technologies are out there now is effective measurement of what's going into your system and whether you remove those impurities at the point of capture or they meet a threshold condition that would allow you to just move it through your system depending on the source of CO<sub>2</sub> at the point of

capture. So that's all engineering analysis and a lot of integrity issues that would be addressed based on the source material coming in. There's work going on now I know we keep throwing lingo out like RP joint industry project where a number of companies get together and have a common interest and pursue an issue. So there is a JIP being conducted right now with Ohio University that's looking at corrosion modeling and internal corrosion and the effects of impurities on creating a more corrosive condition, the interaction of impurities and the thresholds of impurities that would create a condition that would need to be addressed versus being able to be moved directly through the pipeline system. Again I mentioned PRCI there's a CO2 task force that's been formed, the work's wrapping up. It was a state-of-the-art study of a gap analysis and one of the key factors that's being considered there is the effect of impurities and making sure that we understand how to manage it effectively.

MR. JOHN GLADE: Thank you, Mark. Paul?

MR. PAUL BLACKBURN: I don't know a lot about impurities but what I've read it's not just individual impurity one at a time it's also a soup of impurities and they can synergically affect each other. Meaning if you have multiple kinds in there they can be worse than -- now the other issue is the regulatory reform issue, which is that there's not tons of regulations for controlling impurities or product qualities within pipelines. For natural gas and oil pipelines the product quality is regulated through the [indiscernible] commission and the federal energy regulatory commission does not regulate CO2 pipelines. That means for the CO2 pipelines there is no other federal structure that regulates CO2 quality, the purity of the materials. So this is an entirely new area that PHMSA's gonna wander into perhaps unless FERC gets jurisdiction, but somebody has to figure out what the quality standards are and that applies to these projects and the current projects. Most of what they're getting is ethanol but not all of it there's gonna be some fertilizer plants that are feeding into these systems. So you're gonna have 30 sources per system, that means 30 different folks that are gonna be doing quality control for the CO2 and each of these is gonna have a dehydrator, as I understand it almost all of them are gonna be remotely operated. So how's that all gonna work? And once you get into other kinds of facilities potentially having carbon capture such as power plants and chemical plants and oil refineries and places like that, the contaminants could be quite different. So

how's that gonna be managed in a system-wide level and who's gonna be inspecting the dehydrators and what kind of remote controls are they gonna have and what kind of training is the operator gonna need these are things that cascade around product quality and it's gonna take some time and thought to work through. Again, this is one of the concerns that I think citizens have, is that these are big new projects and there's various structures which is typically from one geologic source. Finally, I'll add it's also the gas mix. I think maybe some of you have seen the pictures of the intentional rupture in Italy, where one of them -- they had I think 94% CO2 and 6% nitrogen and they shifted it and it ruptured, but then they shifted it by 1.8 percent more nitrogen and they did the exact same rupture and it caused a running fracture that was 50 meters long and it blew that pipeline apart, split it in half, threw it in the air and that pipeline landed crossways in the trench and the trench was three meters deep. So less than two percent has a huge impact on the kinetic energy of that rupture. So it's not just the nature of the contaminants, the specific types, but also that the gas mix has to be regulated very carefully for these pipelines. And again, PHMSA just needs to look at that.

MR. JOHN GLADE: Thank you, Paul.

Another area we're supposed to discuss is other topics. So we've talked about a lot of different issues over the last two days. We've seen different proposals from Pipeline Safety Trust and others addressing issues related to CO2 pipelines from the gap like Paul has raised on gaseous and liquid CO2 to odorization, crack arresters conversion of service. Are there other areas that you think should be looked at and considered as PHMSA goes through this rulemaking process?  
Mark?

MR. MARK PIAZZA: I'm just looking through notes. Again I think fracture control dispersion modeling, odorants, leak detection, impurities those are the critical issues we've been talking about for the past day and a half, those are pretty well defined in my mind. Obviously we've talked about the need to get this done in a prompt manner, but I think the known issues from my perspective are on the table and then of course there's the regulatory issues that we also need to address.

MR. JOHN GLADE: Great. Thank you Mark.

Alex?



MS. ALEX COLLETTI: I was gonna say the thing we haven't really discussed on the big topic that's on my mind would be emergency response considerations and communications. I'm not gonna talk about it here simply because we have a whole panel on it later and we're right before lunch, but if you have questions on that always feel free to pull me aside I'm happy to talk about that, but that's a big area that we're looking at, at least in my group.

MR. PAUL BLACKBURN: I think we should drag Bill up from Pipeline Safety Trust they did a study and there's potentially some other issues there I just don't remember off the top of my head, but I will say one of the issues that needs to be addressed is some of the jurisdictional issues around PHMSA's boundaries at capture facilities because if PHMSA's gonna regulate CO2 quality and contaminants then the dehydrators need to properly be regulated. Usually PHMSA regulates pressure is that compressors and that's important from a local perspective because the rest of the facility might be subject to local or state building codes. So for example, I've read that at some facilities they paint the pipes that are subject to PHMSA jurisdiction in a different color, so it's really clear where the boundary is, but I think that you're talking about a lot of county inspectors or state inspectors asking where's the boundary, those are important questions. Then also existing on the sequestration side, where's the boundary, where's PHMSA's boundary stops and there's some questions there. I think I said yesterday there's the potential for some changes in the Pipeline Safety Trust act itself, because section 6012 doesn't address sequestration boundary lines, but again looking at the Pipeline Safety Trust website, there's a whole list there.

And if there's -- but usually PHMSA regulates pressure, compressors or pumps or both? And the dehydrators integrated into one of those things, important from a local perspective because the rest of the facility might be subject to local or state building codes. And so, for example, I've read that some facilities they paint the pipes that are subject to PHMSA jurisdiction in different colors so it's clear where the boundary is. But I think you're talking about a lot of county inspectors or state inspectors working at the 60 or something facilities, Summit and Navigator projects, where's the boundary and who's going to do the safety stuff on the other side of the line are important questions. And then also exists in the sequestration side. Where's the boundary and PHMSA's jurisdiction stop in the sequestration well and

questions there too. Like I said yesterday potential for some changes in the safety act itself because section six one doesn't address sequestration boundary lines. So but again, look at pipeline safety trust's website, the study, there's a whole list of things there.

MR. JOHN GLADE: Thank you, Paul. Before we move on to the questions, one last question for Mark and Paul. We've heard a lot of discussion over the last two days regarding setbacks and public availability of risk assessments. Would you guys mind touching on should we consider that as part of our rule-making process? Paul?

MR. PAUL BLACKBURN: Could you repeat the question

MR. JOHN GLADE: The issue we've heard over last two days regarding the issue of setbacks and public availability of risk assessments. Is that something you think that should be part of our rule-making considerations going forward?

MR. PAUL BLACKBURN: I think they should be definitely part of the rule-making considerations. Some of the ordinances we've drafted for counties have said require the company to do a dispersion model and then you can decide what your setbacks should be in a functional sense. We think that's until we have more generally applicable dispersion modelling that's one of the ways that counties can handle this is to say just tell us what your dispersion modelling is and I think another question is making sure that the dispersion modelling is public so people can understand the dangers and there are ways of doing the modelling and giving a general of sense over the danger zone and having transparency so people can understand that side of it. So that piece would be helpful to be done. Finally, there's also a real jurisdictional question about what local emergency responders can require companies to tell them. We've been in the fight with companies around the right of local responders to ask for information on safety. So your local governments, state governments can't make any requirements of companies with regard to their company internal company emergency response plan. Federal law regulates what's in a company emergency response plans that means the counties and states can't do that. But they can have their own response plan for the police and fire to use. So every one of these pipelines is going to have to have two emergency response plans, one for the company, and one for the government entities. The question is how are those coordinated. Federal law regulations require that pipeline operators provide and cooperate with local response and state

response agencies. But there's ambiguity there about what they can do. So if a local county wanted to say we're going to require dispersion model not for company's plan but so the county knows how to protect its people can the county require that. Or does PHMSA have to say in regulation, well, if a county asked you for this, you have to give it to them. There's some question about asking for information, is that a safety standard or not. And until there's more clarity around that folks in Satartia wouldn't be able to say well, here's the information we think we need. So please give that us to the company or is that preempted by federal law and as pipelines spread all over the place there's going to be more and more emergency responders and they are the ones that know where the places at risk are and know where the hospitals and nursing homes are and their own equipment needs and what the emergency response needs to be. Not the companies. Remember, the companies don't have any expertise and emergency medical services, companies are not firefighters, not police officers. Companies know how to do the emergency response plan for their own personnel, their own purposes, and they are not going to do much more of that because of liability reasons. So you need to have your local emergency responders respected for the knowledge that they have respected when they need information for particular locations, to ask that of a company and is right now the companies are saying we can't give you any safety information because that's preempted. That's a real gap and also gets to the question who pays for it. Can a county require that a company pay for their breathing apparatus. It's expensive stuff. Is that a safety standard to require companies to pay for breathing apparatus? Anyway, those are some of the issues that really hit the -- where the rubber hits the road on safety is who pays for it and what kind of information can local responders demand companies give them and do the companies have to do that. Right now the companies are saying it's preempted and you can't force us to do a dispersion model or provider with you equipment or anything else

MR. JOHN GLADE: Thank you, Paul. Mark?

MR. MARK PIAZZA: I'll let the emergency response issue be addressed by the panel coming up in the afternoon. On risk assessment, I think John, I believe I believe that the current regulatory framework in 195 and 192 does an effective job of addressing risk and risk analysis and threat

assessment, do we need to look at it is in revising regulations specific to CO<sub>2</sub>, certainly, in any unique characteristics.

MR. JOHN GLADE: Max, I was going to move the public questions to the panel. I'm going to let Mr. Caram talk first. We need to hear --

MR. BILL CARAM: Thanks. Bill Caram, pipeline safety trust. Thanks for the great discussion. I think over the course of the last couple days, I think all of the regulatory gaps we identified have been discussed. Just want to put a finer point on a couple of those. One, good discussion on impurities. I want to just restate that we're gonna be seeing with these sources of CO<sub>2</sub> we're going to be seeing levels of impurities and types of impurities we haven't seen in CO<sub>2</sub> pipelines as of yet. And those pose both public health hazard in the case of a failure but also pose pipeline integrity issues. And in addition to the integrity issues discussed, the level -- the presence of these impurities will affect the solubility of carbon dioxide and how much water it can hold before that free water is sitting there forming carbonic acid and I want to encourage PHMSA to adopt some prescriptive level limits and standards on these impurities and be very conservative with them. Both from a public health point of view and from a pipeline integrity point of view. The second issue -- the only other issue I want to bring up is on the phases. Yes, there's the project Paul mentioned the tall grass, there's also was announced in Louisiana thousands of miles of pipeline they want to convert from natural gas over to CO<sub>2</sub>. They didn't say which phase, but we're assuming hopefully gas. But, again, that's just a lot of new pipelines that are as of now, unregulated. On the dense phase side, we have these pipelines, I mean, it's reasonable to think that 90% of this pipeline, these pipelines, are going to be in liquid phase and not super critical. And I appreciate PHMSA saying that that is jurisdictional, but I fear from the public perspective that if there is a failure, that a lawyer could argue it wasn't jurisdictional when 90% is in this unregulated phase. So thank you so much.

MR. JOHN GLADE: Thank you, Bill. Turn over to this mic.

MR. ALAN COSWELL: I have a question relative to the opening presentation by the -- by PHMSA's chief counsel. She talked about regulations about valve leak controls. My question is assuming those regulations go into less hypothetically say January 1st, 2025, will those regulations only affect new pipeline after January 2025, will they affect pipeline -- those

regulations by the way sounded wonderful. Will they affect pipeline that is in the process of being constructed on January 1st, 2025? And will they affect pipeline that's already been constructed retroactively?

MR. JOHN GLADE: Thank you, great question. So we published a rule-making I don't have the exact dates in front of me, I'd say roughly we're dealing with nine, 12 months ago at this point on remote control valves to require, any pipeline that's newly constructed, diameter six inches or greater, I have to get you the date but I believe it was May of this year actually that the effective date is. Anything built after May of this year has to be built with a remote controlled valve that has to be able to be closed within 30 minutes of identification of the rupture. We published it -- we'll get the exact dates in a minute. But don't have those at my fingertips but -- major safety issue for us, actually. And just to be clear, that would apply to CO2 pipelines that are in the super critical state which I believe is my understanding that's the Wolf and Navigator and Summit. Go back over to this mic.

MR. WALLY TAYLOR: Thank you. I have a couple of questions for Mark. Is API working on any new standards for CO2 pipelines and the second question with all due respect is, API petroleum institute the proper entity to be formulating standards for CO2?

MR. MARK PIAZZA: Great question. Thanks for that. So we are, as I mentioned earlier, we are looking at now a new recommended practice that will focus primarily on conversion of service filling the gaps where the existing regulations perhaps don't address the unique characteristics of CO2, 192, 195. Also doing a comprehensive review of all standards within the organization even things I mentioned earlier like materials and manufacturing specifications to associate those with or relate those standards back to CO2 versus other gas, liquids, et cetera. With regard to whether we're the right organization, we're not the only organization who develops standards. We are in conversations with ASME working on, they have standard B3112 for hydrogen, B318 deals with integrity issues that Bill mentioned. Working with them on updating those standards but I think API is more broad than just petroleum. We address 800 standards addresses the full range of issues in pipeline safety and integrity.

MR. WALLY TAYLOR: When do you think we'll see the new standards?

MR. MARK PIAZZA: I don't have a specific answer for you. We're just now forming the group looking at update, the new RP for integrity and conversion of service. The other standards that could require some R&D, research, testing to be done in those different phases of operations. So it's going to be variable across the range of standards that would need to be adjusted for CO2 service.

MR. WALLY TAYLOR: Okay. Thank you.

MS. DENISE KLEPPE: Denise Cleppe. I wanted clarification. So when I heard the fact of it talking about being in gas form and evaporating and that aspect, when I think about it, my previous life I worked in a lot of manufacturing that we had ammonia. So at that point that's a gas. We had to capture, it was a closed loop. My intent and hope is this pipeline is also a closed loop, every year I had to report what we had, what we started with, what we ended. Had to report within 15 minutes. If we had a leak of I forget the number, but again, there were protocols that we had to do and follow it. So if we have those for many manufacturing sites and everyone else that has ammonia, why can we not have that, because that's a gas no different that I can see than CO2.

MS. ALEX COLLETTI: Absolutely. I can speak to it a little bit. It's an excellent point. I think you're absolutely right. There is a requirement right now to require leak detection on hazardous liquids pipelines and liquid phase only. I can see a gap there with carbon dioxide obviously. There's a tool and probably Mark can speak to this with more eloquence than me but called computational pipeline monitoring that can be used to detect leaks of varying levels of degrees and really depends on the specific model and pipeline system and there's a lot of different factors. In addition, I can kind of speak to my previous history in terms of measurement and things of that nature. So it's a little different on the carbon dioxide side. But there is a process for measuring what goes in and out and depends on the specific pipeline system, how often they are having the measurement devices for pressure and temperature to make those determinations for what volume is in the pipe itself. And so there's different things that can be done, but I agree that there can be some work there for carbon dioxide absolutely.

MR. JOHN GLADE: Thank you, Alex. Paul?

MR. PAUL BLACKBURN: Yeah. One of the real gaps in terms of CO2 management is what we call cradle to grave tracking of CO2 from capture to sequestration or enhanced oil recovery. This is important from across agency perspective. So PHMSA would work works on the metering, the mechanical ways and chemical ways of figuring out how much CO2 is moving through a pipe. But this is also important for EPA because EPA tracks CO2 production and then where it goes, actually, it doesn't actually track where it goes, just tracks it stays in the ground through six class to well permits. So you have EPA trying to confirm it stays in the ground then you have the IRS which -- converts CO2 into a valuable product. Just the opposite of a carbon tax, actually now is a valuable product. And they will probably are more production because it's a valuable product. It's \$85 a metric ton is the value. So 45 few tax credits based on confirming the CO2 is captured, transported through a pipeline and sequestered. Who is tracking that? Nobody. EPA is just concerned about whether the CO2 gets into the water table or not. That's what the class 61 class two well process is about. It isn't about tracking the CO2 ends up -- comes from one place -- (indiscernible) -- and that creates the potential for fair a fraud with the 45 tax credit and I only know EPA realizes IRS points to EPA regulations for verification plan but doesn't include the volume of CO2 the verification it stays underground where it's put. So the IRS is using the EPA's regulations for something they were never intended to do. This is a problem. I think from PHMSA's point of view it's mostly about having technology to track where the CO2 is moving from here and there. Again, these pipeline systems right now are more complex than anything in the past. The planning multiple hubs with multiple sources going through -- into each will you be and CO2 going out to various enhanced oil recovery and sequestration sites and how is that going to be tracked and how are you going to know if somebody in Iowa captured CO2 and it went to someplace in Texas, none of these questions have been dealt with the federal government and need the cradle to grave manifest structure for CO2 industry.

MR. MARK PIAZZA: Not a lot to add other than right today, we effectively measure gas and liquid pipelines. I think we can address that challenge with existing capabilities that are out there. I don't think it's -- maybe there are some nuances with CO2 that we need to material compatibility and other things you want to assure you have taken care of and any metering

system but I think the current -- there's tons of measurement standards through ASTM and other organizations that we're currently using that I think can be effectively applied to CO2 operations.

MR. JOHN GLADE: Thank you, Mark. We'll go back to this mic.

MS. ANNA RYAN: I'm Anna Ryan from Des Moines. I have a question about incident reporting requirements relating to injuries. And I'm raising this issue because here in Iowa we have companies who are telling us there's never been any injuries associated with carbon dioxide pipeline ruptures but we all know in an in Satartia 45 people went to the hospital following a carbon dioxide pipeline rupture. I neglected to bring apply specific reference but my understanding is that's because at the time of this Satartia incident, reporting requirements only obligated companies to report injuries if they resulted in overnight hospitalizations. So the 45 people in Satartia who were taken to the hospital treated and released were not considered to be injuries for reporting requirements. So I was wondering if someone could address what those reporting requirements are and how if any changes have been played to those requirements since then.

MR. JOHN GLADE: Alex, would you like to take that?

MS. ALEX COLLETTI: I can take that. That's correct. The definition of an injury under part 195 is overnight hospitalization. And that's how PHMSA tracks it. I can say from my previous life as an NTSB investigators it's really difficult to gain information on the health status of individuals that is not given voluntarily. Because of HIPAA laws. We had a number of cases where I really wanted to follow up to see how that person was doing that was in a coma ma. If they made it out and they didn't and I couldn't get at that information. So I do understand kind of both sides of it, wanting to have that full detailed information but also being limited by what we can do with HIPAA laws. I don't have a great answer on what the right solution is, I wish I did. But I do understand the frustration there and where that gap comes from.

MR. JOHN GLADE:

MR. PAUL BLACKBURN: Perhaps one thing can be done is rather than having overnight hospitalization it would be the standard for if anybody is transported by ambulance. I mean, that would be a broader standard. It may be over conclusively for some people but why not



have it be transported and that's not necessarily a HIPAA issue because it doesn't say who went in the ambulance where. They would just have to say were they putting them in them and that's much simpler standard for whether there's an injury or not. You get into medical stuff about whether somebody is injured from a CO2 it's complicated if you get -- really deep questions about somebody's personal well-being but really what PHMSA should be tracking is whether people were hurt enough to get the ambulance call.

MR. JOHN GAYLE: Thank you, Paul. Actually I have to go to online question at this point.

PHMSA READER: Yes. Thank you. Matthew May asks, Navigator says they will use a fiber optic leak detection, Summit does not appear to be using that. Is the fiber optic system the current best practice. Why or why not?

MR. JOHN GLADE: Simple thank you. Mark, would you mind taking that question?

MR. MARK PIAZZA: Certainly. So fiber optic is a technology that has been proven for leak detection. It has applications, it works effectively, there are other -- one of the tools in the toolbox for leak detection that's available to pipeline operators. State of the art, probably one of the best technologies out there, but staying away from antitrust I'm not endorsing any company or technology but yes, it is an effective technology for leak detection.

MS. ALEX COLLETTI: Can I supplement a couple answer, I have a date for this gentleman, April 10, 2023, what the effective date for that valve rule. So that's (indiscernible) and the second one my colleague reminded me the accident reports while the trigger still requires overnight hospitalizations they do collect information on people that were medically treated. It's not perfect, but it's just a little bit more information on that.

MEMBER OF PUBLIC: I have a question on terminology. We've heard a lot of liquid CO2, we've had heard a lot of super critical. I guess I would like a definition of what each one of those is. Because you talked about converting like gas pipeline into a liquid carbon. I would like a definition of what each one of those is and I guess for clarification, I know that our Iowa code it only has jurisdiction over a hazardous liquid carbon pipeline. So is liquid and super critical interchangeable or are they different?

