National Transportation Safety Board
Washington, D.C. 20594

Name: Andrew Marshall

Department Atmos Energy / Mid-Tex Technical Services

Title: Manager of Engineering Services

Date of Interview: April 25, 2018

I have reviewed my transcript(s) from the above referenced accident and:

☐ I have no comments to make.

☐ My comments are submitted herewith.

☒ My comments are marked on the attached copy.

[redacted]

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *
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NATURAL GAS-FUELED EXPLOSION OF *
RESIDENCE, DALLAS, TEXAS * Accident No.: PLD18FR002
FEBRUARY 23, 2018 *
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Interview of: ANDREW MARSHALL

Marriott Courtyard
Plano, Texas

Wednesday,
April 25, 2018

APPEARANCES:

ROGER EVANS, Investigator in Charge
National Transportation Safety Board

CHRIS McLAREN, Distribution Integrity Management
Program Coordinator
Pipeline and Hazardous Materials Safety Administration
(PHMSA)

JIM COLLINS, Regional Manager
Railroad Commission of Texas

JOHN McDILL, Vice President of Pipeline Safety
Atmos Energy

THOMAS TOBIN, Attorney
Wilson Elser
(On behalf of Mr. Marshall)

I N D E X

I N T E R V I E W

(8:40 a.m.)

MR. EVANS: On the record with Andrew Marshall.

Good morning. Today is April 25th, 2018, and it is now 8:40 a.m. My name is Roger Evans with the National Transportation Safety Board. I'm a senior pipeline investigator with the pipeline accident investigation group out of Washington, D.C. For this accident, I am the investigator in charge.

We are at the Marriott Courtyard Hotel in Plano, Texas. This interview is being conducted as part of the investigation into the fatality home explosion that occurred on February 23rd, 2018 in a west Dallas suburb situated north of Love Field. The NTSB case number for this accident is PLD18FR002.

The purpose of this investigation is to increase safety, not to assign fault, blame or liability. This interview is being recorded and may be transcribed at a later date. A copy of the transcript will be provided to the interviewee for review prior to being entered into the public docket.

Mr. Andrew Marshall, please provide the spelling of your name, the company you work for, and your job title.

MR. MARSHALL: Andrew Marshall, A-n-d-r-e-w, M-a-r-s-h-a-l-l. I'm a manager of engineering services at Atmos Energy.

MR. EVANS: Okay. Thank you.

You're permitted to have one person present during the interview. This is a person of your choice -- a supervisor,

friend, family member, or nobody at all. Please state for the record who you have selected.

MR. MARSHALL: Mr. Thomas Tobin.

MR. EVANS: Okay. Mr. Tobin, can you please give us the spelling of your name and your affiliation?

MR. TOBIN: My name is Tom Tobin, T-o-b-i-n. I'm an attorney with the Wilson Elser law firm in New York.

MR. EVANS: Okay. Now I'd like to go around the room and have each person introduce themself, with the spelling of their name and the agency or organization they're representing.

MR. COLLINS: Jim Collins, J-i-m, C-o-l-l-i-n-s, regional manager for the Railroad Commission of Texas, Dallas-Fort Worth.

MR. McDILL: John McDill, M-c-D-i-l-l, Atmos Energy, Vice President of Pipeline Safety, Dallas, Texas.

MR. McLAREN: Chris McLaren, PHMSA DIMP coordinator. That's C-h-r-i-s, M-c-L-a-r-e-n, and Houston, Texas.

MR. EVANS: Great. Thank you.

INTERVIEW OF ANDREW MARSHALL

BY MR. EVANS:

Q. Thank you, Andrew, for showing up today. We really appreciate that. We expect to get a great deal out of this interview today. I know you're a key person in your risk program and all that. So before we begin the questioning, I would like to get some background information about you, and let's start with your education and then just -- we'll go on from there.

A. Sure. I graduated from Texas A&M University in College Station, Texas. I have a degree in electrical engineering.
Q. And are you a PE by chance?
A. I am.
Q. Okay. And how long have you been with the company?
A. I've been with the company since 2007.
Q. Okay. And since you joined Atmos, can you go through your hierarchy of positions you've had ~~an~~ and how many years you were in each one of those positions, just to kind of give us a background?
A. Certainly. So joining the company in 2007, I came on as an engineer. Around 2010, I became a compliance manager, which is when I took on responsibilities related to our distribution risk analysis activities. And then my position was changed to a manager of engineering services in early 2016.
Q. Okay. And do you have reports?
A. I do.
Q. Okay. And how many reports do you have?
A. Four individuals working for me.
Q. Okay. And just if you can give me the -- yeah, I have it here. Thanks. So we'll go through -- so I understand you have Roger Comstock, Bill Peterson, John ~~Johansen~~ Johansson, and John Tate. So we'll go through those positions. Just briefly, if you can give us an idea of what each one of those -- each person there does for you?
A. Surely. So Bill Peterson is an engineer on my team, and Bill

is skilled in GIS systems and GIS analysis, as well as database analysis. He helps us with our distribution risk programs primarily.

Q. Okay. And what about Mr. Comstock?

A. Mr. Comstock is a GIS analyst, a similar skill set to Bill. He helps us primarily with our transmission risk analysis activities.

Q. Okay. And how about John ~~Johansen~~ Johansson?

A. John ~~Johansen~~ Johansson is a GIS specialist, and he bridges between both of our programs, supporting both our distribution and our transmission work.

Q. Oh, so you do both?

A. We do. The risk analysis pieces.

Q. Is common for the whole company, right?

A. Yes, for the Mid-Tex Division.

Q. Okay, Mid-Tex. Okay. And John Tate?

A. John Tate -- Eric Tate. He is new to our team, an engineer, and he helps us with both programs, primarily our transmission risk.

Q. Okay. And do these people have reports to them?

A. They do not.

Q. Okay. Just to kind of kick this off, so I would -- in this particular case, rather than ask you questions, I'd like you to describe how this all works: The fact that you have data that gets acquired out in the field, that data makes its way into your

department and you do something with that data. And if you can kind of give us the full picture of that?

A. Sure. Very good. So, at a high level, we have a lot of ongoing operations and maintenance activities, as most operators do, which are putting us in a position to have knowledge of our system. We have a corporate GIS system, which houses all of the data about our mains and our facilities, and we have a work management system, CM+, which is Compliance Management Plus, and that stores all of our performance data, our leaks, observations of corrosion, and other collateral information that's gained during the leak management process.

So my team takes that data, as well as data from third-party sources, data providers, or data sets that we develop through our own initiative, and we run it through a risk assessment tool. As a part of doing that, we put all of that information into a common geospatial platform. You know, the pipe exists in a place in the world and the things that happen and occur on the pipe are also documented against those same places in the world. So we heavily utilize geospatial analysis to complete our work.

As we bring all that data in and we're able to analyze it in a cohesive way, we establish the likelihood of our facilities failing and then the consequence should we be subject to a failure. We come out with risk scores and risk values which help us understand on a relative basis those facilities that are higher relative risks than their peer group within the system at large.

Then, in our role, we make that information available to our partners who make decisions about replacement planning and prioritization, as well as those individuals who are responsible for setting up and mobilizing leak surveys and subsequently executing those surveys.

Q. Okay. Just to make sure I -- so I have Marlo's role, you just gave us your role, and then I guess you pass your data on to Tammy; is that correct?

A. That's correct.

Q. Okay. I just wanted to make sure I was clear on that. Okay. So just a few questions about the data. You just mentioned that you have other data coming in besides from your leak work program, CM+. What other data are you talking about? I mean, is it commercial data?

A. Commercial and publicly available. So on the publicly available side, we leverage census data, would be the primary one, to understand concentrations of population centers as they affect our assets. And then we also have partnered with a data service provider who is also prominent in the public awareness space, to gain intelligence on all the hospitals, churches, schools, nursing homes, day cares, and similar facilities, where you'd have trouble evacuating or would be of higher consequence should you be subject to a failure, and use that to help most appropriately frame the consequence in the event we were subject to a failure.

Q. So you're tracking sensitive-type addresses where you would

have issues with -- based on evacuation because it would be a large population in that area?

A. Yes, that's correct.

Q. Like a school or hospital?

A. That's generally correct, yes.

Q. Okay. So we have census data and leak data, the sensitive building kind of data, and then all that goes into your model, likelihood times consequence, bingo, you come up with risk?

A. A little more than bingo, but yes --

Q. Yeah.

A. -- overall.

Q. Right. Okay. And the model that you use -- and what I'm curious about is, is the model a changing target? I mean, do you change this equation, your likelihood times consequence, kind of -- does that get changed throughout? I mean, have you changed that 10 times in the last 5 years or something? Are you constantly improving that or are you -- is it something that you've calculated what you're -- how you're going to come up with your risk, right, and do you stay with that formula?