MS. ALEX COLLETTI: Sure. So there is a difference between liquid and super critical. Carbon dioxide has quite a few phases. I like to think of it in a little bit more simplified form. We've got

solid which is dry ice, we're not going to be transporting that, certainly hope not. The second phase I want to talk about is super critical. And that's really defined by the pressure and temperature which it's operator. There's something called a critical pressure and a critical temperature, and when it's operated above that both of those, it's considered super critical. Super critical behaves a little different. It's also sometimes called the dense phase, and it has different characteristics than a regular liquid and a liquid would be kind of a step down from that. So it's going to be either it will be below that critical temperature and pressure but not low enough for it to evaporate into a gas form. And then that gas is obviously are lowest. Does that help you?

MEMBER OF PUBLIC: Well, I'm just wondering too, then, if our Iowa code says it only has jurisdiction over an LLC which identified carbon pipeline, does that also include the super critical pipeline?

MS. ALEX COLLETTI: Very good question

MEMBER OF PUBLIC: If not. Who would have jurisdiction over that?

MS. ALEX COLLETTI: Very good question. Unfortunately I'm not super familiar with the specific laws of Iowa, just the federal ones. Happy to look into it

MR. PAUL BLACKBURN: I'll just add that it is a question of law and that may be addressed at some point.

MS. MOLLY MCEVOY: Hi. With EPA. Underground injection control program. I a comment about the plans mentioned in the 45Q tax credit. I wanted to clarify that that plan is submitted to and approved by the office of air and radiation within EPA's grown house gas reporting program. I don't want things to think they are in the same offices. But I just wanted to make that comment that EPA does prioritize tracking those CO2 emissions and air levels as well as protecting underground source drinking water and we do collaborate with them. If you have questions on that, we're not the folks to answer that but there are others that can provide information.

MS. CINDY HANSEN: Okay. So three quick questions. Cindy Hansen Shelby County land owner. The converse of natural gas to gaseous CO2, is there an age limit on what pipelines would be allowed to be converted? I have a family member who is an environmental pipeline inspector,

one of their recent projects the pipeline was old enough that it doesn't have the -- and I don't know the technical term, but the port where they put the pigs in to do the inspection, so are those older pipelines, can they be converted or is there an age limit on them? Second question, you talked about the risk where you had like a five or six things, this is specifically for Alex, that for reporting. But you said that there was an exception with the 660 feet. I wanted to know how that 660 foot was determined, and then the third thing was with the overnight emissions do you go by the legal definition or overnight hospitalizations, do you go by the legal definition of them being admitted for overnight or because observation patients are not considered technically an admission, so how -- what do you look at and how is that determined? Thanks

MS. ALEX COLLETTI: Sure. So for age limit it's a great question. There's not an age limit requirement in there. And as you mentioned some of the older pipes aren't in line inspectable. So when we're talking about pipes that are converted, they are required to follow all the part 185 except for things that would require I would say design and construction sub part C and D. And that includes things like making a pipe I might be miss remembering what section that's in. I agree there's a gap there. The 660 feet, that's one that I researched at one point and it's too many things in my head. I have look that up and get back to you. I just -- I could say something and I'll misspeak for the third time today. And then for the overnight, that is admissions, that's correct, as opposed to observations.

MEMBER OF PUBLIC: So my little sister beat me on three questions. I have two. The first one is, is last January, we had at least three days of freezing rain and it accumulated. Do those valves get stuck that they won't shut off?

MR. MARK PIAZZA: So not having experience with or dealing with the frozen valve, I would say if it's three days straight of freezing rain, you'd have to have maintenance procedures to address that kind of weather condition. So it can be addressed. I just have never had to deal with that and wouldn't know if an automatic or remote control valve would function properly. I would guess it would. I would think they would be designed to address weather conditions such as that. If not it goes in an operation and is maintenance plan that operators would have to develop and establish

MEMBER OF PUBLIC: Could that be a PHMSA requirement? I feel bad for whoever has to do that because the roads are that way too.

MR. JOHN GLADE: We can definitely take a look at that

ME Okay. Second question -- it's really more a comment -- you talked about the fact that first responders, the equipment they are going to have to buy, in my opinion, if the only reason they have to have that equipment is for CO<sub>2</sub>, then the companies need to buy it.

MR. JOHN GLADE: Thank you. We'll go back -- we have another online question.

PHMSA READER: We may have answered part of this but they ask Alex mentioned in her initial comments on conversion of service that an operator converting would have to comply with all regulations that don't invoke the retroactivity clause. Can she explain that. And then next, also she and Mark talked about how only gas phase CO<sub>2</sub> are likely to use converted pipes. Do we know how much the industry plans to do gas phase CO<sub>2</sub> versus super critical?

MS. ALEX COLLETTI: So I can definitely explain a little bit more about retroactivity. So unfortunately, PHMSA does have limits on what we can and can't do in our regulations. We've heard about our cost benefit requirements but another one we have, I like to think of it as the retroactivity or grandfathering clause. Someone in the legal group can give me the specifics citation on what that is. Essentially what it means is that we can't force operators to go back and rebuild their pipelines. So it does limit us in what we can do. I'd like to write to your Congressman or reauthorization to I certainly would love it. That is a restriction that we have. Second part of the question, I -- I did not write down. I was too busy thinking about retroactivity

MR. JOHN GLADE: It was on any knowledge of how many miles --

MS. ALEX COLLETTI: Oh, great. So the only conversion project that I am aware of that's kind of really fleshed out right now is the trail blazer project, I believe it's Nebraska, Colorado and Wyoming of. I've heard of end link one which was relatively new and not aware of any other ones that doesn't mean they are not out there but PHMSA not aware of them

MR. MARK PIAZZA: Not aware of any data specifically on what that looks like.

MS. MARY POWELL: Yes. Mary from Shelby County Iowa. The comment was made you're only tracking people admitted to the hospital with a potential event. Keep in mind in the event of a

natural disaster like this, people are may be not going to be transmitted to the ER by ambulances because there's not enough ambulances in the area. So instead could PHMSA change that to be emergency room visits? Because hospitals can be overwhelmed, and not have a bed to admit someone. Someone can be terribly ill, the doctors treat them the best they can and send them home to be followed up. So I think a more fair representation would be emergency room visits. The other thing I want to talk about is, is our very first speaker this morning said from PHMSA, I quote, safety remains our top priority. But yet this morning, when I was speaking to a representative from PHMSA, I was told in relation to these regulations and our pipeline, and I quote, it's too late. So if safety is a top priority from PHMSA, how can it be too late to take into consideration the regulations that are being worked on for pipelines that are not yet even in the ground? How is it too late? And can PHMSA not, because they have been working on these regulations since March of 2022, can PHMSA -- we have asked to please put together a moratorium or directive on that. If you can't do that can you not put in your regulations that since we have publicly notified everybody that we are revising our regulations related to these pipelines, we notified them over a year ago, can you not put in your regulations that state any pipelines that are put in the ground since we have notified you that we're making changes and evaluating the safety will have to go back and comply with those regulations? To continue on that, yesterday they said that a research study will be completed in 2024, which will provide vital information on the type of pipelines that should be used to transport this CO2. So you've notified the world that there is a problem with the pipelines, you have notified the world that you are working on safety standards. What other part of government says yeah, we know there's a problem, we know there's a safety issue, but we're gonna go ahead and push this through and too bad, we'll deal with it later. Make those industries accountable. And the last comment I have, at what point did we become a government a that is not by the people, for the people? When did we become a government that is for the billion aers and millionaires by the billion aers and millionaires at the expense of us? Again, our governor for the state of Iowa said Americans are not in favor of millions and billions of dollars of give away. Being given to the mill aers and billion aers at the expense of people. Was that just an empty promise made to get elected to office? Or are all those people in public office going to be held accountable to

what they testify is their belief but their actions speak opposite in what their beliefs are. The governor of Iowa has the ability to say to the three people that she elected to Iowa utility board we need to halt, hold, show that your consideration is for the safety of the citizens of Iowa and PHMSA, show that your consideration, what you tested this morning, that safety is your priority, that you are willing to ensure the safety of the citizens before you approve these pipelines and hold them accountable to coming up to new standards that are put in place if they choose to put a pipeline in after you started this in March of 2022. Thank you.

[Applause]

MR. JOHN GLADE: And thank you very much for that comment. Not being part of that conversation, I can't really speak to exactly the context. But in terms of too late, one thing I think Paul is raised the issue of gaseous CO<sub>2</sub> versus super critical CO<sub>2</sub>. The pipelines that are being put into Iowa Summit and Navigator and the wolf are all super critical CO<sub>2</sub> pipelines. Right? So these are pipelines that would be currently covered under our regulations in existence today. There are some areas we need improvement on and we're looking at some of those things, looking at improvements to emergency response. We're looking at issues of geohazards, if we adopt some of these requirements such as geohazards emergency response, changes and the like, those all requirements that will be applicable to these pipelines that are being built today. A gentleman today raised the issue on the issue of the remote controlled valves that's a requirement we just put in place. That's going to be applicable to these pipelines being put in Iowa over these next several years. We also adopted changes in 2019 on hazardous liquid pipelines affecting leak detection so leak detection applies to all liquid pipelines not just certain liquid pipelines and ask assessment requirements on all liquid pipelines and this would include the CO<sub>2</sub> pipelines being put into Iowa that they have to be assessed not just if they're in a high consequence area but all of the lines piggable which will be lines put into Iowa. So I'm not sure again what the context of the conversation was. And I'll be glad to talk to you and maybe with the person you talked to before. But it's not going to be the case where it's too late. Regretfully regarding our authority, we can only do what congress allows us to do. We are limited. If you want to make changes to that, the reauthorization process. But we are limited in applying certain construction standards to pipelines that were

previously built. We have no say so in that. And it can't be just because we he noticed. I understand your thoughts and your issue. What we can do the best what we can do right now is move on this CO2 rule-making as quickly as we can and the leadership that you've heard from the last two days including Mr. Brown and Ms. Dorsey have been very committed to moving these rules very fast. We've completed several safety rule-makings the last couple years on gathering lines remote controlled valves, improvements in gas transmission and just recently posted rule-making on leak detection. We have the rule-making here we're talking about on CO2. And we're gonna push improvements on gas distribution. And I bring those up just to show you the commitment that the leadership you've heard from the last two days has. And my office and working with Allen and Max and Alex and others are committed to improving the safety of these pipelines.

MS. MARY POWELL: Pipelines that are supposed to go into the ground now [inaudible]?

MR. JOHN GLADE: If they are emergency response, geohazard, incident reporting, average reporting those kind of changes. Yes, ma'am, I didn't mean to cut you off

MS. MARY POWELL: The safety the pipeline, as you develop [inaudible] in 2024, this is the safest pipeline. Pipelines not in the ground today are going to be held accountable to that standard

MR. JOHN GLADE: If it's construct related that's correct. What we can do is if we can get rule-making out quicker, 2024, then if they are built after that they would be covered under that standard. Construction-wise. Operational versus construction is what I'm trying to differentiate.

The new changes, just the new changes, though. There's already -- there's a large list of regulations that are in the regulations today that they are subject to but any changes that would be correct.

MS. MARY POWELL: I'm asking PHMSA to make that a standard because we already

If you're not in the ground today, you're gonna be held to whatever standards we make coming up regardless if you put it in the ground tomorrow, you're going to be held accountable to the standards

MR. JOHN GLADE: Gotcha. Gotcha. Okay. Okay. I'm going to have to do it on the next one. Ma'am?

MS. DENISE KLEPPE: Yes. When we're talking about injury reporting, has it been considered to look at following along with the OSHA 300 log, because again these companies should be tracking an OSHA 300 log that's again, it's safety requirements for their employees that they must track. And they must post once a year for the employees to see but there are different categories. It's death, days away from work, restricted worker transferred to another job, medical treatment beyond first aid, loss of consciousness or significant injury or illness diagnosed by a physician or other licensed professional care. So again, I know OSHA is for work related there. But they would already reporting those things for the employees that they would know those standards for the impact that they have or if there's a, again, Satartia or something like that to use those same requirements they are used to using. I'm just asking to have that looked at

MR. JOHN GLADE: We can definitely do that ma'am. Thank you.

MR. THOMAS CRAIGHTON: Good morning. Thomas Creighton, emergency management. My question comes not specifically to you folks, but my observations so far, just personal opinion at this point, is that this process, this tax credit and -- that whole process got the cart ahead of the horse. But the other part is what I'm hearing from you is that you guys regulate the pipeline. What is the cooperation or collaboration with other departments that regulate the rest of this process? And I think you addressed it this morning, Alex, when you said that some places paint the pipe up to this point and then it's not regulated by PHMSA. So my question is, who else is actually working on fixing these requirements in the whole of the process, not just the transport of the process?

MS. ALEX COLLETTI: That's a great question. Thanks for asking it. And I several members of my team subject matter experts are part of a CCUS interagency group. We meet I believe biweekly, too many meetings, to discuss our various projects. Every agency in that talks through what they are doing, that includes currently rule-makings where we're at in the process. Gaps that are being identified that resources are needed. Things like that so some groups I can just think off the top of my head would be DOE, Department of Energy, and EPA. I know there are dozens



others but they are just poofing right out right now. That's something we actively do all the time. Thank you.

MR. MARK PIAZZA: So I think you're going to be capturing primarily from manufacturing, right, power plants, whatever. There should be other regulations, OSHA has a process safety management program that would potentially deal with the operation and the integrity of the manufacturing assets. So I think there's other -- doesn't just stop and nothing regulates that operation. It's already regulated by an existing regulatory program or agency.

MS. CINDY GOLDING: Hi. Representative Cindy Golding. Guys, we do have members of the legislature here. And we listen and I specifically listen because I have a farm that wolf has put in their line. So I want to just quick background. 50 years ago I was a research chemist and my job was to help identify, as we have hypotheses in these projections and find the loopholes and the pitfalls of theories, and it was in industry. So my son is a chemical engineer, fluid dynamics, was a member of API, worked for an oil -- major oil drilling company and found out that their projections had lots of problems. And so as we're talking about plume projections and leak projections, and he now has gotten out of that industry and he does testing on computer projections because as TJ said this morning, garbage in garbage out. So the assumptions have to reflect reality. One more piece is I live -- for 30 years I've lived one mile directly east of Duane nuclear power plant. And for all of those years, we've had emergency training, we've had emergency flyers at our schools, we had evacuation notice, we had test runs of what would happen if there was a nuclear problem. So I'm asking PHMSA if we're really concentrating on safety of these issues, why can we not -- and so back up a little bit. Wolf pipeline, a lot of the pressure in my district has kind of evaporated because they have said they're not going to use eminent domain but that does not eliminate the danger of a CO2 pipeline going past the schools. My farm is actually contiguous with the Cedar rapids international airport. What would happen if there was a leak from the plant north of the airport, if there's a leak from this? Before when Navigator had proposed, we first heard about that Navigator was proposed to go through our county. And they had said very specifically that it was going to be a trunk line that others could tap into and you've been talking about contamination. And the integrity of the lines. How would other industries tap into a line that's already in existence? What are the

safety measures there? Contamination, I'm very aware of, as you mentioned, just the parts per million difference that can cause a tremendous difference in the kinetic energy in the explosion. So if there's other industries that are going to be able to tap into this, who will control the contamination? And it was also mentioned about the commodity value. So there's going to be incentive for other industries to participate in this, not just the ethanol industry. So a couple of questions here. Can PHMSA institute or require safety like the Nuclear Regulatory Commission required in those regions, especially in the populous regions. This is going through the second most populous county in Iowa, past -- through the second largest city in Iowa, and even though it's a voluntary, people can sign up, they're not planning to use eminent domain that does not remove the danger. Can PHMSA require emergency planning in the regions, like the nuclear commission can. Can they regulate if other industries tap into a line, what those -- how they would tap in, what would be the safety requirements of tapping in, and then one last thing was clearly stated by both industries, Wolf and Navigator, that they wouldn't be doing this without the tax credits. Very clearly stated. They haven't hidden that. But they've also stated that they in both instances that they do not own the carbon dioxide that goes through the line. And they take it to whoever owns it says it should go so there's no promise of sequestration. So as you're talking about how are we going to measure, there's measure is it staying in the ground, how are we going to know it's going where it it's supposed to go and isn't being used for fracking and my last question is about the environmental impact. So again, my son was in the industry where he was sent around the world in drilling sites. And happened to be aware that in the Middle East they were doing some carbon sequestration. And just recently there was major earthquake in an area where there had been carbon sequestration. So as we're talking about sequestering this in central Illinois, there have been many earthquake tiny ones frequently. As we're talking about the seismic impact here, I would be very concerned about the more serious research on how much CO<sub>2</sub> is being pumped into the ground, it's already used for fracking we know it breaks apart ground so asking for a little bit more in depth investigation of that. Thank you.

MR. JOHN GAYLE: Thank you, ma'am. I think you just ruined lunch. On the issue of response training, that's definitely part of the rule-making that we're looking at. It's definitely looked at under the accident investigation report and we're taking a look at that issue. But with that

being said, I didn't know maybe if anybody on the panel would like to discuss our current requirements regarding emergency planning or public awareness how that possibly could either be leveraged or improved to cover those concerns.

MR. MARK PIAZZA: I'll take that first. As working for an operator company prior to API we did the public awareness program has a significant element of training with local emergency planning committees, emergency responders, table top drills, full scale drills and making sure that everybody who could be affected is appropriately informed, number one, and prepared to deal with emergencies.

MS. CINDY GOLDING: I've asked that question publicly in our hearings, so I don't know, does API regulate what the CO2 pipeline companies do?

MR. MARK PIAZZA: No, we don't regulate what they do. We work with them to develop best practices and industry standards. Emergency response panel will be -- some discussion of the efforts we have under way so I don't want to steal their thunder but they will address your concern at that point in time.

MR. MARK PIAZZA: I think on the seismic concerns, again, I think that's where PHMSA will work with EPA, EPA is going to help define where these sequestration sites should be, make sure they meet the specific requirements. We heard from Molly it's a two year review process, they thorough evaluation of whether that's the appropriate location. And I think I heard seismic conditions are certainly taken into consideration. So I can let EPA address that maybe you can talk with them separately. But even for pipeline operation, as John made reference to geohazards being something that we're evaluating, but seismic conditions is something that operators need to actually look at on an annual basis to evaluate whether there's been any seismic activity, what kinds of changes might that make to a pipeline safety program. And threat assessment, threat evaluation process

MS. CINDY GOLDING: I don't know if you are familiar with the geography here, but Cedar rapids is about six hours west of Joliet and that's about four hours north of where they are talking about sequestering all of this. So I'm really concerned.

MR. PAUL BLACKBURN: If I could jump in here, something you need to understand about PHMSA's jurisdiction is it can regulate one entity only. Owners and operators of pipelines. In

terms of like a nuclear power plant, the NRC can have -- impose standards on states. PHMSA can't do that. PHMSA can regulate only the owners and operators of the pipeline so it's up to your local emergency county folks do the emergency response planning for your folks. Not PHMSA. PHMSA can't do that legally. And that's just -- it doesn't have the legal authority in congress to federalize emergency response. So it's up to your local folks to do that. The other thing I'd say about sequestration is that there is no legal obligation for these companies to sequester the CO2. The 45 tax credit let's them on an ongoing basis decide if it goes to enhanced river or sequestration. That's all done through federal tax returns. Federal tax returns are confidential. Therefore, we're never going to know where the CO2 goes. So they say it's going to be sequestered. That is strictly their own internal corporate decision, that is not anybody except potentially internal contracts which are never seen. And another on thing you need to understand about Illinois, there's significant areas for enhanced oil recovery potential in Illinois, oil fields, so when they say they're going to go to sequestration in Illinois, maybe they will and maybe they will go to EOR and they're not getting the sequestration sites in at this point. So they may end up going to EOR because that's the obstacle option they have.

MS. CINDY GOLDING: That's exactly -- I wanted people to understand that they were very clear about that, that they didn't have to sequester. So all of this hype and hoopla about taking the CO2 because it's climate change and all that, is hype and hoopla, it's not reality.

[Applause]

MS. JANN REINIG: I'm Jan from Shelby County a land other and want to thank you for coming being here and trying to clarify and answer some of our questions. There's a lot out there. Just made me think a bachelor of designs from Iowa state but this is more than I could comprehend in one day. One point we haven't covering something to did with easements and safety. If these pipelines go through and this is unbelievable, I laughed when I heard it the first time, thought it had to be a joke, these easements if they are voluntary or if we are going through eminent domain are lifetime permanent. We cannot have these for ten or 25 years or whatever. So if we are forced to sign or we sign an easement, this -- the rights to our property is given to this pipeline, and so safety -- I mean is the you the most we needed a many controls as we possibly can have because this isn't just going to go away and they also have the right to,

if we sign an easement, put other pipelines through this corridor. So what foreign country wouldn't love a corridor through the middle of the United States? Right you through the Midwest. And my mind is starting to think a little like whoa, what else could think of? So I'm thinking we hear so much about drought, I know this isn't anything you can do about with but this is just out there. So much about drought. If you can put a pipeline of CO2 or oil or anything else, why can't these companies with anywhere force say we're going to put a water pipeline through here and where will we be then, what kinds of -- I know this is hypothetical but if we can do this, they can do anything. So I just want to thank you for all the help you can give us and please make it strong if you can. Thank you.

[Applause]

MR. PAUL BLACKBURN: The easements are not necessarily take it or leave it. You might want to take the action team that bold helped form in Iowa. Because you can negotiate issues like how many pipelines go across your property. Width of easements and things like that. Easement action team for Iowa. You can check with any of the bold members and they can then you get in touch.

MR. JOHN ASPRAY: Thank you. I understand how loud the Mike is. John Aspray. And I want to ask a question going back to Mr. Ryan's statement that pipeline companies are representing that there have been no injuries related to carbon pipelines. And I understand the response from you, Alex, about we need a hard definition of what constitutes an injury under PHMSA and there's difficulty to maybe getting all the best medical information due to HIPAA. One thing I didn't hear is from the panel or even the folks asking very important clarifying questions is, is there a sense of moral outrage from anyone else here that there are pipeline companies representing that these pipelines do not cause injuries, knowing what we know about Satartia? I guess I'm just concerned that it doesn't, it doesn't seem like the answer that -- or that the response to pipeline companies representing that there have been no injuries from carbon pipelines has elicited any emotional response from people who know that that is not true. And I guess I just wanted to ask you all as panelists whether you think that's right, like on an ethical or moral level, that the companies -- companies are representing that carbon pipelines have not caused injury using PHMSA's statistics.

MR. JOHN GLADE: Thank you. Paul, any comments?

MR. PAUL BLACKBURN: I think pretty clear what they are saying is reprehensible because we know they are saying things like oh, it's just like soda pop. Oh, it's not dangerous, can't hurt you. And yet it's regulated as a hazardous, quote, liquid. And we know that initial reports that they did said they didn't mention any money going -- being transferred to the hospital and only said it was 200 barrels of CO2 so there are significant issues with reporting initially. And first responders understand that as well that if there is an accident there's no guarantee first information you get from a company will necessarily be accurate. Which is why it's important to have -- be cautious about how to handle this and be conservative with how people do this but at the same time I agree with you, that it's completely inappropriate and outrageous that they would be saying that there's no human risk from these pipelines or that people in Satartia didn't suffer because they certainly did. And hopefully we'll be able to have more people will be able to hear the stories of people in Satartia because they are dramatic and it's really unfortunate what happened to them. I think it's clear from listening to them and from the medical people, that essentially if you suffocate somebody for minutes, if you strangle somebody with CO2 or minutes or however long it takes they're going to get brain damage just like with any oxygen deprivation and that can do long term serious harm. I think we're just getting really sick of having companies say there's no risk from this exposure when in fact, there is. [Applause]

MR. JOHN GLADE: I think we're going to let that be the last comment from the panel and turn it back over to Max.

MR. MAX KIEBA: Thanks. We made a judgment call because some of these questions rolled into some of the open questions as well which we had a couple folks on the list. So thank you for sticking with us. We're now going into lunchtime. A general feel from the room and what we had yesterday, do we feel like we can get out and back in an hour? Or are we feeling we still need an hour and 15? An hour? We think we can do an hour? Let's shoot for an hour. Be back at 2:05 central time. Thank you.

MR. CHRIS RUHL: All right, guys. If you want to grab your seats, we're gonna get started.

Guys, we're gonna talk a little bit about emergency response. Of course we try to construct, maintain and operate our pipelines to prevent incidents, but when they do occur, we want to make sure we've got adequate emergency response. So the rules do require preparations prior to an event to make sure the communities are prepared to respond as well as operators. So with that, we're gonna kick off our panel discussion. We have a very diverse group on the panel. So I think there's been several references to emergency response for the last couple days so I think it's good that we culminate with this discussion.

I'm gonna real quickly introduce our panel and then let them each talk a little bit in terms of some thoughts they have before we answer some questions. The first is Lee Turfe with Occidental. I just want to give Lee some props, he's the only pipeline operator that's chosen to be on our panel. So you guys, give it up for Lee Turfe being on our panel. We've got Bill Byrd with RCP, and then we've got a number of folks with local county emergency management groups. The first is with Iowa, Jodi Freet, Cedar County Emergency Management Agency. And then I know we've had a lot of discussions about the Satartia incident and I'm very happy to have two folks from that who actually responded from that incident. First is Jack Willingham, Yazoo County emergency management, and then to his right is Gary Briggs, Mississippi who also responded through the mutual aid agreement that they had.

[Applause] So Lee, I'll turn it over to you first for your comments or remarks.

MR. LEE TURFE: Good afternoon, everyone. My name's Lee Turfe. I have about 20 years of operating CO2 pipelines for Occidental, also known as Oxy. When the opportunity was presented to us to come here and share our processes and procedures for emergency response and our collaborative efforts with the American Petroleum Institute and fellow operators, we welcome the opportunity. We understand that can come with great scrutiny, but at Oxy we have nothing to hide and we're willing to share.

You heard a lot about pipelines and CO2 being the safest way to transport through pipelines. I do believe that. I have 20 years of operating CO2 through pipelines with Oxy. Oxy has about 50 years of operating CO2 experience. That doesn't mean things can't go wrong and I think what this panel is here to do is kind of shed some light on what you do when, what happens if, how do we know if we're prepared, how do we mitigate and hopefully I can shed some light on what

we do at Oxy. I start as a pipeline controller about 20 years ago and through my experiences I've held different roles. I've managed damage prevention, operator qualification, control room management, drug and alcohol policies, amongst others for Oxy.

So I wanted to share a little bit on -- you heard a lot of acronyms and technical words and a lot of engineering science is behind it. I want to give a human perspective. The operation controller that's sitting in the chair, in a console in our situation it'll be Houston, Texas. We're operating these dot systems remotely through SCADA it's something that let's us open and close it gives us data, pressures, flows, and it also gives us warnings and alarms and that's warnings and alarms are going to trigger what we would consider going from normal to abnormal and then ultimately possibly emergency. So how do I simplify this? It's much like an airplane pilot before they take off they've got a checklist they go through and that's what the controller do. The controller will look at everything that happened in the shift prior and then anything that happened in multiple shifts prior to help make determinations on the fly. But what happens when the human element because we're not perfect, what does this SCADA system have programmed where maybe the thinking needs to come out of it? Well, people ask about how do the valves close if it's iced up or whatever. We have high discharge pressure, high pressure shut-downs programmed into our systems. So based on the hydraulic if we hit a certain point on the pipeline that's set below the 110% critical points, the pumps are gonna automatically shut down, they will not run. There's other components for auto shut down and that's key I'm talking to you as a controller we're not perfect we're human, but through these devices and programs we can take a lot of the decision out of it. Now where does the challenge come, where does the operator go beyond what PHMSA wants to see from us or the railroad commission Texas wants to see from us? How do you find a pinhole leak and how do you find things before it gets really, really bad and I think one of the key ways to do that at Oxy is we're looking for abnormal within normal. What do I mean by that? Let's just use an example of ten to a hundred whether it's a pressure or a flow rate or whatever. We know the lowest ten and the high is a hundred. We're never gonna let it get to a hundred we want to be warned before that so we may set our high at 85 and low at 25 but let's say this system always operates at 50. You're gonna see 45, 52, that's your number. Now your normal is up to 85 and it's as low as 25,



but I've been running this system for a long time and I know it's right around the 50 range and all of a sudden I'm seeing 82, I'm not hitting 85. Or I'm seeing 30, I'm not hitting 25. An experienced controller who has no fear of shutting down and I think that's key, knows I haven't hit an alarm state yet but this is just not what I'm used to seeing. Again, trying to find abnormal within normal. I heard the term pinhole leak come up a lot. A pinhole leak isn't gonna make a significant flow change or pressure change. To find a pinhole leak, you need the right culture and that starts at the top at our company. Our CEO has challenged us very publicly to walk the talk and one of the ways we do that is looking for abnormal within normal. And many times you'll find that you need it to re-configure, you need to change your range, you need to fine tune it, you need to broaden it. There's no pinhole leak there is no potential of abnormal but that willingness to shut down without fear needs to be celebrated and rewarded. At our company, it is. So how do we prepare for emergencies and emergency responses? I already kind of got a little leeway to speak a little long, so I apologize but I want to share with you as much as I can.

One thing is through the American Petroleum Institute, Oxy is a longstanding member with API. I work on a lot of workgroups and let me underline the workgroups. We offer recommended practices and these take a long time. Various operators are in there who bring their subject matter expert in the room and we come up with the best practice. Our goal is to get it referenced in the code and usually PHMSA and other key stakeholders from the other regulatory agencies are invited. They won't dictate us on what to do, but at least they may say is that where you're really going and our red flag goes up and we say maybe we better explain it. I serve on the 1175 leak detection. I drafted the original training I serve on the emergency systems, I serve on the 1168 control room, I serve on the control room and the cybernetics workgroup. I wish I had more information on the operators that you are questioning, but we are urged from a collaborative standpoint, internally and externally at Oxy, to work with key stakeholders fellow operators and within our own operation to always find best practices. We're challenged to never be complacent, we don't want to just be good enough. We don't look at an inspection protocol just when PHMSA comes in. There are these inspection

protocols. They're several pages long, they're in-depth they're intense and when PHMSA comes in they're coming in to make sure we're meeting the criteria, the compliance.

A good operator's gonna go beyond that you don't want to have a check the box mentality you want to look for abnormal within normal. You do that by having a procedure, documenting it, saving it, and showing it to PHMSA or whomever else in the area in which you operate wants to see it, being fully transparent. API is working with the liquid -- and I think in the near future is going to be releasing a CO2 technical guide. I'm very excited about that. I think we all should be. I'm gonna read here, some of the components the guide is gonna cover is preparedness in planning, stakeholder outreach, drills and exercise, training, dispersion modeling best practices, CO2 pipeline leak detection and identification, CO2 release notifications, initial response actions, responder community safety, isolation strategies, CO2 disbursement strategies, air monitoring strategies, incident management, amongst others. Again, when API says they're doing it, API is working with another group and yet is gonna present that to the operators and the operators are gonna give feedback, are gonna contribute. So this is again your oil companies, your energy companies, your CO2 companies working to do the best things. Somebody had mentioned on one of the microphones yesterday and it really struck a nerve with me this isn't our great grandpa's oil companies anymore. You're right, you're right. We all care. These pipelines are running through my children's schools and back yards and parks, my co-workers in west Texas around their homes and where they live and we have two major criteria in the pipeline. Number one, everybody goes home. We want everybody to go home safe, the way they left their house we want them to go home. And number two, we don't want anything to damage the environment and we drink the water too, we breathe the air too. I hope I'm presenting a more personal, human effort on this because this is important to me. And I'm supported by my company on this. Again, it's nice to see API and LEPA putting out this technical guide I think it's gonna be good for all of us, public and private. And I'll answer more in-depth on emergencies and drills I want to give the other panelists some time for opening remarks also so thank you.

MR. BILL BYRD: I'm Bill Byrd I'm president and founder of RCP Inc. Which is an engineering and regulatory consulting firm, founded 28 years ago now. We specialize in PHMSA regulated

pipeline systems. So I summarize it by saying, if PHMSA requires a company to do it, we probably have an expert in it. So we have a pretty large staff of people with a lot of expertise on PHMSA regulations. Personally I've been an engineer at a major oil and gas company and a consultant, I'm a professional engineer and generally regarded as a pipeline regulatory expert. We have a lot of training for people about what pipeline safety requires for regulators I've done that for people in the industry, but I've also done it for members of the public and I'm happy to say that Pipeline Safety Trust send their staff to attend my training class, which is not an endorsement but at least they think I can explain the regs.

Our company works for the industry I want to be clear that I do not speak for the industry. It's not my job to speak for any particular pipeline operator or industry associations or the industry at large, but you will find if you monitor the safe pipelines news group, which is hosted by the Pipeline Safety Trust I'm one of the few industry people who will publicly comment and respond to questions. So if you do that, I'm Bill B not to be confused with Bill C who's the Executive Director. I spent the first 13 years of my career at a major oil and gas company in a variety of roles, one of which was in emergency response and I actually served as incident commander on events. So I've got a good bit of experience in emergency response and there's one particular project that I want to explain to you and I'll kind of tell you how we got to the answer because the answer doesn't feel right when you first look at it, but I'm personally convinced it's by far the right answer. So you think what's the threat from a CO<sub>2</sub> pipeline release, what threat are you actually trying to address? Well, it's an inhalation threat right? You don't want to breathe too much of it. You can breathe a little bit, but if you breathe too much it'll make you sick or even kill you and that's well-known. That's the major threat we're talking about, people breathing too much CO<sub>2</sub> from a major pipeline release. Frankly in the industry, there's not a whole lot of CO<sub>2</sub> emergency response work that's been done to my knowledge, but there is a similar area where an awful lot of work has been done and that's on hydrogen sulfide releases. When I started my career I worked at a plant that processed gas that had 20% hydrogen sulfide. That's where a hundred parts per million can kill you and we had 20,000 parts per million in the inlet gas we also had 40% CO<sub>2</sub>. So we had a lot of CO<sub>2</sub> of the two, the H<sub>2</sub>S is much more hazardous than the CO<sub>2</sub>, but again the threat from H<sub>2</sub>S is inhalation

if you breathe too much it and it can make you sick or even kill you. So we had an emergency response plan and within the industry, the state of Texas I'm familiar with since we're headquartered there, they have statewide rule 36 and it's specific to responding and planning for H<sub>2</sub>S releases and it lays down a pretty common sense approach on how to respond. And a lot of that applies to CO<sub>2</sub> as well, maybe the same kind of approach would be appropriate. My company at the time had a response plan very similar to the rule 36 requirements, and one of the fundamental things that's in that plan was evacuation. When people are threatened by a toxic gas cloud we want to do evacuation and that had been our plan for years. Finally in the early '90s we sat back and started thinking, is that really gonna work? How many people do you actually have to evacuate, how much time do you have to evacuate them before they're at risk and the reality is we can't get there from here. Fortunately we've never had a major release so we've never had to try the reality, but we've said there's gotta be a better way to do this. So I want to propose a scenario to you. Let's say that you all got a notification right now that there's some hazardous gas cloud in the general area. That's all we know, that's all we know. We don't know how hazardous, we don't know exactly where, but we're pretty sure there's been a hazardous gas release and it's somewhere in the general area. I'll give you two options. Option A, we stay right here. Option B, I'll tell you all to leave. Which one do you think makes you safer? Right here, hunker down right here. I don't have hazardous gas in this room. There's probably not hazardous gas in this building, but if we leave, we may well wander into it. So why don't we stay and why don't we teach people to stay, instead of evacuating because they're safer almost every situation, they're safer staying where they are. So I presented this new strategy to our corporate management and they were less than enthusiastic about it. They all grew up on evacuation plans and they're like, yeah, that sounds good, but you're gonna have to prove to me that that's the right approach. Okay so fortunately we'll give you some money and a couple people and we started doing some work on this. So there are two things you need to know if shelter in place is gonna work. Number one, what's the concentration of the gas outside the building that you're sheltering in? That's where air dispersion modeling comes in I'm gonna steal the phrase the fastest egg -- so we use Delta-Mendota how much gas do we have outside this building. And then number two, we

need to know how quickly is air exchanged in this building how fast does the outside air come in, how fast does the inside air go out and once you can calculate that, then you can calculate interior gas concentrations as a function of exterior gas concentrations. So we did that, we did a number of tests -- there's actually an ASTM standard that was mentioned earlier today about the air infiltration ASTM E is an ASTM standard that can do that. How do you measure air infiltration rates in a room? So we model a high school gym, a trailer, just a variety of construction and some of it were leakier than others. You might be pleased to know the best place to be is a high school gym, not a lot of windows, you've got a tremendous amount of shelter time in a high school gym. But even a normal house, the trailer was one of the best places we tested and it wasn't even a very good trailer. You'd be ashamed to live there. So we found okay let's do the math, how long could these releases last, how big were the concentrations, how much time would people have if they stayed inside and in virtually every case, the right answer is stay inside. So we took all that data back to corporate management and said, this is just the right answer. We need to change our corporate strategy. Then they finally agreed. So that's how we got to the point of shelter in place. But then it's like okay technically it makes sense, but how do you make it work in the real-world? What are the things you have to do?

Well, one is you've gotta train the public on how to shelter in place and you've gotta train the emergency responders in the area about how to manage a shelter situation. So members of the public it's pretty straightforward, stay inside, close the doors, close the windows, turn off the air conditioners and wait for the all-clear. So just hunker down, don't get curious, don't walk outside. So that's what you tell members of the public. The emergency responders, you explain to them you'll be getting this notification it usually comes from them in our case we had an auto-dialer system, but once this notification goes out we'll show you the area that's being sheltered and we need your help blocking it off so people don't go into it, help us block off the roads. And then there might be selective evacuations, there could be situations where people just couldn't shelter or couldn't shelter well and you need to go in and get them, but that's the exception, not the rule. And then you need practically a leaked monitoring system that's continuous. So we could know hey, we've got a leak in this area. So it's gotta be a widespread

continuous gas monitoring system, so we knew as soon as possible that there was a leak and then we had to have an automated notification system that went out to the public to tell them hey, we've got a leak in the area. At that stage of the game, you don't know exactly where it is. You might know what monitor went off, but that may be just the edge of the cloud. The cloud may be somewhere else. When you're early in the process, you've got way more questions than answers. So you'll over-notify people, you'll tell a lot of people to shelter when maybe only a few of those actually had to shelter. That's okay, that's an acceptable outcome. People need to stay in their house for another couple hours. You'd rather do that than put their lives at risk and let them run around.

So we actually published two peer-reviewed papers in a journal of society of petroleum engineers and presented it at a conference hosted by the society of petroleum engineers and the EPA. So I downloaded those two papers earlier this week so they're still out there. You've gotta buy them unfortunately, but one of them explains the technical basis and the other explains the implementation of the approach. So I look at CO<sub>2</sub> and I go, you know what, virtually everything about this other than the concentrations is the same. So I really recommend that the industry and the regulators adopt a shelter-in-place strategy. I know some people mentioned yesterday well, they just told me to stay put. It's like, I'm gonna talk about that tomorrow because I really just think it's the right answer. It doesn't feel good just to sit there and do nothing. We're action-oriented people, but it's just the safest thing to do. So that's my purpose here today is to explain how we got that answer.

MR. CHRIS RUHL: Thanks, Bill.

Jodi?

MR. JODI FREET: Thank you. Before I begin, I want to thank PHMSA for traveling to Iowa to bring this information to the heart land. And I also want to thank you for this opportunity to speak today to tell you a little bit about emergency management and about Cedar County. So I apologize in advance I usually don't read from something but there's a lot that I do want to bring up today. So this was the best way to do it. Again my name is Jodi Freet I'm the director of the Cedar County Emergency Management Agency. As the Cedar County EMA I focus on all aspects of emergency management including preparedness, response recovery and mitigation.

I won't go into a lot of detail but know that I'm responsible for those efforts in my county to plan for, to train for, to organize for, and to provide exercises for activities that relate to disasters and emergencies. Another part of this mission that I take very seriously is the fact that I'm responsible to help educate the residents of Cedar County about those -- Yes, sorry. I take very seriously the fact that I need to help Cedar County residents understand disasters that may affect our county, and in my role as 911 coordinator, I'm charged with ensuring my first responders have the tools they need to communicate with one another not just on an everyday basis but during an emergency or disaster. I oversee the 911 network for Cedar County and I'm also responsible the person that makes sure that when you dial 911 in Cedar County that your call goes to our sheriff dispatch. I'm a certified emergency manager and I hold degrees in both emergency management and homeland security I also have several FEMA certifications and have graduated from the FEMA academy.