A. So we have enhanced our modeling capabilities over time. We focus on the data that the model has available to consume and putting that in its best shape, as well as the mechanics of the model and how it operates. An example would be the difference between a leak and the number of clamps installed on a pipe.

So several years back, we were looking predominantly at the

number of leaks that might be associated with a given segment of pipe, recognizing that a leak record might actually involve the installation of several clamps where gas is actually escaping from the pipe. We made a programming change so that we could accurately reflect the number of clamps in addition to leaks as we try to predict our likelihood and understand how likely different facilities are to fail.

Q. Okay. And so, another key part of this I'm curious about in my own mind is, do you have an interface back to -- I mean, do you have contact with the people in the field? If you get data in and you see some eyebrow-raising kinds of circumstances where you see a number of leaks in a concentrated area, do you have a feedback method to go back to management and say, hey, we've got this -- without even doing the calculation, we've got problems in this neighborhood?

Do you have something like that, that you would go back and say, let's act on this; let's not even wait for our total analysis? You know, some sort of a look-see that your data, as it comes in, showing you some interesting numbers -- because I understand the data comes in rather quickly and you're able to process the data rather quickly, from what I understand. So is there any way to alert those outside your arena here in your work chart to notify the field that this area is highly likely for problems, we need to look at this?

A. So for the purposes of the work that my team does, we run our

risk analysis annually, which is still more frequent than the rule requires and what a lot of peers would be doing currently. As to leaks that occur or accumulate in between those annual cycles, you know, we have strong processes through our normal operations and maintenance through which individuals in the field have the opportunity to take actions in between those analyses through the knowledge they gain by surveying, responding to leaks, and otherwise.

Q. I guess what I was wondering, if you have -- I'm not talking about -- I'm wondering if you do any sort of localized risk assessment for readings that may be coming in, not your umbrella risk assessment for the entire company? Can you run any sort of a routine that says, I'm going to look at this little neighborhood and see what I -- you know, based on these indicators coming in? Are you capable of doing that? Is that part of what you do?

A. It's not part of what my team does currently in our work, in our responsibilities.

Q. Could you?

A. For our complete risk assessment to take place, there's a lot of different data sets that have to be loaded, and it is accurate to say that the leak data is continually available. One of the things we also do through our efforts, though, is we try to improve the quality of the information, the geospatial location of those leaks as they come in. We partner with a firm to review our leak sketches and look at the geocoded address location or the

coordinates that our field folks have supplied and give that the context of what was drawn on a sketch and what material those leaks were attributed to, to try and make sure that they fit in the right place. It's not something that we are doing currently. It's certainly a process that could be explored.

Q. Okay. Yeah, I was just curious.

So if we were to look at all of the factors that you use to build your risk model, could you, from memory, go down the list and say, okay, that was the pipe material, we have clamps, we have -- could you go down and give us some sort of a list of what you are considering?

A. Absolutely. So on the likelihood side, we are looking at the piping material, we're looking at the coating, we're looking at the size of pipe, and we're looking at the pressure service. And those things together, along with collateral information, which helps frame how those facilities are performing -- leaks, observations of corrosion and condition reports of the coating -- serve to help us frame the likelihood of failure.

On the consequence side, you know, the largest drivers of that, we have the building type, which we referenced as these critical sites, which includes things we identify through our efforts as well as our business district areas, which reflect wall-to-wall paving and things like that. Population density is a very high contributor. We have factors that speak to the presence of conduits, you know, paths for the gas to migrate further than

it normally would, as collected when our leaks are repaired. And the type of surface cover where our leaks are found, you know, is it gravel, asphalt, was it just grass, so that we can, again, kind of try and paint the good picture of how likely we are to experience migration.

Q. So if you have a soil type that has corrosion properties in it, would that be part of this? Like you have maybe some -- a lot of times when we go to a scene, we'll take a soil sample because it looks like there's something in the soil that could possibly accelerate the corrosion that's on the pipe. I'm not talking about the type of soil, the fact that it's -- could swell and move and all that type of thing, but just basic characteristics of the soil. Is that part of what you look at?

A. For our distribution models, we typically look at the performance impacts that are caused by the soil, so the presence of that corrosion and the number of clamps that are installed and the observations of that corrosion.

Q. Okay. So when you say you do the analysis once a year -- and you run your risk model, I guess, once a year, right?

A. Correct.

Q. When you get your results, what do you do with those results and how does that impact the entire company?

A. So as we get our results, the first thing that we'll do is my team will review those results and make sure that they're consistent with the changes we might have made to our data

pedigree or to the way that the system operates. We will screen those for replacement activity that may have affected the segments that present. It might have been replacement work that happened in the 3 months that it took us to complete our analysis. We want to make sure that that's accurately reflected in those results. And then we send those off to our field folks across the system for review and validation.

Q. Okay. So you run your risk analysis, you get the results, you look at the data, and then you send this data out to the parties who are going to act on the data, correct?

A. Initially it's a review and validation exercise.

Q. Okay.

A. So it's our subject matter experts out in the field, typically supervisors, managers, senior construction individuals who have a lot of experience with those local systems and have been through several roles during their time, individuals who are involved in our leak survey or our corrosion control.

Q. Okay. Now that particular review and validation process, is that geared toward a department with a head; there's a department head that actually receives this as his responsibility or her responsibility?

A. We would initially dispatch the request for the review effort through the local operations director and local operations manager. And subsequently, they would select the individuals in their organizations who would be most appropriate to provide that

feedback to us.
Q. Okay. And what would that person's name be for the operations manager that would get this report, typically?
A. It would vary. We have eight different areas, so there would be a number of individuals across different geographies.
Q. Oh, okay. Okay. So it's not -- I got it. Okay.
MR. McDILL: It's dispersed.
BY MR. EVANS:
Q. It's dispersed. Okay. Once this gets out there and you have this to these different operations types, do they have a timeline that they have to meet for review and action back to you to say, here's the results, we have them, it's your turn to do the review and validation? Do you expect that back in so many days?
A. Typically we would afford about 4 to 6 weeks to complete that exercise. Some areas you have several hundred individual segments to review, and we want to make sure that they have the time to give that review its due in addition to the other responsibilities that they're carrying.
Q. Okay. So now let's take the next step. So they've done the review and now you're going to get their comments. I guess you get some sort of product from them once the review is completed?
A. Yes. We have an electronic system that we use to facilitate the review that my team designed, and it provides them with the context of the segment, maps, exhibits, leakage histories, all the information that we use to complete the risk analysis. And in

reviewing that, they'll affirm whether or not the segment is high risk. At times there might be a data issue, ~~which~~ where we called it high risk and it was not in fact a leak that belonged to that segment, perhaps. And they will give us that feedback, and those that they have approved that will take the next steps through my team.

Q. Okay. So let's just say there's a correction process of some sort, or some sort of validation that you do to make sure that their comments are accurate and you agree with their comments -- or you're going to shoot down their comments or you're going to support their comments, kind of like that, right?

A. We would usually call areas that had questions or when a conversation was warranted.

Q. Okay. So once that's been resolved, the comment part of it, now you have a completed assessment, right?

A. Correct.

Q. The assessment is then complete?

A. Yes, that's correct.

Q. And it's ready to be acted upon, correct?

A. That's correct.

Q. Okay. Now, so when you have a -- you have all this fruit to pick kind of, so to speak, right? That you identified?

A. That's true.

Q. And it's going to take time, money, resources, all sorts of stuff to in order to pull this off to make sure that you meet what

you found in your assessment. So once this has been kind of assembled, the next step that you take, does it go to a -- which department does it go to, I guess, is the best way to start?

A. So it primarily goes two ways. So we package all of the results up into media and materials that can be consumed by our partners throughout the organization. We publish the areas that have been identified as high risk to our corporate GIS system.

We prepare lists, maps, summaries, shapefiles, which can be consumed into other applications that some of our teams use, and make that available to the folks who are handling the replacement prioritization and decision making. It's available to folks who are doing project replacement planning who might be related to a street project or road project. And we send the segments off for high-risk surveys, as well, to Marlo's team, who you visited with yesterday.

Q. Right.

A. So we subject all those segments to an annual survey that have come up as relative high risk.

Q. Okay. So is there somewhere along the way that this effort goes to an accountant, where the accountant says, you know, we have to have a budget of X million to do what this risk analysis says?

A. Tammy would be better able to speak with that, who you're visiting with later today.

Q. Okay. Okay. I'll get that with her. Okay. So once this --

you have the materials and they're packaged up and you now know where your high-risk areas are -- and I guess since I saw a part of the presentation that you made to the Dallas city and I saw a lot of money being spent, 8-point-some-billion dollars or something, I think was the number -- it was a lot of money that you're going to be spending over the next umpteen, you know, projects that you have.

But what I was wondering was, you have to blend all this stuff in with those projects, correct? Because some of the projects that you're working on may involve what you're working on as projects, so this has to get digested into that part as well, right?

A. It's a comprehensive process and program that considers, you know, the risk out of our work, the risks that are being found through the field, and a number of different factors, as I understand it.

Q. Okay. So once the assessment's out and you're now going to make, start making progress, I guess, on -- I mean, I would imagine you're going to the high items first, the high-risk items first. How does all that, the items that you've identified, how does all that make its way to say, this needs to be fixed tomorrow or this needs to be fixed even -- ASAP, we don't have time to even let this -- there must be items like that you find when you do a risk assessment?

A. So we have -- you know, they all have a numerical score, and

you can rank them based on the score. So the ones with the higher scores would traditionally get the earliest attention. With respect to survey, they are -- they're all sent out for that annual survey, and we provide all of the information we have through Marlo's team and published out to the local compliance organizations who handle those surveys. So they'll look at how they need to schedule those.

MR. EVANS: Okay. Well, I'm sure I'm going to have a lot more questions, so I'm going to pass it on to you now.

BY MR. McLAREN:

Q. Chris McLaren with PHMSA. Good morning.

A. Good morning.

Q. Yeah, trying to go through this discussion in a logical manner, I guess I just look back towards the DIMP rule and -- because there's a lot of different questions I have. So maybe just starting on knowledge -- we talked with Marlo yesterday about missing information, trying to gather unknowns, trying to get all the services into the GIS to be able to be utilized in the risk modeling. And we really didn't -- we touched a little bit on the environmental area in which the pipeline operates. One of the -- when the DIMP rule talks about that, you know, it's the design, the operations, and the environmental conditions that a pipeline operates in that needs to be gathered to understand threats and consequences.

What missing information have you identified in very general

high topics, and what's the process where you communicate with the data collection people on the data that you need to make sure it's more accurate, the effect of unknowns within your database?

A. Sure. So we're fortunate that there's quite a bit of activity, some of which Marlo spoke to. One of the mechanisms we have for gathering missing data or data that warrants correction or improvement at all times is an electronic map data collection form and process.

So all of our field folks have access to a web portal where they can advise our GIS team members of data that requires correction. Maybe a pipe coating could be added where it was otherwise absent, maybe a piping material needs a correction, things like that. We started running that system back in 2013, if memory serves, and we have thousands of transactions that have been acted on to correct the map data out of that effort.

We have -- you're familiar with geocoding of leaks. And, you know, you guys probably type an address into Google Maps and sometimes the address can't get where it's supposed to be. A similar problem on historical leak data. We've sent 53,000 leaks over to a partner, ~~a~~ an external firm to review the sketches, like I mentioned, to look at an improved ~~geocoding~~ geolocation that considers both the address as well as parcel data, and then finally a person looks at it and actually puts the leak associated with the pipe that it most appropriately belongs.

We've executed a conflation process. Our main locations as

historically reflected in our geographic information system may not have been in a location that matched common mapping locations -- right side of the street, things like that. So the company invested a lot to correct the geospatial location of those facilities so that when you have a leak that's been collected with a GPS unit, you can actually get that leak associated with the pipe where the satellites and the rest of the world thinks that facility ought to be.

We always strive to gather new and more data. Through the efforts of my team, we've initiated a process to start capturing leaks by coordinate, in addition to address, so that we get better early information from our field folks that's more precise, and those coordinates are sourced out of our mapping system as opposed to a handheld GIS device, so that it has the context of where that facility was located as those coordinates are collected.

And the sites and structures effort that I mentioned, you know, through that we gain over 60,000 unique individual locations where we might have difficulty evacuating folks -- might be kids, might be old folks, might be sick people -- that we can then use to help paint the best picture of our consequence.

So there's quite a lot of activity. I mean, for my group and our efforts, there's several hundred thousand dollars a year that we're afforded in budget money to help correct and clean up data. Through Marlo's team, there's much larger dollar figures associated with the distribution record scanning, the service line

scanning and subsequent mapping, and some of those efforts.
Q. With regards to gathering data, you mentioned that the field can put in the electronic data form. If a field technician is out there completing his exposed pipe report or other data acquisition form, have you -- has your group had input to make sure that the field is collecting the data you need, and are you aware of when that form was last revised to its current state?
A. As to the second question, I'm not sure. The compliance team is where the -- so Marlo you visited with yesterday. The GIS function exists under her team, and they'd be able to better speak to the currency of forms.

And forgive me, your first part of the question was?
Q. Is what's your input into that form to make sure that operations is gathering the data you need to make the decisions that are going to be coming out of it?
A. Sure. So with respect to the map correction form, that was a product that was created while I had the GIS function under my responsibilities. So we crafted that to collect the data that was needed to enhance our mapping information, and also to support the risk analysis.

As to some of the collateral processes that you're mentioning, we've given our folks training about the map data correction form, when it's to be used and what types of situations where it's important to capture that information. Empowered with that knowledge, we would have them completing it appropriately and

at the appropriate times.

Q. Okay. What about with regards to the collection of data on environmental factors? That would include not only the soils mentioned in the geologic and hydrophoric, different types of soils and their effect, as was noted during some of this investigation, but also, I think almost ties in -- it's difficult to account for third-party damage other than based on population, but looking at areas of growth, even third-party damage is a big issue for all operators. How do you handle all these different environmental factors within the risk model and data collection forms?

A. So with respect to the risk modeling effort, a lot of that information does come to us through reports of performance issues in the form of leaks and collateral information that's collected along with the presence of those leaks.

The excavation damage process, we're fortunate to have a good partner in the form of Marlo's organization, and they do manage the damage prevention process as a whole. So all things related to excavation damage and damage prevention do come out of her responsibilities.

With respect to other environmental factors, as those things occur, our local field folks will respond to them as they're noted. It might be a tornado, might be a flood, something along those lines, and they will set up these requisite special surveys and undertake other activities. As through those efforts they

find leaks or other performance issues that those situations have caused, we get those through our risk-modeling exercise. And we're aware of the cause and we're able to associate those leaks and the causes to the appropriate pieces of piping.

Q. Okay. And to go down that little discussion, it was discussed that you were going to provide to Tammy geospatial information, numbers, different sorts of information on what you consider high-risk areas. How are those areas grouped? Is it a square mile, is it half a square mile, is it a particular neighborhood, or does it vary? How do you break up your areas for risk modeling?

A. So as we group our assets to support the modeling exercise, we undertake a process called dynamic segmentation. So we take all of our assets, and there are computer scripts that go through and look for pipe groupings with similar physical and operational characteristics and it will package those up. You know, you think about drawing a box around a length of pipe and combination of facilities; it's akin to that.

And the way we have our tools programmed, we have it set to, in general, capture 2,000 feet or less of pipe in an individual risk analysis project. So the whole system is divided into these areas of dynamic segmentation. In total, there are about 270,000 individual groups of segments that are analyzed on their merits.

And I think the part of the question you asked, what we send over to our partners in other areas of the organization who are

making those decisions are the representations of those assets and the information we have about those assets, their risk scores, information about the leakage, some of the contexts that qualifies the data we used to call it high risk, information about the corrosion that was experienced so that they have, you know, a numerical representation of the relative risk, a feel for the rank, and also the information which helps them understand what was going on with that segment.

Q. And so, of these 270,000 dynamically segmented segments of 2,000 feet or less of main, do you look at the top 10 percent and try to group them to understand where an area would be that would be applicable to a replacement project or where a problem area might be?

A. As we make those available to the folks who work for Tammy, they have the ability to look at those segments in their systems that they use for flow modeling and to help make a variety of replacement decisions for a variety of reasons. So they can see our segments represented in tandem with the infrastructure and all of the information that's used to make replacement decisions.

Q. Okay. And so is that done geospatially? Are they on the GIS and is it coming up as red, yellow and green, or how does it -- how does somebody visually integrate that data?

A. It would be geospatial. We send them -- one of the products out of our effort are shapefiles.

Q. Okay.

A. And we send shapefiles to them that they can load into their software, which can accept those types of data files. And then they can see that and have those in mind as they're visiting with the local areas that are their responsibility to coordinate with, and can look at that in the context of all the replacement projects that are proposed and coming up, both those that might be stimulated out of our work as well as for other condition-based reasons or things that have happened between our assessments that warrant attention.

Q. And Marlo had mentioned that the services were coming back into -- well, she was hoping to have the services all scanned and into GIS; the program would close out, hopefully, by the end of this year with some carry-on, I would assume, to make it all QA/QC. Is there a plan to incorporate services into the risk modeling?