I'll admit the invitation to speak today was a little unexpected. So I thought what would be the best thing to do. Well, I want to tell you about Cedar County because I think Cedar County represents a lot of the rural counties that are in Iowa, the Harding counties, the Franklin counties or the Floyd counties that's represented here today. Cedar County is located in eastern Iowa and we are very rural. We're home to about 18505 individuals and we have 576 square miles in our county. We're unique in Iowa in that we're the only county that has both highway 30 and Interstate 80 running through our county. I have a lot of hazardous materials that come through my county on a daily basis. One of my claims to fame for Cedar County is we are the home and resting spot for President Herbert Hoover who was the first true emergency managers president he did a lot with disaster relief and humanitarian outreach. We are largely a bedroom community and we are bordered by three of the most populous counties in Iowa. Our residents leave our county every day to go to work and then come back at night to live in Cedar County. And like many rural counties, our population is aging. We do have a very aging population. I have eight towns in my community all of which have volunteer fire departments. We have no paid fire departments. Every community that does have a fire department has a minimum of six members. I have one fire department that has six members to support their community. The largest fire department's around 35 people. We have a

mostly volunteer EMS system. Six of our towns provide an ambulance service and then two other towns have a first responder service. And like many other rural counties in Iowa, we are facing an EMS crisis. We simply do not have the volunteers needed to run EMS services and it's very painful for me to tell you that. It may take anywhere from 15 minutes to 30 minutes to get an ambulance to some of my residents. Our board of supervisors in an effort to stem this crisis actually is doing something unprecedented and very unthinkable at one point in time. In looking at potentially implementing a county wide and county funded ambulance service. Why am I telling you this because I think it's important for PHMSA to understand the struggles of rural communities in the heartland we're not prepared to respond to an emergency from a carbon capture pipeline. Don't get me wrong pipelines are one of the safest ways to transport commodities. My volunteer fire departments, we actually have -- I would say considerable pipelines in our county all of which currently transport gas fuel petroleum based products. And I'm not against commerce nor is my community, but a response to a natural gas or petroleum emergency is considerably different than that of a CO2 emergency. My volunteer fire departments do not have the level of training in hazardous materials that they need to respond to a CO2 pipeline emergency. Why? Well, that training takes a considerable amount of time and financial commitment and we're already asking our volunteers to give up time of their lives to respond to disasters in our community. And when you're asking them to attend a very long hazardous materials training, the prospect of not seeing your child's little league game or spending a weekend away from home, it's just not appealing. The amount of training that our firefighters go through for even volunteer fire departments is quite astounding and for good reason. I think about my family members who are firefighters 40 years ago they show up at the front door of the fire department and they were a member. Now our fire departments are going through firefighter one and firefighter two and doing considerable training and continuing education just to support their communities. Further, my local fire departments do not have the budgets or the financial resources to purchase the equipment they need to respond to a pipeline emergency. If we think about a firefighter who wears an SBA the self-contained breathing apparatus the average price is \$6,300. Now some of my fire departments do have funding from their city councils but \$6,300, that's a lot of pan cake



breakfasts to pay for that life-saving equipment. Many of my rural fire departments struggle to respond to emergencies and the considerations and burdens for specialized equipment become astronomical for them. Simply put we're not prepared in my county for a CO2 emergency. So what happens if there's a CO2 emergency? I can't send my firefighters or my EMS people in to respond. I have to call in a specialized hazardous materials team. In the area that's being proposed for the pipeline that's gonna be the lane county hazmat team. That's a 45-minute Drive if they're running lights and sirens. That's a long time to get people there, and consider that lane county hazmat serves nine different counties. If the pipeline emergency were to affect lane county and they don't have a second team to come to Cedar County, that's not a situation I want to be in. I don't want to explain that to my residents why a hazmat team is not coming in. I do want to address some comments that were made yesterday. CO2 pipelines are on the radar of your emergency managers, especially in those counties where are proposed locating. And if you haven't talked to your emergency manager, I urge you to do so. Right now for my Cedar County residents that are here, I've been working with the Clinton Scott and lane county emergency managers because we know we need to work together to prepare for this. Know that your emergency manager reports to the emergency management commission which is made up of all the mayors in your town. Reach out to them, find out what they're doing to plan for the pipelines in your community. You have a right to know, but even though we're doing a lot of planning in Cedar County, I don't feel that we're prepared. And finally a mention was made yesterday of the LEPC or the local emergency planning committees. These are committees that are free to join anybody can join it and I encourage everyone whether you're a landowner or the pipeline or another agency, please look at joining your local LEPC's. The local emergency planning committees exist to improve a community's preparedness for handling chemical accidents promoting cooperation among the state and industry and we also increase awareness of chemicals present in your community and these committees actually came into existence after the hazardous materials accident in Bhopal India back in the '80s. This is part of that community's right to know about the chemicals in your community. I can tell you for Cedar County we're very active in the region's which is made up of nine different communities in eastern Iowa we focus on planning training and exercising for hazardous materials situations.

We've been talking about the CO2 pipelines for quite some time and this is the group where your voice can be heard and you can help us have an impact on this training. And if you need to know about your local LEPC I can tell you about them. In closing thank you for the opportunity to tell us a little bit about Cedar County and our concerns about the pipelines.

[Applause].

MR. CHRIS RUHL> Thank you Jodi.

Jack?

MR. JACK WILLINGHAM: Good afternoon. I didn't respect to be on this panel this afternoon, but I can probably talk my way through it. I'll tell you a little bit about myself my name's jack willingham that is the county that the Satartia pipeline. A little bit about my history I've been in public service for 33 years the last eight years I served as emergency management director, fire coordinator, 911 director, the EMS director, everything else they could put on me. The previous 25 years I worked in law enforcement where I specialized in accident reconstruction and disaster response. In the past eight years I've worked 12 federally declared disasters or in neighboring counties. And uniquely the obvious areas that we've all heard about a pipeline incident and I've listened to there's two people in this room that have actually been through pipeline incident and that's me and Jerry. So I'm here to answer any questions that you all might have about what actually happened how it occurred and how it went down. I've gotta tell you listening to every company operator like Mr. Lee's company he puts the pride into it the incident that we had in Satartia would've never happened had they been following the PHMSA guidelines that were already in place and they actually had in place. So I can't blame PHMSA for it, but we didn't know that there was a CO2 pipeline running through my county. How did you not know that? Well, the next county over he didn't know there was a CO2 pipeline running through his county. The other county didn't know because the pipeline company just didn't cooperate with the county. If you're gonna have one of these in your area, I think one of the requirements for these pipeline companies which are already in there is the training and I think they need to have some community involvement above and beyond a meeting with the emergency management director. I think they ought to be required to provide the residents all the CO2 alarms. I mean, I've been to the factory of operators the one that operates in our

county and all their employees have CO2 alarms in them. Why wouldn't you provide this to the residents that live in that area? We've all heard a lot about disbursements or plume crowds and where they think they're gonna go. There was a nice plume cloud for Sartartia and it was absolutely incorrect. If I would've known -- that came from the National Weather Service they didn't even look like the same mountain. They don't know until you know what the weather conditions are going on you can have these tests over and over again but you can't predict how large or how much is gonna escape at one time. A controlled release is very different from an explosion. So the plume clouds you're not gonna know until they happen particularly at Sartartia it was 47 minutes before we even knew it happened and we had to contact the operator to determine what happened. At that time when I found out what happened I had to find out how much was released and I contacted the National Weather Service in Jackson Mississippi and they had a direct plume crowd ready for me and we started sending our responders in. No offense to you but we had several people who sheltered in place until we pulled them out of their house unconscious. Ideally it's a great idea if you have a solid structure Sartartia MS community has 100-year-old houses. Now if we would've known ahead of time maybe they should require to train these people to let them know you can have a room and we need to make sure this is being done. Emergency management is not gonna be done totally by the pipeline companies it's gonna start at home and I'd like to see these people that are actively questioning these things it shows you're interested in what's going on and you're not waiting until -- but it definitely needs to be in the requirements that these pipeline operators be involved with the community and be responsible for paying for the devices that these people need. We were able to because my county was fortunate enough to have 48 SBA I was able to have a lot of training in place. We communicated -- we use the same equipment and they was bringing extra bottles. So we were able to shut the road down and have points where we were shuttling rescuers in and changing out bottles I had 96 bottles, but who didn't have bottles my brothers who I worked with for 25 years how many of you carry SBA's in your cars? The first responders the first people we're gonna get into these rural areas the first responder are gonna be your law enforcement, your deputies because they're full-time. Your volunteers as dedicated as they are they're coming from home. I actually had a deputy who's a good friend of

mine I'm talking to him he keeps going in to rescue these people I knew what was going on and I'm hollering on the radio don't go in unless you have a SVA. You guys aren't gonna listen to me he did it the fifth time he went in he went down. I had to listen to him on the radio I listen to his voice deteriorate I thought my friend was gonna die and there was nothing I can do. This is real when you're really through it and I know we're here to see what we can do to make it safer but I want you to be aware that everybody's gonna have to work together. It's gonna have to be cooperation between whoever the operator is and your local emergency management we're gonna have to have enforcement and PHMSA needs -- they need more inspectors because just having laws or rules is not gonna be good enough. If you guys just had speed limit signs but if you don't have going 25-- we can't count on companies to police themselves it's just a fact. We don't police ourselves. The main thing I learned from all this is we don't know exactly how it's gonna react. There's nothing we can do to stop it from happening because if it's gonna happen it's gonna be bad. There's not gonna be a safe blowout. All of this happens quickly all of our people were unconscious within what three minutes. The Satartia community was within a mile of the blowout on a 24-inch pipe after they said they shut the valve off it went on for -- I'd have to say for two hours it was dangerous where you couldn't breathe without an SCVA. That's about all I can say I'm happy to answer any questions you guys got. He was down on the ground pulled several people out himself.

[Applause]

MR. JERRY BRIGGS: Thank you, jack. Like I said I'm Jerry Briggs I've been in fire service for 27 years I've been a chief for over 20 years and Jack took everything I was gonna say I should've been taking all the info -- that's how I communicate. But again, I'm just here for the other emergency responders, the law enforcement, fire, just to kind of help plan what you need and what you think you need may not be that much. You may already have what you need, you just need to understand the product that's being brought in and if anybody has questions, I'll be glad to answer.

MR. CHRIS RUHL::Thanks, Jerry and Jack.

So the question everybody wants to know is it a prerequisite or a requirement that your first initial name to be a J? Thank you. We did have a few questions queued up. I think our folks

have answered a couple of those, but what applications are in place to provide notification to first responder such as an E 911, text alerts have been mentioned in the past. Do they work what about if you don't have good cell phone coverage?

MS. JODI FREET: I can take that for Iowa. Every emergency management agency has some sort of a mass alerting feature. Most of us use what's called the alert Iowa where residents can subscribe to certain alerts that are happening in the community. We also have the ability as emergency managers to send out force notification it's called I paws it's an acronym I don't remember what it stands for, sorry, where we can force messages to cell phone towers to hit every five minutes. We can send alerts through the TVs, through the weather radios. So there are things in place the key is just knowing when the incident happens. In talking to Jack, one of the things that has always bothered me about Sartartia is you guys didn't know for 47 minutes.

MR. JACK WILLINGHAM: the initial call that came in I'm sitting at home and the dispatcher says look we've got a report of a green cloud and the smell of rotten eggs. Anybody's that's had any training at all the first thing you think is what? Well, chlorine. So I start thinking what in that area could have chlorine and all I could think of is the water system for the city of Sartartia. I'm thinking there's no way it could cause that much chlorine. I know we've got natural gas lines in the area which doesn't quite smell like rotten eggs, but they could mistake it. So we're mitigating and trying to figure out what the exact problem is and we're going from line to line I still don't want my people going in unprepared because we don't know what we had.

Fortunately my fire chief who actually works for the state now past experience in the oil field, just made a call to the operator and said hey, we've got a problem is there anything going on oh yeah we had a major pressure drop at [indiscernible]. So when he called and told me that are you sure that's what it is and he said yeah. So after some foul language that Jerry taught and I used, I was able to find out what product they had and how much of it had leaked and how much -- I mean, I was expected to go out and I took that number and I gave it to the National Weather Service a representative from Mississippi emergency management and we were able to get that information from the National Weather Service in about 12 minutes and it expanded as the night went on and I was able to feed it to Jerry and the guys in the field and that's how we were able -- fortunately nobody died we were able to rule out the places we didn't have

to -- and from road to road where there could possibly be some people. The last people the three people out of their vehicle that were really bad look there's 1 More Road there aren't too many houses let's just go check I don't know what made me stay and we did and that's where we found the three victims they were dead they got to the point where they had -- they were dead. He was once he broke the car out and he started to take them out he had to pile them on the [indiscernible] just to get them and hoping the UTV didn't die from the gas. So yeah not knowing can hurt you a lot.

But to answer your question we now have a nice alert system in the county that was actually paid for by the operator afterwards [laughter] and the problem with that is, nobody signs up for it. So I through a cell phone which through the local system if people don't put their information in but the older generation doesn't like to put their information in the computer when we're trying to find out -- this alert system you can put everything from your medical information to your phone number and they say well, I don't have good cell service it's gonna force a landline and -- and if you've got everybody signing up for it that would work great. If you use Facebook that's a good way to get information out but nobody watches the news anymore. The only problem with Facebook is you don't know if it's gonna hit the right people at the right time and of course we use the mass email system too.

MR. CHRIS RUHL: Terry anything to add?

MR. JERRY BRIGGS: Yeah, that sounds great mass notifications, emails, Facebook, Twitter, whatever kids do today, great. And I'm sure the three people in that car their phones were blowing up with those mass alerts they just didn't hear them or they were unconscious. Yeah the shelter in place for five miles out or 10 miles out and you've got enough time to know how much release, that's great, but when you're next to the blast site and nobody's even called 911 yet, I found them sheltered in place and revived after that and --

There's a lot of good theories but it has to be something solid for how far and how close to the pipeline you're dealing with.

MR. CHRIS RUHL: One additional question: There's been some discussion about access to emergency response plans. I just wanted to see from your guys's perspective what kind of access do you have to emergency response plans I think there was some questions related to

access to emergency response plans whether that be from the operator, whether that be from the county just so folks know what emergency procedures are for their area.

MR. BILL BYRD: Well, I do believe that people need to understand their role in an emergency response plan. So it's above my pay grade on even the whole plan I don't know, but I definitely have an opinion that they need to understand, members of the public, this is how we respond to this kind of emergency, this is how you'll be notified. And there could be in certain locations siren locations we have multiple ways to notify people, but they know when this shows up on my call, the siren will go off and here are the things I need to do. And similarly with emergency responders, number one the operator takes 40 minutes to communicate with the emergency responders. That's your first call and they need to get involved too. They need to know as much as you know about here's the kind of event and know your abilities to detect things. So how good is our information? Are we giving you a really good geographical area or are we giving you -- we're not so sure. There definitely has to be that communication between the operator and emergency responders in the area or it's not gonna work and I agree with you a hundred percent on that.

MR. JACK WILLINGHAM: And I will say as much as the hard time I've given to the operators they've really since this happened, they're working a lot better and I give all the credit to PHMSA this organization right here because that's the only reason they've done it. They're working a lot harder to work with the community, I'll give them that.

MR. LEE TURFE: So again we're hearing what to do after, which is important. How do you know? So you have to have training. As an operator, you have to have internal training. As the local communities, you have to have years training and then you have to have overlapping training. I go back to my original statement, we're all human and the only way -- we're never going to be prepared for that actual moment, it's kind of like when you're a kid you're in the backyard it's the last second of the Super Bowl and you make that throw every time, but when you get into the game, you don't necessarily always make that throw. So how do you handle adversity in real-time? You have to have drills so as an operator you start with table-top drills. You get in a room you have your key people, you identify a certain business unit within the organization, you simulate an emergency and you talk about how you're going to handle things.

Now, what's very, very important is you must be a true self-evaluator. You have to identify your gaps and you have to set a culture within your organization where finding gaps are good. Any time you can find a gap during practice or training, that's the best time to find it. We don't want to find it like when these gentlemen found it. And then you get into emergency training and then you get into full deployment training where you get together with your local stakeholders, EMS and fire departments and first responders and police officers and you invite them and you simulate a drill, a fire, a cloud, whatever and these get so in-depth that some operators will have individuals lay on the ground as if they are passed out or worse, to simulate -- and nobody knows who's been assigned to do that. And when that happens, there's evaluators watching to say okay, how did you handle that and the evaluators usually are somebody from the operator, usually there's somebody from a third party to give an outside assessment and there's people from the local community. So I'm a big proponent for drills and training.

Another thing we do is qualified individual. So every quarter at Oxy and after hours also, the controller is going to call at least a supervisor and is going to say, hey, this is a drill, this is a drill, Lee's pump station pressure drop, flow increase, are you ready to do the following? And the controller will go off by calling the local 911, getting booms out or whatever and it's causing that supervisor to think okay I just got a phone call at nine a.m. or two o'clock in the morning we'll run these at random times, am I ready to have this conversation, can I clear the cobwebs trying to get people ready for real-time. We document it, we record it so I'm a big proponent for drills.

MR. CHRIS RUHL: Thanks Lee we're gonna be wrapping up the session but Travis we've got two comments or questions over here.

MR. TRAVIS HALLAM: I do have a few statements and one was -- I've emphasized this over and over again where people say nobody wants to see pipelines fail. When I sat on Governor Burgum the North Dakota public improvement nobody wants to see pipelines fail. That's true, but some pipelines that are monetarily driven are willing to risk things. So once again you can see the difference between Keystone and Dapple. Keystone's had multiple incidents. Not all pipelines are the same.



The next question for Jerry, did the three people in the car die or did they not die?

MR. JERRY BRIGGS: They're alive today.

MR. TRAVIS HALLAM: That's not sheltering when you're in a car and with anhydrous ammonia the only person who died was the guy who left his house he only made it a few steps. So while it's not the greatest option sometimes it's the safest option. If you're in a two-story house go to the highest window until someone can get you out. Did you have these diesel trucks and would they have been better in an oxygen deficient atmosphere.

That's what you need, that's the same physical properties of water. You can't breathe but those SDA's will save you. And for the police officers, what you have here is a confined space. It's an air confined space incident and what always stuck in my head in confined space incidents for every fatality six people die trying to rescue four. You get more people dying trying to be the rescuers. So they make small little self-contained breathing apparatus but you can't run in if you're not prepared you're gonna become the victim. And I'm glad you brought that up and as the idiot who actually had CO2 poisoning from an ice fishing incident it makes you tired the symptoms come on -- fortunately I had my eight-year-old stepson as my canary he told me what was going on I always thought if he hadn't been there, I might've not made it. So it is a serious issue, but that's one thing. If you are an operator you need to reach out, you need to educate people so that incidents like this don't happen. I appreciate your time.

MS. ANNA RYAN: Good afternoon Anna Ryan from Des Moines Iowa. I'd like to say during this conference I have found the panels to be very informative and balanced but this afternoon for the first time I found myself having a response to a panelist that was simply wow. Let me give you a little bit of context for that response. For the past 12 years of my legal career I've practiced in the field of public utility regulation from September of 2021 through last month, I focused 90% of my time on investigating carbon dioxide pipelines. I have worked with an engineer who was available to answer any of my scientific and technical questions. We both followed regularly a number of publications so that we could keep up on ongoing research about carbon dioxide pipelines and safety. During that time, with the two of us working on those cases, I came across one, one reference to any research that dealt with the issue of sheltering in place as a result of a carbon dioxide pipeline rupture. That report I found as a

result of reading the May 2023 carbon transport and storage newsletter sent out by the national energy technology laboratories. Now to be clear that research wasn't actually contained in the newsletter. What was contained in the newsletter was an update about a DOE carbon transport website where I found some links. I followed one of those links that said that it led to workshop on carbon dioxide -- road map for carbon dioxide transport fundamental research workshop, which was sponsored this February by the Department of Energy's office of fossil energy and carbon management. Topic two was carbon dioxide leak detection and emergency response protocol. The final presentation under that topic was indoor carbon dioxide loading actually it was overview of emergency response work groups. There are so many steps here that I had to jump through just to get this information. Partway through the final presentation, I got to the section on indoor carbon dioxide loading following a simulated carbon dioxide pipeline release. The results of the experience reported in that report concluded that shelter in place is a viable health protective option up to four hours following a carbon dioxide pipeline release and possibly longer. That conclusion was based on an experiment that included one carbon dioxide release in controlled circumstances that included 228-foot travel trailers with a known level of air sealing and whose windows and doors were shut. So what we learned from that experience isn't any general information about whether or not shelter in place is a good idea, what we learned from that experiment is that if there is a carbon dioxide release that approaches occupied dwellings at the same rate as the controlled circumstances in that experience, at the same intensity and at the same height off of ground level and assuming that all of the occupied buildings in that zone are single-story dwellings with the exact same amount of air ceiling that those two trailers had and whose windows and doors were closed before the carbon dioxide reached those dwellings, then and only then is sheltering in place a viable safety option for four hours, maybe more -- we're really not sure. That is not sufficient research for those of us who live in the proximity of where these pipelines will be going to feel any level of confidence that any emergency response plan or any safety recommendations will seriously take into account the risks that we face. And I want to address one other issue that Mr. Byrd mentioned and this follows up a little bit on what Bill Caram started to raise as an issue earlier this morning and that is the level of leakiness of the houses.