A. We'll incorporate them. We're leveraging the GIS data as they're entered into the GIS system, and that's something we're all looking forward to, I think. We do consider service lines through a parallel modeling effort where we look at our -- you know, our steel service lines have the most leakage on them. And as we analyze our service lines and do modeling activities related to service lines, we have certain steel service ~~line~~ lines and map sheets that present as higher risk than others.

Q. So that would be one of the other programs maybe listed in Section 6, or what would be -- to account for services, you have

an external program looking at steel services because the data shows that they have the highest risk. Okay. And so, Mid-Tex is the only one that uses Optimain; is that correct?

A. That's correct.

Q. And so you supply shared services this information, to Mid-Tex, to Operations, and Tammy and her -- and then is Tammy shared services, also?

Okay. So you'd provide that to Tammy at Mid-Tex to do her job. Do you also provide risk-modeling services to the other divisions?

A. We don't. You know, we all do collaborate on practice and methodology, but we don't provide services to the rest of the corporation.

Q. Okay. On the input of SME qualitative information into the model, rather than existing quantitative data, how does that happen in the model?

A. So we have a path through which folks in the field can reach out to us and make us aware of things that they've observed. Typically, we would constrain those in similar fashion to the way that we do the segments that we identify through our own efforts with a, you know, ~~mounding~~ bounding box or, you know, along a given segment of pipe. And we would work to understand the things that were going on with that facility or that group of facilities and, subsequently, as appropriate, incorporate those into the listing of what we call high-risk assets.

Q. Is it common to get those one a week, one a month, or more, and how is that documented?
A. It's infrequent at present time. As we made the transition to getting the clamps enhancement, the main thing we were getting from folks prior to that work was that local folks knew how many clamps they had installed and they had that very present in their minds. As we enabled that capability through our own analysis routines, we started capturing most of the segments that they would have identified for those same reasons.

There was a second part to your question there, forgive me.

Q. And how is it documented?
A. We would --
Q. Is it a near-miss-type recording event? Is it some sort of voice box -- or not complaint but a recommendation box?
A. We have a voicemail box that's set up, and we also have an email address where folks can reach out to us and initiate that type of dialogue.
Q. On the current incident report, it's listed as under investigation with a G8, "other incident cause." Have you made any progress on the incident from February 23rd in identifying a more definitive cause?
A. I'm not aware.
Q. Okay. You list -- one of the things that we -- it seems to me to be a -- of course, you have a lot of drivers to be addressing leaks, the Texas programs, and you describe in the

presentation given to Dallas this input from the model leading towards prioritization. But leak surveys, it seems to be leak surveys is your primary tool for identifying risk?

A. Leak survey is the cornerstone of a lot of how the gears turn in the program. I mean, we survey 34 percent more pipe than federal code would otherwise require if you look at it over the past 10 years. Above and beyond the state rules, we survey an additional 10 percent of pipe. So 34,000 more miles than federal code ~~to Atmos practice~~ in Mid-Tex. And on the Railroad Commission end of things, about 13,000 miles over and above what the Railroad Commission would otherwise require. So we do place a lot of value on survey, it's true.

Q. Certainly the lead data trends over time support that you're aggressively addressing leaks and the leak rates. The scheduled leaks at the end of the year seem to be going down. And as you've looked at these areas, do you -- when you look at leak rate and you're saying, I want to replace this material or this construction or this environmental factor, are you finding that you're replacing the right stuff, in the right place, at the right time? As a general comment, do you think that the program is effectively addressing the problem materials and the problem places?

A. I do. We work hard through our own efforts, through my team, to make sure that we've provided awareness of where those types of situations exist, where facilities are leaking more frequently,

leaks, clamps, understanding what those levels of relative risk are, making them available to a variety of folks who are in the position to act on those facilities. Some of that work is dispatched just as a product of having been identified as relative high risk.

And by doing more frequent surveys on them, you know, we're getting health checkups on those facilities ~~at~~ on an annual basis. So if their condition starts to worsen, our local folks will be the first to know and the first in a position to take action. And then as we complete our subsequent risk analysis, we'll see the downstream effects of what those more frequent surveys are providing to us.

Q. Is there a required cast iron replacement program in Texas?

A. There is not that I'm aware.

Q. And so, from your work, you're going to be identifying what cast iron, what bare steel, what un-CP bare steel, un-CP ~~coded~~ coated steel, what problem areas -- it's going to be based on leak rate where the problem materials are, regardless of material on those?

A. We make that information available to all the folks who are making decisions about replacement prioritization so that they can see where those segments are, you know, constrained by those ~~mounding~~ bounding boxes like we discussed.

Q. Within the Optimain algorithm, how heavily weighted is age or vintage material? Have you done sensitivity analysis to understand what are the primary threat drivers that drive your

risk scores?

A. So in the way that Optimain works and the way that we set it up in partnership with the vendor, assets are grouped into what we would call failure families. So you might have, you know, coated steel 2-inch IP and you might have some information about its joining method, perhaps. And it would group that as a family of assets that might have a particular likelihood of failure in and of itself.

So as you take all of those similar assets across the whole company and you look at all the leaks that have been associated with all similar assets, the software and the partnership with the vendors serves to establish sort of a likelihood curve. That likelihood curve can be affected by other things, you know, like corrosion that might have existed on a given segment, and pull that curve up and down. So then, as you establish that family and you understand the broader prediction of the likelihood of failure, you're able to apply it to a specific segment that's been subject to specific leakage and specific other circumstances and criteria.

So the system works to put more emphasis on recent leaks through an algorithm that ages leaks. So, you know, a mid-'90s leak would have a different contribution to the likelihood of failure than would a leak that occurred last year, for instance.

Q. Okay. Thank you. On looking towards -- I guess, operations is really more in charge of leak management, or is that part of

Tammy's program? Or is that -- do you cover sort of looking at the leak management, is it being located, graded correctly, keeping those records, and then the self-assessment piece?

A. That would be under Marlo's purview for the leak management program.

Q. Okay. And looking at -- now that the data's been sent in to GIS and you've looked at it from a risk program, what performance measures and metrics do you look at from that data? And I assume that would be part of what you'd be providing to Tammy to be able to make some of her decisions?

A. So we have --

MR. MARSHALL: This has not been distributed?

MR. McDILL: It has not been.

MR. MARSHALL: Okay. We have performance measures that we look at. And probably familiar to you, Chris, performance measures which do kind of speak to how your leaks by cause are being impacted by your programs, practices and policies over time. So we trend that. We look at that to try and assure that comprehensive programs, both stimulated by the risk analysis, condition-based work, leak survey, all those things that are happening, are together serving to reduce risk system-wide.

We look at leaks by cause, hazardous leaks by cause. We look at the information about our excavation damages and our damage ratio through a couple different lenses, and we also look at hazardous leaks by material. And then we pull excavation damage

out for an alternative view of that just so you can hone in on those leaks that you might be more -- with so many excavation damages being just a result of, you know, no tickets and people not abiding by the laws and regulations, pull those out to get a view of what facilities by material look like without excavation damage in the mix.

And we do see that the combination of things the company is doing serve to, year by year, reduce risk over time.

BY MR. McLAREN:

Q. And one of the things of going through the DIMP exercises is to identify additional actions, risk mitigation measures to take beyond the code minimum requirements. And those actions have some performance trending from a baseline to make sure we're doing the right things and we don't need to change.

Realizing that you're going to get -- or that that's Tammy's program to go implement and take the data and identify risk mitigation measures, I then see a lot of measures to address risk in number 6, the table of the many programs, including a cross-bore mitigation program. And it's hard for me to identify which of these are regulatory required, which of these are addressing an industry concern, and which of these, going through your DIMP process, you identify as this is the -- this is what my management system told me to do, in other words, and would then be required to have a performance measure to track it.

Can you work with me to look at how all these other

programs -- I guess, what's the effect of all these programs that Atmos has implemented on the output of the risk model program? In trying to normalize data such that I can understand this was the cause, this was the effect, I now have a lot of causes to change the data, I guess. And maybe let's just start with one, cross-bore mitigation.

A. Sure.

Q. Are you familiar with that program?

A. It's not my program, but I am familiar with it. It's a program that's managed out of Phillip Murdoch's organization.

Q. And does that present data that's input into GIS that affects your -- the risk modeling?

A. We, as I understand it, we have recently started tracking incidents of cross-bores in a more discrete fashion. In the interim, we've done a lot of enhanced messaging, mailers across our entire operating system, in adjacent territories where folks might rent equipment and then go back to their home in another jurisdiction, plumbing firms and entities, places like United Rental, Home Depot, quite a large, wide net that's been cast for that supplemental messaging. That was quite recent, so I don't know that we've had enough time pass just yet to be able to see the positive impacts of that messaging.

Q. Yeah, on an early program the performance is going to be all over the place because is it because you're finding them because you're looking for them now or -- yeah, so it takes a long time

for that baseline to establish, but -- and is that program something that initiated out of the distribution IM?

A. I would say, you know, we're plugged into industry issues. We participate in a lot of the forums that are available for operators to get together and talk about things that are happening to their systems. Cross-bores, as you know, has been a hot topic for some number of years. Our own experience in having cross-bores on our system does not seem, just generically, to be as high as some of our peers, as best we know to date.

But seeing that industry discussion and that industry knowledge, my understanding is we felt that it would be prudent to go ahead and execute some enhanced messaging to try and get ahead of problems that might start to arise as, you know, passage of time and more industry tracking started to occur so that we had a good read on what cross-bores we might be experiencing that perhaps were not tracked as such.

Q. The next one from the bottom, the Distribution Facility Replacement Program sounds like the Texas rule.

A. Yes, that's right.

Q. And I think that's conducive towards tracking and documenting because it's required and it has a set format and everybody can agree on that format. And I guess -- I think when I look at the annual reports, I look at my pipeline data mark, I look at y'all's charts, I end up seeing that, excluding excavation, it seems to be either -- however it's working, whatever combination of these

couple of dozen programs and whatnot are working, are seeming to reduce leak rates.

A. That's my observation as well.

Q. Yeah. I guess the concerning thing to me is excavation damage, especially when I look at some of the data on the annual report around, you know, mains, but also around services, some of that local excavation damage. And then how that root cause or common ground alliance cause factor that we put in the annual report is sort of a third, a third, a third with regards to they did not do the One Call, it was not located correctly, and they did not dig correctly. And it just seems -- and when I look at the excavation tickets rate increasing in Dallas in your work area, in the Mid-Tex work area, it's very extensive.

A. It is. There's quite an uptick in development here as -- you know, the economic climate is conducive for businesses and people moving.

I would ask you -- draw attention to sheet 5 of 7. Just so you know, our damage ratio is still overall favorable. Compared with industry peers who have more than 3,000 miles of main, we do seem to perform below the average [i.e., we have a lower damage ratio]. Again, not my program, not my matter to speak to in a great lot of detail. But I am generally aware that, you know, some of the poly services, as you know, Chris, do become unlocatable for various reasons over the passage of time; ~~(indiscernible)~~ tracer wires get cut and things like that. We do have our locate contractors empowered to, as needed, run a fish

tape through for a challenging-to-locate service. And subsequent to that, they'll use marking technologies to make it possible to locate that service again in the future so that the situation is not left ~~as~~ where you will have a challenge locating it a second time. ~~having a challenge locating it.~~

And we've also done a lot to tighten up our as-builting time. You know, several years back it might have been common to have an excess of time between the in-service date of facilities, especially in new growth areas where you have a lot of construction activity and a lot of opportunity to have a newly installed facility hit. We've tightened that down to, I believe, ~~4 to 6~~ 8 to 10 weeks. So folks who are involved in locating and protecting our facilities are able to see the assets, you know, as reflected in our GIS, as made available to them a lot sooner so that they can, you know, do -- their best and most capably do their work to make sure that those facilities are protected and not hit.

And Marlo would be able to speak probably in more detail to some of those things. Again, it's not my area, but ~~they~~ there are things that are happening to help address some of those issues.

Q. Okay, just a couple more questions. To go back in, page 18 of the DIMP, the likelihood of failure, talks about how -- and you had started -- you had discussed a little bit about how Optimain works. But in the third paragraph, it talks about that the risk assessment tool specifies five failure types that are mapped to the eight threat categories. The five failure types ~~or~~ are corrosion,

break, joint, strike, and leak.

A little bit more about that. I mean, I've seen some pictures from the incident site and it is -- if we had a leak that was repaired or an incident area that was replaced or repaired, would that individual GPS spot on that main be assigned one of these failure types and one of these causal factors?

A. It would.

Q. It would, yes?

A. Yes.

Q. And that's if we dug it up and we looked at it and we either replaced or repaired it. If we did not dig it up, what is the -- what is your policy about assigning probable -- that's a bad word because that would infer apparent probable and root cause, but it would -- you know, opinion on cause, or if it's a fitting, or if it's a break to an area that has not been inspected visually or nondestructively if you put a camera down it, whatever other iterations. But I just left all this in and I ran a new service line and I don't know why that service line -- how do you treat those unknowns?

A. You know, it is a good question. We have a way for our operations personnel, through their knowledge and their assessment of the site, short of digging it up, should it happen that it's not dug up, to provide us with a probable cause, something that they believe was the cause of the leak upon their inspection of the site. ~~Subsequently, should~~ Should it be exposed during the process

of repair or replacement, they ~~separately~~ would establish a cause that would be a cause determined as a product of whatever they observed during the repair, replacement or elimination of that leak.

In the case of services, I've observed some of that work. It's not uncommon to have the tap and portions of the service line exposed in the process of making that repair, so there are some opportunities to gain that specific knowledge based on a visual observation of the tap and the portions of the service. But it is a good question. We use the data that comes from the work management system for the risk analysis as it's input by our operations personnel based on their experience and their judgment.

Q. Okay. So Optimain is going to pull from CM+ historic opinion or SME data assigned to a historically -- similar to the clamp event, as it would to an active leak?

A. Say that one more time so I make sure I'm confirming --

Q. So Optimain is going to associate -- I'm in ~~light~~ like mains.

A. Yes.

Q. And now I'm assessing that main, which is a ~~light~~ like main, and I'm going to be able to say, well, in similar mains I had this opined or SME put historical data for a cause that was historical in nature for a leak or incident that was historical. So what we learned from Marlo was that it resides on an abandoned asset layer. I guess that's where she's probably -- or where you all are probably pulling the clamps from. And the clamps would be

active. It would be a number of clamps on an active layer, but pulling from that abandoned layer where the old history resides.

A. So historical information does have a bearing on the overall establishment of the -- they call it ~~like~~ a base probability. So you've got all your ~~light~~ like grouped pipes and you know what leaks based on what people did excavating, or what they might not have seen but established a cause based on the best information they had available. And you do end up with just a base behavior likelihood for each of these failure types. So you have a basic anticipated likelihood for your corrosion, for your break, for your joint, and so on. And then as known leaks, known failures are associated with a given segment, like you described, you understand how to trace along those different curves, which are subsequently added together to establish an overall likelihood of failure.

So you might have had -- you know, you might have a curve ~~4~~ for corrosion, and that's just a basic curve for corrosion across all similarly situated pipes. Well, let's say for that given segment you've had observations of heavy corrosion as gained through operations and maintenance geospatially associated with that segment, the slope of your curve will tick up because that's worse than the traditional segment. You have known observable corrosion, and then you might have a leak, or several leaks, or a leak and several clamps.

And as you become aware of that information and the way the tool works, it will trace up that curve to establish a likelihood

that you're going to experience future failures on that given segment with the context of what happens to all similarly situated segments and that subject segment that you're completing an individual risk ~~an~~ analysis on.

Q. And Optimain is taking in all of those threats, failure types, and environmental considerations into account?

A. Yes. Correct.

Q. Okay.

A. So as the leaks and their causes come in, there's a mapping exercise based on the facility type, the cause of the leak, and it also leverages repair type information. It helps you get more out of some of the "Other" ~~other~~ leaks and actually get to something, a failure type that's more appropriate, more reflective of what happened to the facility, especially on historical leaks. I mean, we have leaks back to 1993 that are leveraged through the system.

Q. Okay. Thank you.

A. You're welcome.

MR. McLAREN: Thank you, Roger.

MR. EVANS: Any questions?

MR. COLLINS: Yes, sir.

BY MR. COLLINS:

Q. Jim Collins, Railroad Commission. A few questions. Based on my limited experience in, let's say, the field -- that started again. Sorry. I've had conversations with field personnel and it seems that when they expose particularly buried ~~fuel~~ steel and repair

for a leak, within several months, a year there's another leak in the same location due to, basically, them exposing the pipe and either from the clamp causing corrosion or just exposing the pipe itself. Is that a trend that has been ever reported to you? Has that ever been discussed? I know I've discussed it a couple of times, so --

A. We've had operations personnel echo similar types of phenomenon as the soil is disturbed and the, I guess the oxygenation around the asset occurs as the repair is made. So it's 80 percent of the segments that are framed as relative high risk through my team's efforts are, ~~they're~~ bare steel segments. So I mean, matching with the story that you're telling.

Q. Okay. Do you know, do y'all have a specific -- so in the 2,000 feet of bare steel pipe, how many clamps on that pipe before it's replaced? Do you have that particular number, or is there other factors involved?