Ten years of work in the energy efficiency field has taught me the leakiest houses are in the lowest income communities. In Iowa low income counties are rural counties, they are the counties that these pipelines will pass through. In other areas of the country low income counties tend to have a correlation between majority minority populations. Relying on inadequate research about the conditions in which people actually live puts the people who are at the most risks from the harms of these carbon dioxide pipelines in the greatest danger and I think this highlights why we need better research, why we need people who can evaluate that research from a technical as well as a societal perspective, and that is why PHMSA needs to issue a moratorium advisory.

[Applause].

MR. EDWARDS BARNES: I was asked to come speak to you all on behalf of the Pipeline Safety Trust organization. I was one of the five at Satartia that actually survive the pipeline explosion and just to give you the details on what happened to us we were on our home from fishing and all of a sudden it just blew up, a big cloud of smoke came in the air and I had just enough time to call my mom before me and my brothers passed out. The car stalled out, the windows were up and the car cut off and we stayed under that gas three and a half, maybe three and a half hours, something like that. And I'm here to tell you all today it's not safe, I don't think it'll ever be safe. You'll never have enough time -- we had no warnings. Satartia had no warning at all. The correspondence that came, they didn't know what to bring when we got to the hospital, they didn't know what to treat us for. I'm still suffering today, headaches, memory loss, just having trouble breathing, thinking, concentrating. It does so much to you and when the lady said there's not conclusive evidence of what the pipeline will do to you, she was absolutely correct. So I will tell you this and I'll sit down, but it's not safe and I don't think it's worth it. Thank you.

[Applause].

MS. JULIE JOHNSON: My name is Julie Johnson we have a farm that's been in our family for over 100 years. I find a lot of fault in the information that's come fort this afternoon. You talk about the culture of the company. Let me tell you about the culture of navigator CO2 and summit solutions. The letters that we received I have to talk about navigator, the letter that we

received said your land is in our pipeline footprint. Excuse me? Who the hell do you think you are? This is our land, damn be your footprint. You say how good is your info, you have to work with good information. You bet we do. So we asked the pipeline companies for information. They refuse to give us any information about EMS training. They refuse to give us any information about their plume modeling. I have been to five navigator propaganda meetings. At one meeting, I asked the engineer, you stated that you would not share your plume modeling studies with us. He said absolutely not. He said any prudent company would not share that kind of information. And I said, so that means that you simply could have read independent studies on this and not done any plume modeling at all, is that correct? No response. I asked the same engineer about putting odorants in the pipeline. His snarky response was well, we're thinking about putting garlic in. That is the kind of culture that we have been working with, trying to work with for over a year and a half.

I also want to point out that you all have been talking about non-CO2 pipelines. Your references are all to non-CO2 pipelines. You use the word leak as if it's a little dribble out of a pipeline. Don't you understand that the hazardous CO2 pipelines are under a minimum of PSI of 2100. If there's a leak it's not gonna be a little dribble, it's going to be a rupture. Please use correct terminology and don't fall back on what you've always used before, because it does not apply.

Navigator says that its shut-off valves will be 20 miles apart, 20 miles apart. In Satartia, it was nine miles. Is that correct? Yes.

Yeah. So you're talking about a whole lot more damage with the shut-off valves 20 miles apart. The public is not invited to meetings that Navigator and summit solutions hold. Their whole culture toward us has been one of contempt, because we are standing in the way of them making money. Their whole attitude has been that we just need to get out of their way so they can do what they want to do. Please keep that all in mind, PHMSA, as you work on regulations. We have been trying the best we can and we're not getting any cooperation from the pipeline companies.

Thank you.

[Applause].

MR. CHRIS RUHL: All right. I believe we've got an online question or questions Stephanie?

PHMSA READER: Yes Jason Webster asks factoring in air temperature do pipeline diameter distance in regards to a worst case scenario what does the data show when the CO2 will be dissipated into the atmosphere.

MR. CHRIS RUHL: I think that may have been a dispersion question.

PHMSA READER: Right, he's asked this several times today. So that's why I put it out there.

MR. JACK WILLINGHAM: I don't think anybody can answer that question without doing modeling. On a hot humid day it's gonna disperse quickly. On a cool night it's gonna disperse slowly. It's all gonna depend on the weather, the humidity, the DEW point, all kinds of things.

MR. CHRIS RUHL: All right. I want to thank our panel I appreciate all the great questions and I'm gonna turn it over to Max.

[Applause]

MR. MAX KIEBA: And we did commit to continue to have open questions. So I want to make sure that those who were patient and had their names on the list I just want to give them an opportunity.

MEMBER OF PUBLIC: Max can I just ask Mr. TURFE a quick question?

MR. MAX KIEBA: If he's willing to do it yeah.

MEMBER OF PUBLIC: So this is more security than it is safety but you mentioned you were on the cybernetics committee so what measures are in place in these days of terrorism to keep these computers from being hacked with these valves?

MR. LEE TURFE: So I understand the confusion. It's not a cybersecurity group within API. There is another group that handles the cybersecurity. We're more technical and we'll assign different things like leak detection or safety management system to other subgroups, but I understand what you're getting to. I want to clarify a couple things if I can have a second here, because I appreciate the emotion. I'm not in your shoes, I'm not gonna claim to be in your shoes that would be disrespectful to you. I tried to give the human element of it. Again I don't know anything about the pipeline companies you were mentioning I look to my left and right and I don't see them here, I'm here. They were here. I mean, I don't see them up here making statements. So when I talk about a leak, yes I'm talking about CO2, liquid, 195 leak. When I

talked about looking for a pinhole leak, again if you're looking for normal within abnormal, that pinhole leak may be an indicator of something very bad about to happen, a rupture, a major leak or something. And I was trying to demonstrate how we are always got our head on a swivel looking for the abnormal before it happens. So I just wanted to clarify that. Thank you for the opportunity.

[Applause]

MR. MAX KIEBA: If you don't mind take the question because we want to commit to folks that had open questions and comments yesterday. I appreciate it.

I'm gonna work through the list and there are some name that I've seen before so if you're on the this list and you've already talked I want to give people an opportunity Dan hardy and please we're doing what we can to limit it to three minutes. I hate being the bad person here, but please try to be concise.

MR. DAN HARVEY: Well, it's gonna take more than three minutes, sorry.

Dan Harvey I'm in Grover fire chief. I've been on the fire department since 1985, fire chief since 1991. We've been dealing with heartland green way Navigator goes through my district.

There's five fire departments in our county. I have the biggest district in Emmett county with Navigator. Esterville has five miles with summit. So I'm gonna pick on Navigator, then I'll pick on summit in a little bit here. So we have 17 -- so I'm gonna relay just what they said up here. We have 17 volunteer firemen. We are truck drivers, manufacturers, site managers, farmers, you name it, we're all over the board. At the most, we have at any fire most of the time it's 8 to 9 people. That's why we have mutual aid. Out of us, none are hazmat operations. This is what I keep telling you people, that we are only hazmat awareness. What does that mean? Haz-mat awareness is that we direct traffic, that's all we can do. To be hazmat operational, you have to have a ton of education and hours to do that. Right now in Emmett county there's only one person out of all five districts that have that. Our closest hazmat team is 90 miles away in mason city so it's two hours to get to us. On the meetings we've had, I'll pick on Navigator here -- when we sat down as their host at meetings on several areas, jurisdictions, we asked the Navigator engineer how much liquid is in an eight-inch, 20-mile shut-off? He didn't have an answer. He's training the responders, he's giving us information. He didn't even know the

oxygen needed for an engine to be able to run. This is at a first responder class. So I'm trying to figure out what in the hell we're doing here listening to this guy. The next one was an assistant fire chief that they hired explaining plume modeling and we've done a study I had my son do a study, it's right here and we knew the numbers. So we were drilling him on what would be that plume model of an eight-inch, 20-mile shut-off. So we were asking him what would that be. Quote if there's a breach from a pipeline, you as firefighters will need to don self-contained breathing apparatuses.

MR. MAX KIEBA: you don't mind please wrap up.

MR. DAN HARVEY: 1100-foot diameter, 1100 feet. So when we tell you this is hazardous, it's the only pipeline that's marked hazardous in the United States. Am I right? What's the other one? That's marked hazardous in front of the pipeline.

MR. MAX KIEBA: Please wrap up.

MR. DAN HARVEY: Okay high concentration, low concentration that was asked what's the HCA high concentrated areas would be 6 to 7 miles apart. Low concentrations, 20 miles apart for valves. A high concentration area is anything 50,000 or higher population. How many areas like that in Iowa? Not very many.

On summit, I witnessed two meetings they've had.

MR. MAX KIEBA: Sorry don't you have these comments written down.

MR. DAN HARVEY: Yes.

MR. MAX KIEBA: Could we put it in the docket is that possible?

MR. DAN HARVEY: It is in the docket. I'm about done.

MR. MAX KIEBA: But we also have 20 more individuals that have asked to talk. All right.

MR. MAX KIEBA: There are other people that are further down on this list won't have an opportunity to talk.

MR. DAN HARVEY: I've been sitting here for two days I had my name on there yesterday morning.

So at the summit meeting, they presented in Wright County their plume study only showed a hundred foot that's critical, 300-foot that's borderline health problems and after 300 feet, there's nothing. Who is right here, Navigator or summit? The plume modeling you can throw

that out the door from what I hear from Sartaria, for our numbers that we're flying around. I had my son do these because as a fire department I want to know what is the worst-case scenario? I don't care if it's two miles or 200 feet, I want to know what it is. At the other meeting the county supervisors asked summit what we wanted a plume study and they said we cannot give that out due to security reasons. I'm tired of people trying to hide what a plume model looks like. We know what it looks like. Start telling the people in the state and isn't it odd that we have setbacks for hog confinements in the state of Iowa but we have zero setbacks for CO2, hazardous CO2.

Thank you.

[Applause]

MR. MAX KIEBA: With that we'll have to transition to our next panel if we can get the what does public engagement look like up here. Is Bill Caram here, yeah Bill's here, David Murk and we did not have a chance to update but Karen Lynch is our liaison, but we actually thought one of CL's that we have in each region. Shawn will talk a little bit about that but it's Shawn Quinlan with community liaison.

Sorry, I believe that the team decided who's going first. I can't remember who it was, so -- okay good. I delegated it to them so Dave Murk. We want to talk there's been a lot of discussion on how does engagement happen. A little bit was touched on our code about public awareness, there are specific parts in our code that require certain aspects of public awareness but also looking at you might learn about some of the other recommended practices up here, but kind of the transition of getting one way communication to more 2-way type engagement. So Dave, please start.

MR. DAVE MURK: Well, good afternoon everybody. I appreciate the opportunity to be here today. Just a quick background on me: I'm the senior director of pipelines at API in the mid stream segment. I've been with API for going on eight years. Prior to that I worked for Linda Daugherty at PHMSA for two years as the director of field operations and then prior to that, I was in the Coast Guard for 24 years.

So pretty much my whole career has been whether you take the 26 years of government service and then the last seven years has been around safety and the commitment to safety not



only as a regulator for those long years and now working with all of our pipeline companies that are API members and really focusing on safety, which clearly there's a lot of passion around that here today with CO2 pipelines. So I want to first thank Alan and deputy administrator Brown for holding these meetings. This panel clearly is important and based on the feedback that we got from many of you in the room about the engagement and the experiences that you have had, so again thanks Alan and team for pulling this together.

As I was sitting and listening the last two days, and many of you with farms and land, et cetera it got me thinking about our family as well. We have -- at one point we had 500 acres of farm land that my wife's grandfather purchased in 1950 in South Carolina in Beauford County and that passed down through multiple generations to my wife and she manages that property. And thinking through and hearing the concerns and the impacts not only to your land but also to your family and potential impacts to your family, I can appreciate that concern. And the other thing I think more importantly is the engagement can happen, but what this panel is about is making sure that that engagement is meaningful and effective. And those two things alone are probably the most critical things and as an industry and we're hearing companies' names thrown around today, but there's companies and I think it was Travis and anything we said yesterday and anything we do -- it's anything, it's not just pipeline companies. You have companies within an industry and there are others that need to do more to help build those relationships and it's no different with anything we're doing related to CO2 and pipeline safety. As an industry, we're judged by -- we're judged as an industry rather than by multiple companies. I mean, it's a reflection on us as an industry if engagement is not done as effectively, et cetera.

I think the most important thing for us as an industry moving forward is making sure we do have that meaningful and effective engagement. To that end, we're moving forward with -- and it's been in development now for the better part of two years at this point -- RP 1185, pipeline public engagement and it was initiated really from the Pipeline Safety Trust with Bill's predecessor, Carl Weimer who through PHMSA got a series of grants to host a series of workshops around effective engagement. The industry participated, the public participated and the government participated and the outcome of that was a recommendation for there to be

an industry-wide recommended practice for meaningful and for effective engagement and the Pipeline Safety Trust, Carl Weimer actually chairs the document -- that document is probably a few months away from being finalized and we're hoping again to have that wrapped up in the fall.

The other thing -- and we just had that panel on emergency response, a lot of interest and engagement and with first responders and what I'll say there, in my 24 years in the Coast Guard as a first responder working with local law enforcement as well as with fire departments, et cetera, I can tell you incredibly important -- again I'm gonna use Travis I think it was Travis yesterday who said early and often and that couldn't be further from the truth. You need to be engaged and you need to be working closely. We've heard training and drills and exercising, capability equipment is one important part of it but you want to have a relationship with your first responder and that community well before any type of incident. You need to be prepared and you need to plan and that's probably one of the most important things that we've heard is making sure you're in lock step with your emergency response community. I think earlier today, Lee mentioned the topical guide that's close to being finished I think we'll finish it this summer. That's a tool to help industry operators help them work better with our first responder and the extension of that is we've now had discussions with the national association of state fire marshals and we're looking at how do we build training into some of these training portals and educational institutions as well as with some of the fire-fighting facilities. So that again is when we think of engagement, this is clearly an important aspect of that, engaging with the public, but the other big piece of that is engaging with the first responder community. Again I appreciate the input it's been eye-opening for me to be here, it's been important for us to be here, and I'm happy to have dialogue to continue the dialogue with folks. I can give my contact information as well, because we do support and work with the entire industry and that includes CO2 pipeline operators, oil and gas, you name it. So I'm happy to have further engagement as well. So thanks for the opportunity to be here.

MR. MAX KIEBA: Thank you.

MR. BILL CARAM: Again I'm Bill Caram you've heard plenty from me already. I'll add one thing and it's really interesting to hear all these folks up here talk about their farming background and

I wish I could say I grew up on a farm, but my family's from New York City and I cannot say that, but that doesn't mean that your stories about what your century farms mean to you and your family don't hit me in the heart. I can't imagine -- I'm trying my best to imagine what it would be like to be in your shoes to have this farm that's been in your family for so long and to have this threat of eminent domain so my heart goes out to you.

As Dave mentioned public engagement has been a huge priority for Pipeline Safety Trust for a long time, longer than I've been with the organization and it was really Carl Weimer my predecessor who spearheaded that. And the reason is because we really believe that public engagement, the process is broken and I think hearing from so many of you the last couple days is clear evidence of a broken process. So how do we improve it? I want to take just a step back real quick and talk about what we're talking about when we say public engagement. So there's the concept of public awareness, and there's API recommended practices around that. PHMSA has incorporated some of that into their regulations. So there are regulations about how a pipeline makes the public aware of the pipeline, the risks of the pipeline, what to do around the pipeline, things like that, but that's really one-way communication. That's the pipeline operator letting the public know information about the pipeline that's required by PHMSA and hopefully above and beyond the minimum requirements from PHMSA. When we say public engagement, we're talking about two-way communication and that's not only the operator talking to the public about their pipeline but also listening to the public and their concerns, taking them seriously and addressing them and the public listening to the operator. And again, it's that process that I think is broken or that concept that's broken that I think we've seen over the last couple of days. And part of that is because effective public engagement requires trust and respect and we have some work to do there.

So how do we get there? I think for the pipeline operators, as the public we need some transparency when we ask for things. It seems like the default answer from the operators is no and we would like the default answer to be yes. There's a line somewhere where things cannot be shared, for whatever reason, but that line is -- we believe that the line is a lot further away than where it stands right now so how do we get there. This really I think requires a culture change in the industry and I think entering into the 1185 that Dave mentioned, this

recommended practice I think was a big step in the right direction. We're still early in that process before we see the effects of that in the industry, but API took basically three caucuses there was the industry caucus, there was a government caucus, and there was a public caucus. And all too often as a public advocate, we've seen when there's a public caucus that it's not really the public, it's retired industry folks or things like that. And API my hats off to them in this process, they really had a true public caucus and it didn't make for an easy process but I think it made for a really good roadmap on how to repair this concept of public engagement. So I look forward to the discussion and I look forward to seeing how we can improve public engagement.

Thank you.

Shawn.

MR. SHAWN: Can you hear me now?

Thank you very much everyone for staying until the end we really appreciate hearing everything you had to say, it really resonated with us. Just a little bit of background about me first then I'd like to talk about who the community liaisons are, what we do, how you can contact us, where we're located and then briefly talk about one of our national engagement efforts that we're involved with.

My name's Shawn [indiscernible] community liaison for the central region out of Kansas city. A little bit about my background I've been with PHMSA for seven years as a community liaison before that I was a pipeline safety inspector for the state of Kansas.

Can you hear me now. Then I was a petroleum supply officer with the United States army for 20 years. A little bit about the community liaison services, there are five [indiscernible] in PHMSA southern, southwest, western and central. My colleague and I Angela picket we're responsible for the central region there are 11 states within the central region, Iowa being one of them. For the people viewing online, please go to our PHMSA website and you can find the community liaison that's in your particular geographic location if you have a pipeline safety question that you would like answered. Some of the things that the community liaisons do, we answer pipeline safety questions, we do research, and then answer questions relating to right-of-way disputes, abandoned pipelines, regulations. We also provide information

regarding grants, such as the TAG grant for R&D research and then also bill grant for an aging pipeline that needs to be replaced, and then we also do outreach and engagement. So outreach as Bill was talking about, it's more of a one-way pushing out of information or education with outreach efforts that you may be familiar with, like our call 811 program before you dig, that type of thing, but we're involved now with an engagement program as a result of executive order 13985 that was signed on January 20th, 2021. It's an equity related outreach effort that all executive branch agencies were required to identify underserved communities in their particular area and then provide outreach and engagement to those communities to make sure that there's equitable access to government resources and information. So an RN pipeline safety information is what we'd like to get out to the people. A national effort that's going on right now is the community liaisons in each one of the regions have been tasked with finding the underserved communities in their particular region and then locating the pipelines that traverse those particular areas, researching whether or not there were excavation damages in this particular area, accidents and incidents. Then the community liaison is reaching out to civic leaders to see if they'd be willing to host a pipeline safety event. Once we're able to do that, then we're able to ask some questions to the community members which I think is very important for the difference between outreach and engagement is that we're looking for a dialogue with the particular community in order to find out what issues are important to them, what they would like to discuss, and it may not be one of the issues that we thought perhaps relating to excavation damages or an accident or an incident. It may be something like an anhydrous ammonia line that's going through their community that they have concerns about. So that gives us an opportunity to do research or perhaps contact some of the SME's within PHMSA to get more information for these people. Then we go to the communities and we hold outreach events where we're able to provide pipeline safety information, but then at the end we're able to have more of a discussion like what's happened here the last two days. PHMSA's able to listen to what the community is saying to find out what their concerns truly are and for us then to be able to research these particular issues and try to provide accurate information for them and answers for the community. But it gives the community a chance to feel that they're not being talked at and it's not one way but it's a 2-way Street of conversation. We've

set a goal of 25% of our outreach per calendar year being targeted at underserved communities and we've given four outreach events so far that have gone well. One of the big things closing on my comments is for getting good information regarding whether or not an engagement effort has been successful is feedback from the audience that we're targeting and asking the right questions, making sure that the message was understood. If there's something that we missed, then we need to address the messaging so that the community gets the information that they need.

I'll leave it there for now.

MR. MAX KIEBA: Thank you. And maybe to Bill, you mentioned the system's kind of broken and we're trying to improve it and we're here to talk about CO2 pipelines. Can you give any input on what specifically about CO2 pipelines we particularly as we inform our rulemaking that we can perhaps beef up?