A. You know, I don't know that I could answer your question directly from the work that my team does. I would tell you, I mean, we -- the higher risk segments that we see through our analysis usually have a fair number of clamps. And considering those clamps is important. We'll have higher risk segments that may have a one-leak record associated with them, but that one-leak record might reflect seven clamps.

Q. Correct.

A. So we do see that and we do take that into account in the way

that -- we treat a clamp just like we do a leak for the purposes of predicting the likelihood because that's a place where gas was coming out of the pipe.

Q. Correct. Okay. Thank you.

A. You're welcome.

Q. Let's see. I've noticed in this ~~plane~~ plan -- I don't know if you helped write the plan, the program at all?

A. In the initial phases we were, yes.

Q. Okay. In Section 6 particularly, it has the list of programs and policies currently in place, and all of them are subsequently detailed in later pages.

A. Yes, sir.

Q. Except for the odorization program. And since we were talking about the DIMP plan there, I was kind of curious why wasn't that in there in detail? I guess the reason I bring up odorization --

A. Yes, sir.

Q. -- on this specific incident there was a thought that the odorization, the odorant was stripped out of the gas because there wasn't any reports of smelling gas before the fires in the first two homes or the explosion. And so, reading, reflecting on the rule, it has to be water soluble in 50 to 200-and-something parts, I think. I'm not 100 percent sure exactly what the rule says --

A. Sure.

Q. -- but it says it can't be water soluble up to a certain

point. So how does that -- is that taking into account any risk or the DIMP plan? Because to me, the two major things for protecting public, odorization and leak surveys.

A. So I'm not sure about the -- it not being in the plan.

Q. Okay.

A. We don't have an odorization factor that goes into the risk model, but as a part of the comprehensive process through which we manage and address risk, you know, odorization is part and parcel, like you say. It's not my area. The figures that you're referencing, I mean, I too would struggle to recount those to you. You know, I'm aware that we manage odorization and, I believe, do so effectively and in accordance with the rules and regulations, do regular checks and things like that.

Q. Correct.

A. I'm not familiar with the specific situation with this specific incident, but --

Q. Okay. All right. I just didn't, I didn't know how -- if that factor would come into the risk analysis, and so that's what I was trying to understand.

A. I believe it's -- I mean, as found through inspections it's corrected as found.

Q. Okay. Thank you. That's all the questions I had.

MR. EVANS: Mr. John?

BY MR. McDILL:

Q. John McDill with Atmos Energy. Andrew, I just maybe had a

few questions for clarification. I think you covered this, but I just wanted to check back with you on this.

A. Sure.

Q. I think you mentioned that if operational needs were determined throughout the course of the year, there's a means by which they raise those issues for consideration, for actions that comes in through maybe you or others, maybe Tammy's team; is that correct?

A. That's correct. Yes.

Q. And so, some of that may be -- do you know what some of those actions that they may ask for, will they ask for replacement of a pipe or special surveys or --

A. Predominantly, replacement of pipe or special surveys. They might ask for remediation of some cathodic protection areas, things along those lines.

Q. Okay. But there's a path established to help?

A. Yes, through the locally-assigned individuals who work through Tammy's team, which she would be in a better position to speak to, as well as through this voicemail box and email address that's set up for my team.

Q. Okay. And earlier in the discussion, you were talking about the process in place that you built, y'all's team built a web portal, that the results of all the analyses are delivered to the subject matter experts in the field for their review?

A. Correct.

Q. So their review, their comments, their validations and documentation, that is maintained through the web portal?
A. That's correct, yes. We facilitate that exercise through the web portal.
Q. Okay.
A. And there are screenshots of that in an appendices with -- that frame some of the collateral information and gives a flavor for the type of information that is captured and that a subject matter expert or another person who has an interest in that project or segment --
Q. So if you could maybe, just as we go through this, could you reference what page number that may be on and the DIM Program that's been, you know, provided (indiscernible)?
A. Surely. If you look towards the last, you know, five pages or so, you'll see Appendix D, the SME review form, and then the subsequent pages are screenshots from that web tool.
Q. So that's starting past what's -- like on page 29?
A. Yes, correct. It's something we're quite proud of, you know. It's a powerful vehicle for facilitating that communication from our group, where we consume quite a bit of data and need to empower folks in the field with that knowledge, both to support their review but, also, to support their decision making around those segments.
Q. In the same package of information you're referencing in Appendix D, there's also a segment that appears to be maybe a GIS

segment, indicating a red-bound area. Can you explain a little bit what that is for us?

A. Sure. So that red-bound area represents an individual risk analysis project. So the length of this one is not specifically characterized on the exhibit, but, you know, it would typically be less than 2,000 feet and would represent the area over which a high-risk segment has been identified. There are little crosshairs which characterize the leak locations, and we also identify ~~service~~ for our field folks the presence of any nearby critical facilities.

A unique aspect that we're quite proud of is, you'll notice in the left side an the top right side you have some critical sites identified. Those are in-home daycares or eldercare facilities operating out of a residential home, so an area that, you know, provides us good context for our risk. This segment does not happen to be aligned with one of those that's framed here. Some powerful information that we're able to consider.

So our field folks will have this to support their review. It's available to anybody else in the project decision-making process. And then for the folks who do leak survey, this is an exhibit that's available as an attachment to the survey record so that they can see the area that they're being dispatched to survey because it was identified as a high relative risk. They can also have the context of what else is around there and the locations of the leaks that we had associated with that particular segment of

pipe through our analysis.
Q. Thank you. So once the operation subject matter experts review and confirm the outputs of the modeling, and this is maybe an example of one of the outputs?
A. Correct.
Q. And I think you said earlier you pass down a number of paths for others to consume. So one of them would be to Tammy's team for consideration for pipe replacement?
A. Correct.
Q. The other would go to Marlo's team for what?
A. Accelerated leak surveys, which would be executed on an annual basis.
Q. Okay. So in the path of -- as this facility works its way through planning for replacement, would surveys be performed on the identified asset?
A. Yes, that's correct. And that's a good point. So regardless of what happens with the replacement decision making, all of the facilities are set up for an annual survey. So should that facility not be replaced in the coming 12 months, it will be, the risk will be managed and the segment will be monitored so that we can make sure that we have a good feel for the condition of that segment.
Q. Okay. Thank you for that clarification. You went through a number of stats earlier related to survey frequencies, and I tried to jot those down. But you said there's assets within Mid-Tex

that are surveyed more frequent than the federal requirements or the state requirements. Could you repeat those again, please?

A. Sure. So if you compare current Atmos Mid-Tex practice to the federal code, we survey ~~in~~ an incremental, you know, ~~in~~ 34,000 miles, about 34, 35 percent ~~of~~ more piping by miles than the federal code would require.

The Railroad Commission of Texas promulgated some rules related to prescriptive survey of assets that exceeds federal code. We comply with those in addition to moving up other assets for accelerated surveys; cast iron being an example. We do cast iron every 12 months. We're replacing it at an accelerated rate, and also feel that an accelerated survey is appropriate for that facility. Our Dupont Aldyl-A piping we survey every 12 months as opposed to lengthier periods that would be inherent to the state or federal rules.

And on the state end, we end up with our practice doing about 10 percent more incremental survey than the state rule would otherwise require, about 13,000 additional miles. So we do put a lot of emphasis on survey, making sure that we know what's going on with the assets, and especially those that have more failures more frequently than others so that we have eyes on those facilities.

Q. Okay. Thank you. I appreciate the additional information. That's all the questions I have for you for the time being. Thank you.

MR. EVANS: Thanks, John.

MR. TOBIN: Do you want to take -- we've been going for about an hour and 15. Do you want to take a 5-minute break? Are you almost done?

UNIDENTIFIED SPEAKER: Yeah, stand up.

MR. TOBIN: If they're almost done, we can keep going.

MR. EVANS: Yeah, we're going -- no, we're almost -- we're not almost done.

(Laughter)

UNIDENTIFIED SPEAKER: I like that bait there. If you're almost done, do you want to --

MR. TOBIN: I didn't want to cause trouble if we're almost done. It'll just give you more time to think of questions.

UNIDENTIFIED SPEAKER: When I stood up, my back wouldn't straighten yesterday.

UNIDENTIFIED SPEAKER: Oh no.

UNIDENTIFIED SPEAKER: We went so long.

UNIDENTIFIED SPEAKER: Went so long sitting in that chair.

(Off the record.)

(On the record.)

MR. EVANS: Back on the record with Andrew. This is tape 2, Ms. Transcriber, or Mr. Transcriber.

BY MR. EVANS:

Q. This is Roger Evans. I would like to continue with some questions I have. I want to go back to some of the tools that are

available for decisions that you may or may not have been part of, but I just want to know if they were using your tools. On the day they made the decision to curtail 300 homes of gas, and then subsequent to that they had the 2800 or so that they curtailed, were there tools, automation tools that are part of your risk assessment world that they were using to make that decision?