MR. BILL CARAM: Yeah. I think any time you're talking about -- there's been a lot of talk about how safe pipelines are and 99.9% of the product gets to where it's supposed to be. The problem is when there is a failure it can be catastrophic, it can be tragic. So we're talking about these low probability but high-consequence events, and communicating risk around that effectively is very difficult. So I think there's a lot of work to be done. I'd like to see some PHMSA R&D work that's generally going to very technical projects, which I don't want to see any pull back from that either, but I would love to see some more social science done on how to effectively communicate risk of these low-probability, high-consequence events and have that incorporated. With CO2 specifically, it's also -- as we've heard it's even more complicated, because with a natural gas pipeline that potential impact radius is simply a formula with diameter and pressure and we've all heard how much more complicated it is to figure out who is in that potential impact area around a CO2 pipeline. So that's specific here it's already such a difficult concept and difficult to communicate and I think CO2 pipelines make it even more difficult and more complicated.

MR. MAX KIEBA: Thank you. Dave a little bit about 1185, is it finalized yet? And I think it's fair to say the last couple of days a little bit about a trust issue they hear some operators claim to go above and beyond but it's not actually in our regulations one is it actually happening and

two what is PHMSA's ability to enforce. So it's a relatively new recommended practice that everybody started so try and help explain, are people really committed to using that and how does that work?

MR. DAVE MURK: That's a great question. With all of our standards that we produce and I think Mark mentioned it on this panel earlier, we have over 800 standards total and that's for all three of our segments. We have over 35 that are just pipeline focused and whenever we develop a standard or revise a standard, in most cases we try and do some type of implementation with that recommended practice. So the RP we hope to have out in the fall. We had a comment period it's going through comment resolution and based on that we hope to get it out. But in parallel based on the importance that the industry's placing on this we're doing a full implementation plan and we have a full implementation team that is helping to develop materials to support operators as they are looking to implement this. And on that team it's primarily industry, but we have two public advisors Carl Weimer Bill's predecessor who's the co-chair of the group, as well as Chuck Lezerak who represented the public. So we have that implementation happening at the same time.

You know, I think the key would be with the RP and ultimately just listening the last two days, clearly there's a pretty significant trust issue with the industry as far as CO2 pipelines and the goal of the RP, some of the core principles and Bill touched on transparency, information sharing, but I think one of the keys is listening and understanding and that's part of the RP. It's a very significant part of the RP. This is an important meeting to help do that, but this is just one piece of a lot of what we should be doing as an industry to listen and understand the concerns that are impacting you as communities and as landowners and as citizens, et cetera. So we're hoping the rollout of this happens quickly. It is something that's a voluntary standard that we're gonna be putting the onus on ourselves to make this happen and there's peer pressure within our leadership group, within our industry that really wants to make sure we're raising all boats with the tide. As I mentioned earlier some companies do things well, some companies not as well and they need to build on it. That's how we're gonna approach this moving forward and with input from the public to help figure out what are those resources and tools that we need to put in the hands of operators to help them do this more effectively.

MR. BILL CARAM: I want to add to that. Dave mentioned that this will be a voluntary standard, and so you may be skeptical about its effectiveness rightfully so. I will add that some usefulness in a voluntary standard, right now all we really know is that certain operators are not doing a good job of public engagement, to say the least, but it's hard for us as the public to really concretely point out the ways that they aren't and this standard will give us an opportunity to say, here are the tenets with concrete examples on how to do proper public engagement and you will be able to point to it with concrete examples and say you are not following your own industry's best practices that have been adopted. And I do think it will be very helpful for the public to have that kind of touchstone to point to.

MR. DAVE MURK: One other thing I want to add. Another important aspect of it is the recognition that -- and I think it was Jerry and Jack who were talking about it -- is not everybody receives information the same way. So you have to -- a big part of this is understanding who your communities are, who your stakeholders are, understanding how they receive information, getting that information how do you get that information to folks, and then probably the most important thing is it's two-way. The goal is to affect that two-way conversation and get things going. Our industry traditionally by regulation it's been an awareness approach, it's been a one way push, push out information and where it lands how it gets there, sometimes it's hard for us to measure that and we have ways to try and do that, but this two-way communication, that's the key with the RP. And to Bill's point we're gonna need to figure out if we're doing -- as I mentioned earlier it's meaningful and it's effective and the effective piece is probably the hardest thing with this to measure, but that's a big push for us right now.

MR. MAX KIEBA: Thank you. Alan, do you want to have comments?

MR. ALAN MAYBERRY: Just a couple of things I wanted to all. First of all, thank you, Dave, to the API team for having this standard committee set up. I was on the committee, I was one of a number of members. It was probably one of the most rewarding experiences I had to work with just very diverse frames of reference related to communication and engagement. And it was needed. It was very much needed. Now, the team represented by Sean, out there across the US that do great work in engaging with you and others in your the public, one of the leading



areas of -- that we deal with every day if you look at the numbers relates to land owner issues. The experience I've seen over my tenure at PHMSA related to issues with pipeline construction or ongoing maintenance relate to how the property owner might be treated or communicated with. So I could definitely see the need and certain that's reinforced here today, I was involved Carl Weimer, presidents of companies were involved specifically because we wanted this to work. And I'm confident it will work. It will result in better engagement with the public. And we had some great dialogue on how to share information. Issues we've talked about here today. Hey, I can't share that with you. Well, can we find a way to go over the information in a very transparent way because I can tell you when you lead off with no, trust goes out the window. If you say you can't have that, trust goes out the window. We need to find a way to communicate better. This standard I'm confident will lead to that and we have a lot of great discussions over do we devote the list of things you share and ultimately ended up with a framework for how to share information, how to navigate that process, because the various types of information to share. So that's just kind of a snippet of my perspective on it. Just my appreciation for the process and my confidence that it will be successful and it will lead to better engagement with the public. Anyway, thanks.

MR. MAX KIEBA: Thanks, in the interest of time, I also wanted to get to still a number of individuals that wanted to ask comments. So is there any key questions for our panel. Otherwise, they will be here for sure. Travis?

MR. TRAVIS HALLAM: Okay. I also sat on this panel and because of me, they had to add a big addendum and I was screaming public engagement. And they did kind of tone it down, but the standard is a precursor to a code where it becomes law. So for industry, you have to give the public that try to know. For the people in attendance, I feel your pain. Our reservation has superior standards but we're have horrible air quality because of flaring at borders and don't allow for deep well injection. Borders are constantly flooded with deep-well injection sites that go on fire. I feel your pain. And I also I'm jealous of because you have pillars of the pipeline community here top to bottom. I've never been given the opportunity for you what right now and I guarantee you Alan is a great guy, Dave, I think you threw me under the bus but he's a really good guy and you're fortunate, your voice is being heard, I can see that. Next steps has

to be congress but I want to say I appreciate all you guys being here. I appreciate being on other panels with you and thank you.

MR. MAX KIEBA: Thank you. I just want to -- I say again if you have for community liaison Sean is here, also Bill Lowry, eastern region, and then a number of others. Feel free to -- Karen is back here, supervisor of all the community liaison programs. One question on the --

PHSMA READER: Okay. From [inaudible] a number of published community engagement standards that have within and related to carbon capture [inaudible] departments of energy, et cetera. Why do we feel this API recommended practice will have a different effect?

MR. DAVE MURK: Guess he'll field that. So I think -- I think there's -- this is a -- as we talked about, this was a very specific balanced leadership-driven effort on the part of our industry and the public and the government, having Alan on there, having Carl and Bill on there put the intention on it and the fact that we -- since we started this process, we've been socializing it significantly with leadership within our industry, and they are really embracing it and they understand. I know there's been a lot of discussion around engagement the last two days. And I think because it's got leadership commitment moving forward, I think it will take hold.

Another similar effort was safety management systems. We developed a RP recommended practice, back in 2015, on safety management systems, and that's one that was voluntary as well. And that's one that's really taken hold within our industry and is a foundational document. So I think to the question, I think it's -- this will be pushed hard by our leadership because they recognize the importance of it, and so I think that's probably -- there's more skin in the game, I guess, is the right answer for that.

MR. MAX KIEBA: Thank you. These the final two comments for this panel and then to open questions.

MR. ROBERT NAZARIO: Thank you for being here. I don't know if you were here yesterday, I'm a retired merchant marine officer and as you know, we do have a great relationship with the coast guard and American bureau of shipping. And other federal and state regulators that always monitor what we do. I worked for Conoco Phillips and Arco and I don't know if you've had a relationship with them in the past my questions are directed to the compliance standard. The ISO 9,001 standard, safety management system that you are speaking of. Are these

companies going to be compelled to have a safety quality environment management system manuals and are they going to be vetted by state and federal regulators to make sure that they are following their processes, and that there will be implications against them if they're not.

MR. DAVID MURK: So right now, there's no regulatory requirement around safety management systems. The RP 1173 pipeline safety management systems companies are implementing that through, again, through a push by leadership within our industry. It's been -- I would say very successful as far as the number of -- we had 98% of the liquid barrel miles that have been -- that are participating in it. There's still some companies that are not fully implementing but there's -- there's companies at different stages within that implementation as well. So, again, I'll let Max or Alan talk to how PHMSA approaches. They are doing a number of inspections, it's not a requirement, but I think they're probably asking some of these questions around safety management systems during those inspections. But there's no -- tip there's no, like, enforcement or compliance of a safety management system because it's not in the regulation right now

MR. MAX KIEBA: We've had Alan can definitely expand on but had some cases of corrective action orders which we've talked about authorities like safety authorities, we talked about finding and corrective action orders and others where we found there were issues with all these aspects of safety management systems. We have required it through that but that was more of a reactive after the fact something happened but we're looking at other ways. We have an ongoing mandate through congress to look at least the extent to which safety management systems are used in distribution systems which is a whole other area not related to CO2 but those are other aspects. I will say congress is looking at it and depending on the output of that there may be additional actions. So we have some vehicles where we worked it in as much as possible but --

MR. ROBERT NAZARIO: Shifting -- obviously we have lives on board, we are our first responders. I was the medical officer, I was the primary response leader. We did drills for man over board, oil spill, we did drills with our federal and state partners in Alaska. We have to mandate this. We cannot rely on companies like the ones we've mentioned because their history with us is no good already.

MR. MAX KIEBA: That's a fair point. There have been discussions at what point SMS has been around -- is it time that we put it directly into the --

MR. ROBERT NAZARIO: Our imagines have to be submitted to American bureau of shipping. Our fire plan has it to be submitted to coast guard we can't operate, we can't even build our change the system without putting it through the system. The IMO, international maritime organization, American bureau of shipping, classification societies, we need all eyes on these companies, whether they run international into Canada or run in between states or even within our states.

MR. MAX KIEBA: I agree. Fully agree. There are some aspects of SMS that they are in our code management of change is one of them other aspects, but more comprehensive outlook, yeah. Go ahead.

MR. TODD STILLWELL: My name is Todd Stillwell. My family has land in southeast of mason city. The forum here is public engagement. And it struck me on a couple different things. Mr. Caram, you're from New York City?

MR. BILL CARAM: I was born there. I've lived on the West Coast. Rural areas in the West Coast for 20 years. Just gonna complement you on Manhattan, I was there in March. Where all my family is.

MR. MAX KIEBA: I'm from Philadelphia.

MR. TODD STILLWELL: I hate the Eagles so never mind.

MR. MAX KIEBA: Go birds. No one likes us so we don't care (laughter)

MR. TODD STILLWELL: You guys mentioned made a couple points and I'm trying to set this straight in my head. You were talking about low probability of incident or whatever in the pipeline. I get that. And you were talking about -- but when there is a catastrophe or if there's a burst, it's the ramifications that are catastrophic, that's what I was trying to say. And I get that. And from what I'm hearing, there's Satartia and other deals. Percentage-wise it's been pretty low. And then I'm listening to you guys talk it and you're talking about in the realm of public engagement, we need to keep these dialogues so we're both talking and so somebody made the point that when you start out with no, you lose trust immediately. We're way the hell past that. I mean, you talk about, they just say no, I mean, we have pestering land agents

that just beat the hell out of us all the time to get us into some sort of lease and some guys or a lot of people obviously, sign them away. Oh, I took the money. Great. Righteous bucks. And then we've got survey crews showing up on our land. It's funny, I was at a chat at lunch with one of the guys on the Satartia that one of the EMT guys, he said we got the same deal down there, guys showing up on our land. He says, I can invoke castle doctrine. You know what that is. Okay. Well, I'm thinking the same thing. Because we're past no. We got guys -- the other things, yeah, those are catastrophe deals when these things burst but they've gone way past no, if they invoke their eminent domain, and they start tearing up our stuff, not only do we lose the income from the crops, if it's going to be a hundred foot deal for service or whatever, they tear up tile that -- like on our farms we invested three years ago and put in all new tile. And if they tear that up to put the pipeline in guess what happens? The guys that but put the tile in and you say can you repair that, I'm not getting around that pipeline. So you're screwed there. I think we're kind of past no. And we're supposed to bend over and take it? We're past no. So I would -- and I wasn't here yesterday, I could only make it today but I've heard nothing but we are -- we're not an authoritative branch of the government and really can't do anything. So I feel almost at times here today like we're getting buttered up for getting kicked in the groin again. And I don't know if there's any Summit guys here or Navigator guys here or anybody here with Wolf or whatever. We're past no, we're past that trust stage. And I know a lot of people, people right next to the land that we have, they took the money. That's fine. Nice job, buddy. But there's a bunch of us, we're past no. And I don't -- I don't know what you guys can do, I don't know what pressures you can apply, but the problem is then two when they say no, we get sued, our counties get sued, what recourse do we have? And we're supposed to try to start out where we're, you know, everybody is amiable to each other? We've past that. And I hope you guys would -- I hope you guys are aware of that. We're past just you know just going to no. We're -- we've been pushed into a corner. So in regards to public engagement, I don't know what to tell you. And I don't know if there's anything you can tell us that's gonna make us have a kumbaya moment. Probably not.

[Applause]

MR. BILL CARAM: Yeah, I hear you. And I don't -- I heard from someone earlier where the first time she heard about whichever pipeline it was in a letter saying that, you know, your farm is in our way type letter. And that -- that should not be the way you first learn about this company or this pipeline. And so at what point is the well poisoned on trust in this particular situation? I don't know. What the RP, recommended practice, attempts to do is try to map a path forward to get to fix this broken public engagement system. And we're a long way away, that end goal of what we're looking for is a fair and equitable process where it's not just the pipeline operator telling you what's gonna happen, but where you have a voice in what happens, and we're trying to develop a roadmap to get there. But from what I've heard over the last couple days and over the last year and a half or so of this is that we're -- there's a chasm between where we are and there.

MR. DAVE MURK: Yeah. And it's pretty evident from the last two days that you're past no. But I'll say -- so this forum itself, right, is part of the engagement that needs to happen, and having so many people in the room to provide the feedback, I can tell you -- so when we're -- we've built the RP, we also worked to develop what we call tool kits and things and resources that can help operators. And there's some element of, you know, two-way communication, want to make sure the public is engaged too, right? And you've showed up and is you're showing that engagement, but you know, can we take the RP and it's going to fix the concerns you have right now? Probably not. At least near term but having these types of forums ask things will continue to help with that and I can tell you I'm sure there's lots of industry on the phone, there's some industry in the room, we're hearing what you're saying too. So I wouldn't discount the importance of this in that overall engagement process.

MR. MAX KIEBA: Good. With that we'll transition to open comments, questions. Do people feel like they need a comfort break or can we go right into another and take breaks as they can? Let's go right ahead. Lisa Dix. Dirks. It was written down wrong, my fault.

MS. LISA DIRCKS: Okay. My name is Lisa Dircks My husband and I farm in Cedar County, eastern Iowa. Wolf pipeline plans to rip through our farm at 160 acre piece on our land. When I say rip through, that's what they will do. They say they're gonna put it back to par separate the top black dirt and put it back. That's BS. They will not do that because there isn't any company that

will do that. And we will never see our yield again on that strip of land. We'll be scared to farm over it in fear of damaging something that will get sued over because our insurance won't cover it. So the comment I have was brought up also yesterday, which I kind of mentioned. But it's worth mentioning again. With the freezing and thawing in Iowa, what if this pipeline raises up over time? Who's fault is that? It shouldn't be our fault because we don't want this damn thing in the beginning. And as a farmer, we don't want this pipeline at all. Land owners can't get insured on this piece of land because of the CO2 pipeline in it. I believe the pipeline companies need to provide the full insurance for any and all issues better yet, as was stated yesterday, by one of our Iowa representatives, these CO2 pipelines I'll add senseless solution to a problem that does not exist. We need CO2 for our crops and trees and everything else. None of us would be here today if it wasn't for the inflation reduction act which is also added more dollars to the so called green energy. These pipeline companies all they do is see them tax dollars which is provided by us and not only taking our land, they are taking the tax dollars that we put into this. They're gonna fill their pockets with this. They don't care about our safety that we've been talking about the last two days. All they care about is filling their pockets, they don't care about the safety of Iowans or anybody in the Midwest. In Iowa the IUB is set to decide if these pipeline companies get a permit. Really? Three people. That's insane. This is a major issue in our state. For three people in Iowa to decide this is wrong. Pipeline companies -- okay. The IUB will also decide if these pipelines are allowed to take our land by eminent domain. Eminent domain is not to be used by private businesses, all these pipeline companies are private companies. So help the IUB now, say absolutely no to eminent domain. What kind of company sues for setting safe -- for the ordinances for counties for setting safety ordinances. Really? And suing the land owners for not letting them to survey their land? These companies are just rude. Who is out there to help us from that? We've had to travel many times, many more than these, I'm two and a half hours away to the capitol to fight to try to get it so they don't use eminent domain. Who's going to pay for our travel, our lawyer fees, our time? We have to take care of that by ourself and we didn't ask for this. This land as we put money into it over the years this is our 401k, our retirement. We expect to rent this land out and get money for -- our retirement and then pass it to family. How about your 401k's? How about if you'd

like a bite out of that? How would you like that? I don't think you would like that. That's what they are doing to us, they're taking a bite out of our 401k and we don't like it. So I guess back to the -- these pipelines a senseless solution to a problem that doesn't exist.

MR. MAX KIEBA: Thank you. Go ahead, you're on --

MS. JANE KLEEB: Hi, everyone, my name is Jane Kleeb. I run the bold alliance started add bold Nebraska in 2010 to fight the Keystone pipeline. We've helped communities across the nation stop various pipelines, have about six pipelines under our belt that we've stopped, so literally two weeks after the final lawsuits happened for Keystone XL because even though the permit got denied we were still in court over eminent domain, so two weeks after we got final word we won those lawsuits, land owners were getting easements back because trans Canada was still holding on to easements that we feared they would sell, two weeks after time word, land owner could sigh relief we god word carbon pipelines were going to cross those same land owners a pipeline none of us knew was even possible that you could theoretically capture carbon from ethanol plants, magically pump it at very high pressure, and then magically inject it into the ground and there would be no problems. Just like with -- the more we learn about the risks of carbon pipelines, the more we get concerned. And I have -- I could spend, obviously, a solid year next to you, Max, with ideas and feedback on things that I've seen over the last 13 years of how pipeline companies need to do business differently. They constantly lie to people. They are going around Summit and Navigator specifically into our communities and telling us, county commissioners, state senators, that these carbon pipelines aren't different than opening a can of soda. That when you get that tingly feeling on your tongue, that's all that's in these carbon pipelines. That is absolutely nonsense. This is toxics waste that they are going to take from ethanol plants here, oil refineries in the south, I'm sure coal plants soon, and pump that through our neighbors and personal people's land. They also lie to our folks saying that congress passed a law that ethanol plants have to reduce their carbon footprint in the next three years or they will be shut down by the federal government. They are saying that. That's also not true. They're also saying that the only way that our ethanol plants can remain financially viable is if these carbon capture equipment is attached to them also not true and our state passed E15. So I think there's a couple things PHMSA could do. One, we need a very clear



memo that states very clearly in black and white terms what PHMSA is responsible for doing and then what states and counties can and cannot do. Even if they don't currently have a state law or county ordinance in place, once they see that they are legally able to do that, they may take that action that we need them to. But right now, with counties being sued, they are paralyzed. You have good people wanting to do the right thing, especially at the county level people go into the county commission positions because they want to do right by their neighbors. So we really need that. You all provided that for us during the Keystone years when trans Canada was aligned to our state legislature and we need that again. I'm tired of them using safety. PHMSA regulates safety so sorry counties ask states you can't do anything. That's just not true. Just like there's an oil spill liability fund PHMSA should consider having a liability fund for carbon pipelines. I know that that is within IRS guidance and they administer that. But I do believe that there should be a safe guard if one of these companies, which we know they're aural LLCs will just go bankrupt and if there's a bad tragedy there should be money set aside by them for damages that are done. If I had a magic wand I would give you authority toned eminent domain for private gain, I know you don't have that. Although I wish you did. But there's something I think PHMSA could. Whether it's in reauthorization or through rule-making process, wind and solar companies when they are finished with their developments, they have to decommission the wind and solar. That's in most our county ordinances and state laws. Pipelines have no decommissioning laws. There's two states in the United States that require pipelines to properly decommission that. That's unfair that land owners here if this pipeline were to go through once they abandon that pipeline, they are responsible for that pipeline on their property. So that should be something that is a federal law. That once a pipeline is abandoned six months later the pipeline company has to properly dig that pipeline up and restore the land or pay a land owner if they choose to have that land owner in there. One minor thing or maybe not so minor for us in Nebraska, you list the fire marshal as the state siting and permitting. That's not accurate. They only work on natural gas pipelines and that's only for emergency response. Our public service commission which we had to fight for three years to get a law in place for them to do the route you go of an oil pipeline, they told us two years ago they are not touching carbon pipelines not regulatory demanded to do. So Nebraska

has no state agency that is looking out for the routing and siting of land owners nor due process if they start to use eminent domain. On the one hand that's awful because there's no process for land owners to engage, on the other hand, we will take them to court and win just like we did with Keystone. We have 2,500 signatures to a petition we did to Secretary Pete and PHMSA. We'll submit this electronically as well but we have that printout. We really think a moratorium needs to happen until these safeguards are in place you're asking people to give up their land and livelihoods for a pipeline with way too many question marks around it for our safety. We appreciate you all being here. I'm pretty disgusted that Navigator and Summit aren't here. I assume they're not here. They never seem to have the courage to come to formal hearings like this. Instead they stab us in the back and tell lies. So I hope that API and PHMSA really sits down with these pipeline companies and mandates that they stop the lies and encourages them to actually allow us to put proper laws in place to protect our families and friends.

MR. MAX KIEBA: Thank you.

Jenny Goldsmith. Denise Kleppe, I think you've -- Kleppe.

MS. DENISE KLEPPE: Really quick question for -- if I -- real quick question for -- before I go on if I want to submit something that's been talked about putting it on the docket. Would one of the community people show me how to do it? Some I went to the website and was confused.

MR. MAX KIEBA: That can help guide you if you go to the website on the top left there's a comment button

MS. DENISE KLEPPE: That's where I wasn't sure if the comment was for the meeting or --

MR. MAX KIEBA: Well it's officially for this meeting, but when with go through rule-making eventually we'll open a docket there but we'll transfer -- somehow reference this or transfer it over there so right now this is our only CO2 docket open.

MS. DENISE KLEPPE: I wanted clarification for that. Okay. Thank you. My name is Denise Kleppe I live in many Des Moines area and a century farm owner. I've lived in Pennsylvania, Minnesota, Virginia and Maryland Iowa has always been my home and came home to take care -- to be closer to family. I know I came home to be -- to be part of this fight. Not only to protect my legacy of the farm but also to stand with the people here in this room and on the

web listening to us today. We keep talking about needing to do this which 2050 to reduce our carbon emission. I'm all for this for the good of the environment. But I don't believe these private companies are in it for the good of the environment. When I attended my first public meeting with wolf in Cedar Count one the questions was if you weren't receiving the tax credits would you be doing this and the answer was no. They're they are only doing it for the all mighty dollar. I heard multiple times during this meeting that it's the responsibility of the pipeline operators to be having these conversations and setting the following -- setting following -- following and setting the safety standards. From what I've seen from these companies to date, they do not have the integrity to work in good faith with the public. They use scare tactics to have people sign they don't share safety information, and dismiss people saying this is no big deal. It clearly shows that these companies do not have a conscience, and it even shows us again when they are willing to do eminent domain for private use. Over the past two days eye I heard many comments that we've heard many times while fighting this. What is the big deal. We have lots of pipelines. It's no different than natural gas. It's safe. It's not my responsibility to help you the land owner, I'm going to say fill in the blank. Either the agency, government official or some other person. Yet if we listen between the lines, we do hear that there are people that do care about us. But, at the same time, I still don't feel that there's someone there to support us. With this -- because again we need the speed and urgency of it. Because right now they are moving forward quite quickly and we can keep continuing until it's going to be months, years, that it's going to happen. I feel listened to but I don't know if I've been heard. And I word it this way since I feel we're still standing on our own looking around to see who can help us. This is a timeline that they are continuing to press forward to be done. But the process is that I heard the past two days will be way to little and unfortunately too late to get us the support we need we keep hearing we don't want another incident just like was in Mississippi. We're on that path and the freight train is coming quickly. I want to thank you everyone that's parts of this fight the past few years it's been a long fight for you with many sleepless nights. As we heard yesterday, we need to continue to support each other and to continue to work together on this fight and support each other when we get tired. In closing I'm asking PHMSA to clearly state what state and local governments can and can't do

for ordinances and state laws pass the strongest rules possible to keep people animals and environment safe and to issue guidance to states to place a moratorium on all carbon pipeline proposals until the safety standards can be strengthened to keep the public and environment safe. Thank you.

MR. MAX KIEBA: Thank you. [Applause]

Rick Knudson. Is Rick over there? I'm sorry. Jan.

How long is a public comment open?

MR. MAX KIEBA: I think this be docket is open six months at least. It will be six months.

MEMBER OF PUBLIC: Okay. I want to thank PHMSA for coming and having this meeting and all your panels, especially the video conference and everything. I think it really helps. I live in Pocahontas county the land I live on has been in my family for 111 years. If Navigator succeeds in getting a permit, I would be within, my house would be within a quarter mile to half mile. I live ten miles from an ethanol plant. I used to see the plume, smoke, coming from the ethanol plant as that's a good use for corn. Now I see it as a plume of death. I want to thank you all the land owners and affected people for all their comments. I couldn't say it any better. What you have to understand is that the land owners and affected people along the route are frustrated, they're mad that these CO2 companies just want to come and take our land for their private gain. At the taxpayer expense which we're paying for. We're mad and frustrated that the legislators and the governor did not listen to us, their constituents. It's only for their political gain, that's all they're looking for, especially the governor. A week ago I learned through on Zoom meetings that Summit now is sending hired private security guards armed with rifles to do surveys on our land that we see as they are trespassing on our land, but we cannot protect ourselves? That's ridiculous. Do you understand why we're mad and frustrated? It's as if we're the lowest thing on the earth. We don't matter. We feed the people. We provide corn for ethanol to get around in your vehicles, so why isn't anybody listening to us?

[Applause]

MR. MAX KIEBA: Rick? Susan Stefan or Jerry? John Aspray?

MR. JOHN ASPRAY: Just quickly. I wanted to comment on a few things. First off, just want to join everyone else in calling for a moratorium on carbon pipelines. I'm standing here actually

with a letter that was submitted to the Biden administration on Tuesday signed by over 150 groups calling for a national moratorium on carbon pipelines. As well as highlighting some safety issues pertinent to this public meeting that a lot of groups would like to see addressed by PHMSA, adequate safety zones, real research and regulations on contaminants in carbon pipelines clear definitions around CO2 we talked about the ambiguity between super critical gaseous and liquid regulations. Some clear guidelines on disclosure of emergency response plans as well as mandating these companies actually pay for the equipment necessary to adequately respond to carbon pipeline ruptures and lastly some sort of requirement for odorants to alert the public of a carbon pipeline rupture. These things have been talked through at length but I think it would be great to see some strong regulations coming from PHMSA, especially because quite frankly, the biggest theme I've seen of this meeting is ambiguity about who has jurisdiction over what and everyone -- every single comment seems to be a response to the fact that every government agency that they interact with says that's somebody else's problem and the pipeline companies insist they can do whatever they want because every other government agency is passing the buck. So I hope you, as PHMSA, even though you can't, you know, intervene in citing can't put that moratorium on your own, that's something the Biden administration can do through executive order, I hope that hearing this loud opposition, this concern about the -- how fast the permitting process is speeding through all of the state entities, that you'll at least put out guidance urging states to slow it down. Advise the Biden administration and secretary that there's a lot of real concern about the lack of regulation and maybe a moratorium is necessary because from everything I've heard this week, the country is not prepared for the level of carbon pipeline proposals that are coming forward. So appreciate you all coming to Des Moines to hear from folks and hope y'all keep doing that. But regulations and moratorium are what we need. Thank you.

MR. MAX KIEBA: Mamid? Christina Grunhagen? Emilia McIntyre? Tyler granger. Marjorie Swan.

MS. MARJORIE SWANN: I'm Marjorie swan I'm a farm land owner in Wright county. Our grandfather's farm has Summit proposing hazardous CO2 pipeline. No lowans should ever be asked to take one for the team so a high profile political donor can grow his wealth it's time

ethanol plants usable product rather than burying CO2. Eminent domain is theft why is the government in a hurry to facilitate this theft of its citizens to better your community? To improve quality of life? Or safe conditions for others in our community. For public good? No. Not even close. Your government is in a hurry to facilitate this theft without a single corporation -- federal tax dollars into its bank account and eminent domain is theft. It is a rare case when such theft could ever be classified as justified and perhaps never. This pipeline doesn't come close it's government sanctioned theft for private corporate profit. Thank you for your time letting us speak. Thank you.

[Applause]

MR. MAX KIEBA: Alan Coslow.

MR. ALAN COSLOW: Hi. Thank you. Again, Dr. Alan Coslow from Des Moines area. As I told you a couple times I'm a vascular surgeon retired. Before I started my comment, I want to say that I really appreciate what the land owners are going through and I think it's absolutely terrible what the pipeline companies are putting you through. And I really think that PHMSA needs to really define what the counties and state need to do and do what a lot of you are asking them to do. I as a vascular surgeon when someone comes up with a blocked artery I think what do they need to do and I talk to them about well, you need to do this, this, and this and very often one of the things I tell them to do is you need to stop smoking. Okay. Now, I'm getting somewhere with this. When I first came -- when I came to the state 28 years ago, and then when corn ethanol was introduced in the state, I got very interested and one of the things in this very room I started coming to the world food prize and one of the things I came up was corn ethanol because they were interested in the diversion of corn from the food stream. Both from feed and human food. And I learned in the conferences here in this room in the world food prize that corn of all the things used to make ethanol, was the least efficient. For the energy put into making ethanol, it only produced 1.7 units of energy for every unit of energy put into making ethanol out of the corn where most others made seven units of energy for every unit put into it. And some even made 20 and 25 units of energy. If you then look at the amount of energy to then convert it back into liquified CO2, you end up not having any production of energy from using corn into ethanol and then into liquified CO2. You actually

might even have a negative amount of energy that you're producing. So the question is, if we did not -- all of the liquified CO2 we're making in the state is coming from corn ethanol. If we did not produce any corn ethanol in the state, we would not need an inch of CO2 pipeline. Think about that. If we had no corn ethanol produced in this state, we would not need an inch of CO2 pipeline. Thank you.

[Applause]

MS. MAX KIEBA: Mary? I've spoken.

Okay. Thanks, Mary. I think it's John -- Joan? Kathy Carter?

MS. KATHY CARTER: A lot of the comments I was going to make today have been mentioned so I would be repeating a lot of things. So just let me tell you about my town. Typical, small town, population about 850. I'm in Floyd county in northern Iowa and another 30 miles you're in Minnesota. Summit pipeline would border the entire north edge of my town. It would be about one half mile from our K-12 plus day care, about a quarter mile from the residences on the north side of town. We have a river that bisects the town moving northwest to southeast. It bisects the town. When that pipeline crosses the river, it's going to be right up in northern edge of town. Let's talk about the weather. We call it the tundra zone in north Iowa, we laugh about it but it's not always on so funny because we guess blizzards and roads can be drifted should for a couple days at the same time. In 1993, we experienced the 100 year flood. My town lost about 20 homes, the medical clinics was destroyed, had to be relocated. Other buildings damaged and destroyed. That was a 100 year flood. Right? Six years later it happened again. Nine years after that we had the 500 year flood. That was the one that just about demolished Cedar Rapids. Bridges washed out roads completely impassable and that can happen again when theirs heavy rain, sometimes it's a difficult if not impossible to get from point A to point B. So if there's a rupture during that time, or valve freezes shut during freezing rains someone mentioned or winter blizzard Summit sells they will domicile an employee within 30 miles of any valve location. What's that employee going to do about it? How are they going to get there? If we can't get from point A to point b they're not going to get through freezing rain with a quarter inch of ice on the road. If it happens, where that river crosses north of town that town is toast. I don't want to be part of it. I don't want pipeline anywhere near me. The

trust issue got brought up. I don't know how many times. And somebody mentioned the -- someone had said the first time they heard anything about this pipeline was a letter that they got in the mail. I think that's true of all of us. We got a surprise certified letter that just blew us away. In August of this year it will be two years since that happened. I am sick and tired of being sick and tired and worried about this. These guys don't care about our safety. They lie, they fabricate, they dance around questions. Here's an example of the matter of trust. One of the public informational meetings they held, I have a natural gas line that's gone through my property since my folks signed for it back in the 1960s. So I asked three different Summit people at that particular public information meeting, I said how far away do you have to be from the existing natural gas line? Three different people. And I got three different answers. And they were widely varying answers. We need the moratorium. We need hit the pause button and put a stop to this and thank you PHMSA for being here and listening to this. Thank you.

[Applause]

MR. MAX KIEBA: Kim Hagmann? Is Kim here? Gal Palmquist? Lee Koffman? I apologize, go ahead.

MS. LEE KOFFMAN: I'll be short because most of the things that I wanted to talk about have already been said. A couple things I'd like to say. We've talked about safety a lot. I didn't hear a lot of comments about our personal health. And that it's important too. Our mental health, our physical health. I have bleeding ulcers and my doctor said what do you think you got those? Oh, well, I think I know. The sleepless nights and the meetings, the supervisors, and on and on. Worrying about what's gonna happen to our century farm that's almost a centennial farm. So it's not easy for any of us to go through this. So the other thing I think we need to address the elephant in the room, and that elephant's name is Bruce Rassetter. He is trying to direct this thing over the objections of all Iowans and he's getting away with it. Because he has a lot of money. He can pay off the governor, he can pay off any of the representatives, any of the people that are in our legislature, and I fear he has paid them off and they are obligated to him now. And we need to -- it's painful for me to even think that, that we have somebody that can do that. This is Iowa, it's not Chicago. This is Iowa. We're supposed to be on the up and up



here. So my last thing is a quote. It's our motto for our state, it says our liberties we prize, and our rights we will maintain, and I hope that holds up forever. Thank you.

[Applause]

MR. LIDDY COFFMAN: I'm from Shelby County. When Summit first proposed the pipeline to us they sent a request, sequester the CO2 from 1.6 million vehicles. Google tells me that there are 1 billion vehicles in the world. If this thing works as planned, it would reduce the carbon in the atmosphere by two hundredths of one percent. Also, China is building coal-fired power plants in the two year span that exceeds the total number of coal-fired US plants in the US. This scheme will do absolutely zero for the environment and everything for the fracking industry. This pipeline is not needed or feasible. Stop the stupidity.

[Applause]

MR. MAX KIEBA: Thank you. Cindy you're up. Cindy Hanson. Go

MS. CINDY HANSEN: Thanks, Max. I'm afraid everybody here will know my name by the time this is all done. I've spent two years, almost two years, in August fighting this. So I appreciate PHMSA, I want to thank you again for coming to town and listening to us, and I thank you, Max, for contacting me ahead of time. It put a lot of weight on my shoulders being the land owner that was asked to speak on the panel and represent land owners from all six states that are affected by these pipelines. And I appreciate the trust that everybody put in me to do that. So a couple of comments here. And I know I took a lot of time yesterday during my statement but I do want to make just a couple of comments here. The purpose of these CO2 pipelines is actually supposed to help our environment. The purpose of them was sequester CO2 and get it out of our atmosphere. And so we got our letter surprisingly in August of 2021 saying that our land was on the route for a proposed CO2 pipeline for Summit carbon solutions. And that was the first we'd ever heard of these pipelines. Come to find out the governor had formed a task force for carbon sequestration several months before that. And she -- what do I want to say -- the task force was packed with people from the ethanol industry, from the renewable fuels industry, from the corn growers association, but there were not small farmers that were asked to be part of this task force. We had -- we had no part of it. And when the task force was in effect, it was said that the -- excuse me here while I get my notes -- the task force purpose

was to study the economic value and look for new revenue streams for farmers and renewable energy producers and looking at how consumers could compensate farmers and others who sequestered. There was no part of that purpose of the task force to look at how much sequestering could be done to actually help the environment. It was looked at as a revenue stream. Charles Stanier University of Iowa engineering professor to served on the task force said the bulk of energy subgroup's conversations were about CO2 pipelines and requiring public construction projects to use CO2 infused concrete and both practices would sequester only a tiny sliver of the greenhouse gasses. He suggested to the governor and to other groups, subgroups, that a target level for emission reductions be used, but the task force members weren't interested. He said Iowa's direction was to monetize the agricultural reduction and to achieve by either to look at how they could monetize the agricultural reductions achieved by either the consumers pay for the reductions or by having the federal government pay for those reductions. But not really -- it was more about money than it was about helping the environment. So the purpose for sequestration was totally lost by our local government, more of a way of making money than at actually helping the environment. I appreciate that PHMSA has said that they are working as quick as they can on new rules and regulations. But I hope you also take into consideration that those need to be quality regulations, they need to be to the highest standards and not just hurry up and get them done. The problem is CO2. The answer by these groups is sequester. In the middle is the land owners that are affected by this, not just the pipe that has to get from one end to the other, and I hope that you consider the land owners in this solution because the safety of all of the people in these rural areas and the safety of our land, our livestock, our livelihoods that needs to be taken into consideration also. Your motto, this last few days, these last two days, has been across the bottom, I don't know if it's your motto but it's across the bottom of page says to protect the people and the environment from the risks of hazardous materials, transportation. I hope you've listened to us, I hope you really mean that you're here to protect us and to protect our land and our values. Thank you. [Applause]

MR. ALAN MAYBERRY: Just wanted to interrupt for a second. We have some more comments. Unfortunately I have to be back in Washington tonight so about to head to the airport. But just

want to say thank you for coming. Thank you for those on the webcast. I didn't get to meet many of you but those I've met I've enjoyed the hearing your stories. In fact, in hearing the stories that we heard. Just the history of owning a farm and just have been quite impressed. Just nothing like being here. And you know, to that point, I'd like to thank Bill and public safety trust for doing in Des Moines. Let's do it. And this is a bit different than typical public meetings because we've never just had the presence we've had of this meetings of stakeholders, impacted stakeholder and land owners. And on behalf of myself, the PHMSA staff, just so very appreciative of the impact you've had on us and just very impressed by the way you've done your homework. And given us very good comments to take back and it's helped us as the regulator and I'm the regulated as well and other stakeholders out there. I think we'll all be better for it. So I just wanted to come here and interrupt that and say thank you again and I'm going to head out. But Max will continue because we did want to hear from you. With that I'm going to head out.

Thank you, Carol.

Thank you, Bill.

Thanks to Max, he's been up here, big trooper.

[Applause]

MS. SHERRY WEBB: I will try very hard to keep it at three minutes. But --

I'm not sure if the mic is on. You have to turn it on back there. They're working on it. You have some help coming up. Hold on, might have a replacement here.