A. You know, having been out due to injury and not having been present or consulted during the decision-making process, I don't know that I could speak with confidence to what information was and was not reviewed. I think you're visiting with Jeff Knights later today. Perhaps he would be able to speak to the types of things he had at his disposal to support that decision making.

Q. But when you came back into the office from your injury, did you find out that they had any activities from your peers as far as accessing data for the 800 -- 2800 -- or 300- and 2800-homes curtailment?

A. I'm generally aware that folks looked at whether we had any relative high-risk segments that were in the outage area that was ultimately elected, and the steel service line map sheets and ~~associates~~ associated results related to that were provided by my team to individuals.

Q. Okay. So if we had a similar incident -- I don't want to say similar incident. Strike that one for sure. If we had any sort of an incident where we had a leak, and looking at the interface you have, this web portal, so this is at -- this web portal, is

this available on the trucks?
A. Yes, it would be available on the trucks.
Q. Okay. So is this part of their training that they would get to how to use this particular tool when they go to the Gas City?
A. I don't believe so. I'm not familiar with the training in that level of detail. I could tell you that the folks who are involved in survey and those who are involved in the review of those segments as we mobilize it do use that tool and have been provided with training. We have a website that my team maintains that the web portal is linked to, which has training presentations and things like that available to anybody who would desire to have that knowledge, but primarily focused on our SME reviewers and those who might be executing leak surveys subject to the accelerated surveys which are produced.
Q. Okay. So let's go back a little bit. When this tool is used in the field, let's say it's used for post-accident review of something, right?
A. Okay.
Q. The person that would typically look at this data would be? Who would that be?
A. You know, it's open to a wide number of individuals. So our local -- it would be speculation for me to say exactly who is looking. I can tell you that in the method that we dispatch it for review, it does go through the operations director and supervisor, and they in turn pass it to key members of their team.

So awareness of the tool and, you know, the awareness ~~traded~~ created through the review of the segments and, subsequently, the survey of the segments is -- you know, does spread out among local operations teams.

Q. Okay. So let's go back even further. Let's say that I am a service tech.

A. Yes.

Q. And I'm the first on scene in the neighborhood and I address, perhaps, the grade 1 leak that's in the southwest corner of that property where the 300-home area is, right? Can I, or could I, or would you think that that person who addressed that grade 1 leak would go to this system here, this web portal to understand more about what's going on? Is that in your thought process that that is available to that person and that person would actually utilize this information? Or his boss or a supervisor or a manager, would that be the person who's more likely to look into this level?

A. I would expect probably someone up the leadership chain. I would not expect that a service tech would be pulling up that system specifically. He might have awareness of the presence of that segment through different means and representations in our GIS system. I don't know that he would get to that web portal page specifically. It's an interesting thought. We've not pursued that approach to this point, but it would be an interesting thing to explore.

Q. Yeah. I'm just curious about that. So the response time in

a truck, is it as long as the person has Wi-Fi, it's just like assessing ibm.com or whatever, it pops right up? The response is fairly decent, you would think?

A. You know, I don't know that -- I don't have a good feel for the connection speeds. I do know that it's a cellular data connection. It's a little bit better than what you would experience with your iPhone or your mobile device with the technology that's in there.

Q. Okay. And one of the things that I was really interested in is, and I don't see a tab for it, which I'm wondering about is, I didn't see a tab for reports. Have you thought of having a report, standard report from --like, if we were to imagine this is all of Dallas, this table, and I want to say this particular table I'd like to know, because I have this address, maybe, in this -- on this table, right?

A. Okay.

Q. What's the leak history for that little section?

A. Okay. I think I see your question. So what's not -- so that is the actual form. The system that houses the form does generate reports where you can filter down to your area of responsibility and you can review those segments as listed and see what is present in your area. You can look at individual segments to understand the leakage and clamps and the collateral information that caused those segments to be considered as high risk. It's stored separately in our compliance management system.

You can run reports based on jurisdictions, map sheets, and other things like that, where you can see leakage that's constrained to an area as small as one of our map sheets or as broad as a district or a city or town.

And there's also dashboards that, through a complementary web portal, through the same ecosystem of applications, where folks can go in and at a glance see their leaks by grade, you know, how soon those will be out of criteria, and a variety of other compliance-centric summary information that most of the folks go to on a regular basis. And they can see reports about our surveys that have been set up due to relative high risk. They can see those upcoming surveys through that system, as well.

So there's linkages between all of these things through different alphanumeric keys and different identifiers that would help you navigate from one system to another.

Q. So as an example, if we were talking about this table and this neighborhood and we have three phone calls maybe at that end of the block, this end of the block and the middle of the block. Within 2 hours, we have three people reporting a problem, right? When you have something like that where it appears, on the surface, to be a global issue, right, of some sort. Who knows, it could be soil or whatever you want to call it, but there's a couple of systems you're basically saying that even before the person goes out to that area -- well, I guess they won't look at any of this until they've gone out and checked that area out,

correct?
A. I'm honestly not sure. It might differ by person. I'm not sure about the initiating process when a tech starts to roll his truck.
Q. Right. Well, what I'm wondering about is -- and I'll just ask the question. I'll make the statement and not ask any question.
A. Sure.
Q. I'll just make the statement: Why do they not use your tools before they go out so they know what they're up against when they're looking for leaks, multiple leaks in the same area to kind of get an idea of, hey, this is a -- this has a -- this many leaks from this period, this many leaks in this period, I'm in an area where we've got quite the activity.

They would have that in their mind before they even got to the -- drive to the neighborhood. And that seems like a part that's missing to me; that if you have all this data and you have service techs going out to these areas, why won't they access the data as a requirement to understand what they have, what's the history of where they're going?
A. It's an interesting thought. And, you know, we do, out of our group, have a lot of passion about empowering people with data and information that'll help them do their job best. It's something worth exploring. I would tell you that the same system that they enter the leak data ~~into~~ in to and use as the basis for their

work has similar information that will be at their fingertips, reports of leakage by map sheet, lists of individual leaks with addresses referenced in those listings.

So we're a reflection of that information and maybe a consolidation of some of that information, but they do have access to the same information through some of the tools that they're using to manage that work directly ~~to date~~ today.

Q. All right.

A. Something more and better we could do them -- for them in that regard, it's an interesting thought.

Q. On the surface, I would like to see that as a safety initiative that you folks do that and then you write it down as a safety initiative so it can go on the report that since this accident, we've changed business, we are now doing this. And I think that -- the fact that you have this available and the fact that the service tech does not religiously look at this prior to going to a scene is just -- it's low-hanging fruit for information.

MR. TOBIN: Let me just kind of sort of object. I don't know that there's any testimony that they don't look at it.

MR. EVANS: Okay. Well, I would like --

MR. TOBIN: You haven't asked the right people.

MR. EVANS: Doc request to John. Do you use, do the service techs use this information, I guess, from the -- what's this called again, your web portal, right?

MR. McDILL: DIMP web tool.

MR. EVANS: DIMP web tool. Okay. So if we can find that out. Good point. Okay.

MR. TOBIN: Or other similar data.

MR. EVANS: Yeah, or other similar data.

UNIDENTIFIED SPEAKER: Yeah, that's what I was going to suggest.

BY MR. EVANS:

Q. All right. Okay. Thank you so much for that. That's very interesting, by the way. The phrase you used was failure families, which is interesting to me, to hear those two words together. The failure families that you have identified, is that the list that's in this? Is that this -- in the DIMP part or is that a different section?

A. That would be a different section. If you look at -- bear with me one moment here.

Q. I just want to reference this again (indiscernible).

A. Sure. Sure, sure. Failure family is described, I believe, in Section 4.5, Likelihood of Failure, and that's on page 18, the third paragraph down.

Q. Okay. Page 18. Third paragraph. Okay, good. Thank you for that.

A. You're welcome.

Q. The other part that's interesting about your whole -- and believe it or not, I actually have done a lot of software in my

life, so I've written specs and I know a good bit about software just through the years, a little kind of sideline thing that I did when I left piping. One of the things in software design is the, you know, where you say this is frozen data. You must use that phrase, frozen data, all the time. We're going to freeze changes because now we're going to run our risk model?

A. Yes, we do take a snapshot of data, you know, circa a certain point in time to begin the efforts to actually analyze a cohesive set of data from a particular point in time.

Q. Okay. So once your data is frozen, then do you allow -- you continue to allow the addition of updates from the field and all that, but that would be another revision, right? So you're working with that one snapshot that you used to do your risk model?

A. For a given annual risk analysis effort, and then for our purposes, subsequent information that came in, changed, or was otherwise adjusted would be picked up during our next annual routine risk analysis.