So I will try and make it a three minutes but asking us to limit our time is exactly what we've been told since day one. Hurry up get over with and then what we're being asked to give literally our land and by the way, you get three minutes to talk about it. So I'm not going to be shy. I don't know if you guys know that our governor has taken \$188,000 from Mr. Rasetter. Why we would not question where this is gonna end up at? You know, 2010, 2011, it took out interstate 680 so what's a valve going to be against a flood like that. It's going to be under water. Then what? So my little truck, we got in it yesterday morning and it says IUB or capitol? And I say we're going to the Marriott downtown. It said what? I don't know how to get there. So I do thank you again for you guys being here. And my comment is, oh, my gosh, carbon

capture is going to save the world. What is the rush? Honestly, the billions that they will collect won't even buy us a quality dispersion model and a plume study. I think that's pretty sad. No -- the Winnebago tribal requested pipeline environmental impact studies and was denied by the IUB. There's no safety information given to us, it's confidential, terrorists might use it. There's no name list that's been requested over and over and over and the IUB said give it up and they won't do it. There's no plume dispersions, there's nothing. We're getting nothing from them. So it would be nice if we did have communication that was mutual between the two of us. Fact this is supposed to be green is a joke. Totally a joke. Yes, they've openly admitted they wouldn't do it otherwise. Minnesota has been told we need 59,000 gallons of water a day in the summer and in the higher seasons. By the way, we only need 11,800 gallons during the winter. And some of our waste are going to go into your waste treatment plant at eight to 11 gallons a minute. Tell me how green they are when they are asking for this kind of water in a drought. The Orca plant in Iceland, they had a special on in 60 minutes not long ago last month, April, two months ago, today is gen first our parent wedding anniversary if they were alive. It works because they have a fizzy water injection and works because they have an unlimited water supply in Iceland and geothermal power. It's not working anywhere else. Infrastructure legislation there was \$12 billion last year in 2022, no solution to get to net zero without carbon capture technologies, what Colin Omara from National Wildlife said, globally 4 to 7 billion tons annually to meet goals carbon capture looks as big as solar and wind, bigger than nuclear. So we're being told all of this and yet, at the same time, there's two carbon capture facilities in Canada that are underperforming. One captured half of what it was advertised and the other was actually emitting the equivalent of 1.2 million cars. It doesn't work. There's only one that's working right now and that's because they have unlimited water. Government watchdog in December of 21 found more than 1 billion public funds for carbon capture projects resulted in a few working and no power plants with carbon capture in operation. Who's monitoring this? I mean, are they going to get paid even though they aren't making their goals? The eyes are on profit, not the goal of reducing carbon emissions. Montgomery County meeting a Summit rep stated publicly they have no intention of following county ordinances and in fact called our board of directors of supervisors chairman

an eco terrorists. So what will happen? My guess we'll be forced to let them rape our land and others will continue to live without sacrificing and they're not going to be the ones that sacrifice. I'm asking again and I know this is not your deal, but if you can understand that we need something. We need you to ethically recommend, strongly recommend to the states that there be a moratorium or strongly recommend to congress there be some kind of moratorium or to the President. If a car seat can be recalled for one buckle, one harness straps or one accessory, and all of them pulled off the market for that, I don't understand why this can't be a little more responded to, I guess is the word I want to use. So to protect the people in the environment from the risks of hazardous materials transportation, this has been a regulation since -- it's bun up there the entire time. You know, the other night I had a dream and it's like United States flag has been defended over and over by our military. Our responders, our EMS, my husband who's at home, he has Alzheimer's I'm hoping I still have a home to go to because of two days here but the flag is gonna change its look and I've seen it, my eyes have been opened. I did not realize how our legislators can be, some of them no not all of them, there are some here and some that supported us and some that were very, very supportive during the session, but there are some that are not so much that. And I'm seeing the flag change its look. The stripes are there but they're green and the stars are now dollar signs. We just want respect, that's all we want. And as a flyover state I wonder what Iowa will look like after thousands of miles of pipeline installed. You cannot restore, they say over and over, we'll restore your land. They have not -- we have not turned our soil over in years. It may be disced but that's as far as it goes as far as getting some of the corn stocks out but for the most part it's no till. Our land tells a 123-year-old story and shouldn't end in a nightmare. You need to take a breath to scream. It'll be a silent death for us. [Applause]

MR. MAX KIEBA: Just a follow-up, you said Winnebago tribe was refused something? Was that through -- sunshine Thomas, Victoria -- Winnebago leaders?

We might possibly follow up on that with our tribal affairs. I don't think our -- we'll at least follow up on that and see what's going on. Sorry. Eric Palmquist.

MR. ERIC PALMQUIST: Eric Palmquist. My mom spoke earlier and we're a family farm of actually nearly 140 years, mom, it's -- we're approaching a heritage farm. I'm going to take a

different approach I think than what some have and at this point and I'm gonna try to stick to safety because I know that's what this meeting is really about. And as far as safety goes, we've been told for all day today, I wasn't able to be here yesterday but all day today been a lost comments about these studies and research that has been done or has not been done that should prove or provide evidence for safety. And we've established, I think, that it's very cost-prohibitive. Nobody seems to know how much it costs, we've got a lot of people earlier who said it's hundreds of thousands of dollars, it's millions of dollars. No one seems to know. When I run a small business, independent of our farm, also manage the farm. When I look at what we do for our businesses, I have to look at the economics of it. Why is the -- excuse me, why are the pipelines able to not look at the economics of this, understand what they are getting into, and provide evidence that supports that? I come from a science background. I'm in medicine. We follow evidence-based protocols. I'm sure PHMSA does too. Where's the science? Right now, seems to me like it's unknown. Let's see it. If we don't have it, in medicine, if I don't have that evidence, I'm putting my patients at risk. Let's see the science. Pipeline companies should be paying for this of the industry should be paying for this. God for bid the taxpayers and federal government state governments, let's find out. If this is that valuable, let's figure it out. Why are we doing what's unknown? Makes no sense to me. Let's figure it out. Thank you.

[Applause]

MS. ANNA RYAN: Anna Ryan from Des Moines Iowa and I'll be brief. It's been a long couple days for both of us. All of us. And there's been a lot of good comments and suggestions of issues for PHMSA to consider about carbon dioxide pipeline safety but I'd like to take a step back for a moment and talk a little bit about process. Because I think that that's a very important aspect of what's happening here that we shouldn't overlook. And those of you from PHMSA who have been here everyone precious you being here you've been here for two days. And you have heard an incredible amount of frustration and anger and fear over the course of these two days. This anger and frustration and fear has been going on for a long time. Between September of 2021 and January of 2023, I spent a large amount of time traveling the

state attending public information meetings held by Summit Navigator and wolf. I've been in at least one public information meeting in just about every county that those three pipelines will traverse with their projects. And I can tell you that it's been over a year and a half that all these people in red shirts have been making the same comments, asking the same questions, and never getting answers. And never having their concerns addressed. So I want you to understand when you come here as PHMSA and when the panelists come here as representatives of industry, you come into a situation in which you as regulators also are in a position that has a lack of public confidence. And there's been a lot of conversation today about the lack of trust in the industry and what the industry needs to do. And I'll agree the industry is responsible for a lot of the lack of trust as far as what's happening here in the Midwest. But I think that there are actions that PHMSA can take to help increase public confidence in you as an agency, in your regulations, and in how that can benefit the public. And I think we've heard some of that today you've heard concerns that you've been here listening but not hearing, heard concerns that you don't really have any enforcement teeth. You've heard concerns that people's questions about who is responsible over what kind of regulations hasn't been addressed. People have a lot of questions that you are in a position to address. There are a couple things you could do very quickly that I think would go a long way to establish some public trust, one would be to issue a moratorium advisory that would send a clear signal that you are putting concerns for people's safety and lives above the private profit interests of a few companies. You could also do what's been requested and issue a clear guidelines about what areas PHMSA regulates and with an areas local and state governments are regulate. But beyond that, Bill mentioned that this has been a great example of public engagement. And I do think this has been a wonderful opportunity and I think it has offered a great opportunity for public engagement but I think that PHMSA can take it further and I think that will help a lot of public confidence in the system. And one of the things I think PHMSA should be particularly aware of is that any ongoing rule-making proceedings should be as open and transparent as possible. People need to know that the rules are not being unduly influenced by input from industry as opposed to the people who will be impacted by it construction of the pipeline. And so I have a number of suggestions I'll put a lot of them into written comments, but just to give a

few quick ideas, I would recommend at a minimum PHMSA establish a website that would contain basic information because federal rule-making processes are probably second nature to all of those at PHMSA and in the industry, but they are incredibly complicated for members of the public to navigate. So a general website with information about the rule-making process, about where we are in the rule-making process, information about any public information meetings such as this one that PHMSA holds if those information meetings have a target audience such as the general public, industry, nonprofits. So that the public will know who PHMSA is listening to and interacting with throughout this process. Additionally as draft rules are produced, it would be helpful for a lot of the questions that people have had if there can also be links to research and scientific information and data that helps underlie the decisions that PHMSA has made in including certain rules and if possible if that information can be written in a language that those of us who aren't scientists can understand, that would be particularly helpful. And also just in general, a plain language guide to how public can participate in the rule-making process and a point of contact for any questions about the rule-making process would be very helpful. So that's just some basic thoughts. If you really want to go further, I would recommend that you look at FERC's office of public participation as a model for how you can improve public engagement in the regulatory process and help the public feel like their concerns are being addressed. Thank you. [Applause]

MR. MAX KIEBA: John here with our director of rule-making but at a high level we have a website, I know it's still figures out what steps in the process, we haven't touched about ex parte but there's a process get to notice anyone that approaches us we need to do a summary of that meeting of what's discussed and then put that on the public docket as well. This is public record here but those are some approaches we take. We can definitely follow up. What we're going to do after this meeting we talked about grants and -- we're going to send a page of different links people can go to as a starter and there's contact information on rule-making and things like that. Those are the easy ones I can commit to. The other ones we'll definitely consider. Steve?

He left. He left? Okay. Phyllis Mckean?



MS. PHYLLIS MCKEAN: My name is Phyllis Mckean from Emmett County and my husband and I farm, Navigator is intending to go through a mile and a half of our property. I have two things I want to talk about.

First of all our local EMTs have fund raisers. They have pancake, raffles, other fund raisers to raise money for the equipment they use in saving people's lives. If we have this pipeline come through, then I feel the pipeline company should give us the equipment that is needed for these life saving activities. The -- it should come from their funds and we should not be trying to have local fund raisers to raise the money for the vehicles that don't need the oxygen and for scuba diving equipment or whatever it is they need for going in. The second thing is I taught school for 28 years, and part of that time I taught geography. One of the things I taught the kids is three fourth of the earth's surface is water. Oceans, lakes and rivers. One eighth of the earth's surface is mountains, deserts and other land that you cannot raise plants on. One sixteenth is roads, streets, parking lots or other paved surfaces. Every time you go to the big city they are paving another piece of property. One thirty second is city buildings, schools and those types of factories and those things. Only one 126th of the earth is tillable land to be used to feed the world. We need to protect it not destroy it. We need -- we fertilize it. We try to keep it protected from wind and water erosion. We tile it to make it productive, to raise more food. We need to protect it. We need to conserve it. We do what we can to raise this food to feed the world. We do not want this land ruined and disturbed by the unnecessary pipeline that will soon be obsolete. Thank you. [Applause]

MR. MAX KIEBA: I have Robert -- lost it. You called me again.

You are on the list. I think my mic died.

MR. ROBERT NAZARIO: I didn't know if I was going to talk again. Let me start with two words, east Palestine. Everybody knows what happened at the east Palestine. The EPA let us down. The Department of Transportation let us down. Cleanup efforts were horrible. We don't want an East Palestine in Iowa. We heard gaps. We heard that word a lot. Why? There are many gaps. There's no regulation -- there's not enough regulations. Who is going to bear the brunt of that but the people of Iowa? We implore you to stand behind people and not greedy corporations. We implore you to recommend to the IUB the moratorium we need until the

final set of safety rules are written in black-and-white and that a plan is put into place to monitor these companies, make sure they are doing what they are supposed to be doing.

Thank you.

[Applause]

MS. MAX KIEBA: I think Cindy Golden was the state -- she was here earlier. Jerry Briggs. Go ahead again. I apologize.

MS. CINDY GOLDEN: Cindy Golden representative. Thank you for bringing the emergency management people because she talked about how we coordinate. But what I was a little frustrated with was when I mentioned the Nuclear Regulatory Commission I was rather dismissed they have all this kind of authority, that wasn't the point. The point was they are a model for what could be done under your safety rules even -- I mean, I wasn't asking for you to mandate that cities do things, but you do have the authority to mandate that the companies do certain things with their safety. And I used the Nuclear Regulatory Agency because I live a mile from the nuclear power plant. When those went in there were a lot of safety concerns. We talked about retroactive things, new rules. Well, through the years the Nuclear Regulatory Agency wasn't established in 1974. 1979 we had Three Mile Island they were able to be retroactive safety measures. I believe with your safety measures you have authority to enforce retroactive. I heard the new rules would apply from that point forward, but I believe you have the authority, if you look into it to enforce retroactive safety measures. And that is what I am encouraging you to do. Because those of us that live near these pipelines deserve that kind of measure, knowing, and again, I was a research chemist. Liquid CO<sub>2</sub> is a very different animal than what we breathe. How we have all been dismissed by the industry is insulting, embarrassing, and something that as a conservative we don't encourage more regulation. We hear unnecessary regulations on business. But when businesses prove they do a disservice to the citizens of the country and they dismiss us that's when regulations are necessary. They have proven to all of us and you guys they need more regulation not less. Thank you.

[Applause]

MR. MAX KIEBA: NSD is one of our sister agencies I believe. We do interact with them on different aspects. The question of retro activity and verses not there are parts of the code I

forget the terms on liquid side than gas. Those operational in general those are retroactive. The ones currently by statute are not retroactive are things like design, construction aspects, things like that. We put new design requirements if there is already existing materials, at least we can't STATUTORILY go back and do that.

MS. CINDY GOLDING: I understand that. As a legislator I have gotten used to reading the fine print.

MR. MAX KIEBA: We have heard requests here is there any ability to put folks on notice to say in this particular case is there the ability to do that. I don't have those answers now but those are things we will look to our leadership. That's one aspect. The other aspect is even there are things ongoing would they be applicable. That's one of the requests that came up. Jerry Briggs? Julie Johnson. Okay Julie GOEBEL. G-o-e-b-e-l. Goebel.

MS. JULIE GOEBEL: My name is Julie Goebel. Our farm is in Palo Alto county. My first thing is I wanted to say when I get home I will write my representatives and ask them to be giving PHMSA more money. I can see you need more money for research, inspectors, regulators and also keeping up the website in such a way that we can use it. The one thing I wanted to comment on --

MR. MAX KIEBA: Honestly there are parts of my website that changed I can't find it on my own website. We completely hear you on that, so, yeah.

MS. JULIE GOEBEL: The first time I went and worked on -- looked around the website I came across your pipeline incidence report. You have the fatalities and the injuries, and literally my heart sank when I saw on your injuries for 20-years there's one incident. I know other people have brought this up, and the reason I am bringing it up again is because you guys lost credibility in seeing that. It keeps going all over. So anyway partly because all of us probably that are left in this room except for my niece have had a one-day surgery, and we know it doesn't take much to go in and have something big done. So this requirement of being overnight, it feels like a pipeline company set that rule up and they have a big loophole. And so I guess I am just asking that you have conversations about that. Thank you.

[Applause]

MR. MAX KIEBA: Might be the last one on this list. Jan Renig. You are good? Is there any one that thinks they were on list. There's a couple names I called that might not have been here before. Sorry you have been waiting very patiently a few times, yes, please.

MR. MAX KIEBA: Yeah, go ahead.

MR. THOMAS CRAIGHTON: Again Thomas Creighton Hardin County Emergency Management. Out of the two-days learned a lot. I thank you all of your staff. You have all been very up front, very easy to converse with and sit down and have discussions with. The one thing -- or actually there's three things that I would like to make sure that you are seeing from our side. Number one is that there is some type of notification rule that has some teeth in it that how they determine they have a leak, whether it is through pressure drops or air monitoring, whatever it is, they have to call our communications center and let us know about that so that we can start responding. Even if it is small, I would much rather respond to something that turns out to be nothing than respond and find a bunch of dead people. The next thing is the monitoring equipment. Making sure there is research gone into that. Then what kind of monitoring equipment it is. On the other side I spoke with our legislative person out here, one of them this afternoon. The fire departments have four gas meters. We monitor carbon monoxide oxide, I'd again sulfide, methane and oxygen. CO<sub>2</sub> is not in any normal array of four gas meters for our volunteer fire departments. The only way that we would recognize that we have a problem with a potential CO<sub>2</sub> line is that our oxygen meter decreases. But it doesn't tell us what the hell we are dealing with. So I would -- I would just -- I want to make sure that you understand that you are in rural Iowa. We don't have full-time departments. We don't have the equipment. We don't have the ability either in time of volunteers or in time and money to be able to put into this kind of extra training. The last thing is, and I have heard this multiple times. I have not dealt with this. I am not a landowner that is affected by this. I have heard it from my people. I have heard it from the people in my county, but EPCRA, if I am not mistaken EPCRA was the rule that said we have to support for public safety right to know act. Gives me the right to know as an employee of a company. Gives the public the right to know what's in their community. That's why we have the LLPCs. What's the teeth behind that? What's the teeth if they are not reporting? What's the -- I heard -- this kind of goes back to the discussion where

who is your regulator inspector person? Sorry to direct right at you, ma'am, but I am going to. Is that it is a discussion about here's what we find. Here's what this board of people decide. And then we come to an agreement on the fine. It should not be that hard. And it shouldn't be that easy for a company to get out of their right or their responsibility. So that is the last thing I want to say is making sure that there are number one, you remember as a federal agency that this is rural Iowa, and 95 percent of our people are volunteers. Most of our counties are rural, and we have very little taxing ability above what we are already at. And our volunteers are already taxed with a lot of training and requirements to respond already.

Thank you. [Applause]

MR. MAX KIEBA: I think Kathy had -- sorry go ahead, Mary.

MS. MARY POWELL: I know I gave up my turn. I have one question. Has anybody looked at the noise pollution from the pumping stations for individuals who will have those posted on their land, what is the volume of sound that is going to come off of that? I would like somebody to look into that for consideration, please. And thank you.

MR. MAX KIEBA: We can. It has come up in gas compressor stations and other aspects but we can look at that.

MS. KATHY STOCKDALE: Kathy Stock Dale also from Hardin county. I am glad my EMS guy is here today. I think he has learned a lot. We can tell them at supervisor meetings and things what we have learned, but when it comes from you it hits. I would also say when we are talking about community and people knowing what is going on in our area, we as landowners know what's going on the affected ones but those outside, my neighbors who are in acreages do not know what's going on inside. I have talked to our mayor. I have talked to city councilmember. I have talked to the firemen. The last time I talked to them none of them have been contacted by either pipeline. I would say one place that you could make some difference is in September our town will be holding the Iowa firemen's convention. What a great time to inform the firemen of Iowa what is going on. This is the second year it has been held in Iowa Falls they could have also done it last year but they were not there. My final thing would be to ask you to go back to Washington, D.C. and tell them we are not protestors. We are not activists. That is how these pipeline companies describe us. Take back and tell them we are Iowans, we are

Americans and we are landowners and we care about our country and our land. That is what I ask you to take back and tell them. Thank you. [Applause]

MR. TOM DETERMANN: I am state representative Tom Determann from Clinton on behalf of my other two cohorts over here we thank you really for coming out here to meet in Iowa with the people, and I think we can relay some of this leadership. Again thank you.

MR. MAX KIEBA: I talked about yesterday showing respect. Hopefully we showed that respect for you. We couldn't answer all of your questions. Leadership tendency is to treat people like people not objects. That is our mission statement to treat you as people. A couple wrap up items. The recording will be available typically a week or two weeks later so everything from the past two-days if you missed it will be on our website. We will send some e-mail blasts. We will send links. That other dimension we talked about we will put that. Please the public docket is open. If you e-mail me we can't guarantee if it will get in the docket. If you need help community liaisons or others can help out.

Currently not. They said maybe six months. There's no 30-days or anything like that. There might be a point when the rule making docket opens up we might close this one down and open there so we know we just have one docket eventually. If we missed any questions that were on-line, we will print them all out and eventually put them on the website including there were a couple of registration questions maybe we didn't fully get to. We will look at those and the ones we can answer we will answer. If nothing else we will at least get them up there as well. I believe that's it. Any other questions or comments?

That's a good -- I don't know. That's a good question. Very clearly this is really important to try to get a rule out as soon as possible. So now it might transition into the rule making status process. I don't know if Linda wants to talk about that or not.

That's another -- if you don't know, one of the other parts when we do rules. We try to do public process. Another part we have to go through what's called technical advisory committees that has to make sure once we get the notice out -- notice is the first part. Then we get comments. How we address the comments. Then it has to go through a technical advisory panel. It is a representation from different groups. I think Bill you might be on one of them. Bill is on the committee. There's industry on there, I think there's also labor unions on there a

few others. If you don't know our technical advisory committee, that's another sort of public process in addition to our public rule making we also have these public meetings for the technical advisory committee where other leaders can listen in as well. That's another public process as well.

I will defer to Linda. That gets dicey sometimes. The question of are we interjecting too much into the public siting process.

+MS. LINDA DAUGHERTY: Eat the mic, Linda. I was here in April, March -- I think March to speak to the Iowa legislative committees with our folks over here. So we do come out and we try to support, but we can't go to all of them. To your comment I have to share this. This is funny. This is humerus. But we were asked by the North Dakota legislative representatives, why are you holding the meeting in Des Moines. You should be holding it in North Dakota. We said, well, there's only so much of us to spread around. So we may be moving around, and I don't know what our cadence will be. But this has been a great group here. You have been very interactive. I can only imagine what it will be like in Nebraska and North Dakota and South Dakota. We would do it if we had the resources to do it.

MR. MAX KIEBA: So everyone safe travels home. Thank you so much for sticking through the two-days. Linda might have something here.

MS. LINDA DAUGHERTY: I have one last comment. For the last several months this gentlemen has been putting this meeting together. It is almost -- I won't say it is a solo effort. He prepared all of the panels, reached out to all of the individuals. He stood up here for two-days and he handled some difficult questions. So I think we owe him a thanks.

[Applause]

MR. MAX KIEBA: Thank you.

Go on. Get home. Thank you everyone. Goodbye.

END 5:48PM CDT

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