Q. Okay. That's what I was wondering. So you have a date cutoff period for your input of data, and then once that's done, it won't get updated till the next annual update?

A. That's correct, for the purposes of the work that my team does.

Q. Okay. Okay. Right. So when the data -- we touched on this yesterday. I just want to get a sense of this. I know computers

are fast and things work faster than they ever have, probably, in our lives, but when you have someone who wants to take a piece of information from the field and do an update, say, okay, this pipe is not 2 inch, it's 4 inch, and now that 4 inch has to be sent to you. From the time you get that data to the time that actually makes it into the system, what's the timeframe?

A. So you're talking about the time that it would be available for inclusion in a risk analysis?

Q. Or for -- let's say you're going to do -- you're going to send someone out on another section of that line to do something and the person looks at the records and says, oh, that's -- this says it's 2 inch.

A. Okay.

Q. But he just updated it to be 4 inch, but how long -- what is the -- how does that work?

A. You know, that is a process that's under Marlo Sutton's organization although we had hands in it, initiating it. I believe that ~~it's consistent with our as-builting process of~~ for a map data correction it's a 4 to 6 week turnaround time, but that would be better confirmed by somebody who is part of that organization.

Q. Four to 6 weeks?

A. From when the person in the field provided the information that there was an opportunity to improve the mapping data and the pipe facility data.

Q. And that's weeks, though, correct?

A. Yes.
Q. Okay. So is there a -- I know you said you have a contractor that was doing some subtle verification of your data points and all that type of thing.
A. Yes.
Q. I took it down in my notes. But, so, if let's say we have this gentleman right here and he just went out in the plant and he -- or went out in the area and he says, oh, it's 4 inch, not 2 inch, right?
A. Okay.
Q. Is there some verification process between when this person makes that change to when you get it? Or are those changes, the guy in the field says it's 4 inches, I guess we should believe him?
A. I may be a little bit out of touch from how that's managed currently. As we initiated that process, it would be typical to -- for the requestor ~~(indiscernible)~~ to be directly contacted. There would typically be a request for a record that substantiated the change. But, you know, we -- if there's information which is believed to be more accurate that would provide better opportunity for operations folks to do their jobs, you know, it warrants further investigation. If they've seen the pipe with their eyes, maybe you can't find a paper document that supports it, I think the situation varies depending on the level of information that individual has and the extent of the system that that individual

observation could be applied to.
Q. Yeah, I can imagine a tech saying, that's 4 inch, I saw it with my own eyes, so I would probably take their word for it because they're on that stuff all the time.
A. There's information in the GIS which serves to help at least lend insight into the extent of the facility to which that information might be applicable. But again, it's not my process today, so I --
Q. Okay. So the other -- you talk about shapefiles and I can imagine what that is, but I'd like you to tell me what that is and describe a shapefile for me.
A. Sure. So it's as simple or as complex as a database that has geospatial information as part and parcel of the way that it's architected. So you know, a database without the geospatial component might be a database of our leaks. You incorporate latitude and longitude and actually project them into a map-based format and you have information that can be delivered in a shapefile, that can be loaded into a variety of applications that can consume data like that. There's quite a few on the marketplace and you can load it into things like Google Earth or Google Maps. It's fairly commonplace.
Q. Oh, a Google Earth shapefile is the same thing as what your shapefile is?
A. Equivalent.
Q. Equivalent.

A. There's more capability with a shapefile than there is with a Google KMZ or KML file.
Q. Oh, okay. Okay. So the shapefiles, let's say looking back at this table being a segment of the city of Dallas, you could generate a shapefile just for this boundary?
A. Yes.
Q. Okay. Okay. Then you talk about map sheets, and I know I've seen map sheets. What are the sizes of your map sheet as far as the scale that you use here?
A. I believe a typical map sheet is about a quarter mile by a quarter mile or so.
Q. Okay. Yeah.
A. In our Dallas territory, it is not uncommon for the map sheets to follow major roadway and arterial boundaries. So there might -- there's some variation over the broader service territory.
Q. Okay. So from a software standpoint, if you were looking at a map sheet, are there -- on the physical side, is there data that is extractable from that one quarter by quarter section?
A. It is a geospatial boundary so you can run reports and queries against the contents of that geospatial boundary.
Q. And could I take that to ~~DEM~~ DIM Pro or what's it called, ~~DEM~~ DIM -- the portal? Has the portal -- could it be enhanced to do a quarter mile by quarter mile?
A. So you're talking about the amount of piping segments that

are --
Q. Yes.
A. It would be technically feasible to broaden out the amount of facilities that are packaged up. All facilities within a map sheet are grouped into individual segments of pipe and are assessed. You could also group those or do different things with them. We find that the granular focus helps us see where segments of pipe that are particularly exposed to, you know, significant amounts of leakage compared to their peers, significant amount of clamps does help us hone in on the areas of the highest interest.
Q. Okay. Okay. Do you have a -- I think you have this but I just want to make sure I ask the right question. Do you have metrics with regard to material type, leaks per X unit for a given area? Like, could I say I want to know bare pipe -- or let's just say steel -- let's use cast iron as an example. Cast iron pipe in this little segment of the city, how many leaks I've had per hundred feet or thousand feet or -- do you have something like that?
A. We look system-wide, at ~~least~~ leaks per mile information. It's possible to look at it in a more finite unit. The system-wide performance numbers are something that my team looks at.
Q. But have you ever thought about making the information available to the tech or someone -- again, going back to before I go out there, I'm a service tech, I would like to know X, Y, Z about this property. And, you know, have you ever thought about

saying, okay, this property has cast iron, in the past it's got 19 leaks per hundred foot, or per thousand feet?

A. I -- go ahead, sorry.

Q. Have you ever thought of that? I mean, is that -- are you doing that?

A. You know, it is not something that my team is doing. I don't know that I could speak more broadly about what folks in our compliance organization might be looking at.

Q. Okay. I'm just curious if there were metrics that were used based on your leak history with footage that could get to the service tech level for his decision-making process.

A. It'd be an -- it's a good thought. It'd be something interesting that could empower him with some knowledge.

Q. Okay.

A. Our Optimain system does incorporate a ratio of failures to the length as a part of completing its calculation on a segment-by-segment basis. But in the terms that you're speaking about to map sheet boundaries or otherwise, no.

Q. Not that you would be familiar with this, but I'm curious. I spent 5 years at the Chemical Safety Board and one of the things that API started was this standard for indicators. Have you ever looked at that or are you familiar with the fact that there -- how the refining industry is using indicators?

A. It's possible I'm familiar with the concept but not by that name. If you could elaborate?

Q. Yeah, I wish I -- API-750? I don't know the number. It's been too many years since I've messed with it. But there was an API standard for indicators. It's a very good document that allows organizations to address issues based on indicators. It's an excellent document. It came as a result of a recommendation from the CSB. That's how it was generated. But it's a great -- I think it's a fantastic tool. But you've never heard of API indicators for anything you've ever done in this company, is that correct?

A. You know, in the context of performance metrics and KPIs and things like that, we do look at things like that if that's a similar concept to what --

Q. Yeah, a similar concept.

A. -- what you're describing.

Q. Right. I mean, your graph is a pseudo -- someone could take this and build indicators off of this very easily.

A. I see what you're saying, yes.

Q. Very easily. You could have some corporate indicators that say X, Y, Z because of this and make decisions based on those indicators. It's basically taking trends and things and building indicators that help you to make better decisions in your work. API does a really good job of -- it's a very small -- I think it's maybe less than 10 pages, the document.

A. I'll have to go give that a read.

Q. Yeah. Okay.

A. Thank you.
Q. What impact do you have with regard to the seven other states as far as do you -- are you like a leader that you share your system, or do they share their system with you, or just in a nutshell -- I mean, I know you folks have, Mid-Tex has their own kind of way of doing business, but are there factors of that business that you share, or they share with you that have brought you to where you are today with the way you manage DIMP?
A. Over the years, we've all collaborated on approach, tools, methods. We're currently exploring tools available in the marketplace. You know, our tool was implemented a number of years ago that we're using, as was the Enterprise tool, and the marketplace has evolved quite a bit since then. So we're seeing what is out there, and our own vendor has enhanced their product.

Years gone by, we talk about some of the data matters and opportunities for improvement, techniques to improve that data. We share with our partners some of the work we've done around the critical sites and structures and the methodologies through which more broadly we could go through that should there be an appetite for those types of things. So we are -- we have the privilege of focusing on this as a team quite a bit.

And we are by no means experts among everybody in the company who executes this work as a practice, so we do take a lot of good ideas and cues from folks who have this same responsibility in those other states through the collaborative dialogue that we

have. And we'll meet face to face a couple times a year, sometimes three or four times a year to get together and talk about matters centered on distribution integrity management.
Q. Okay. So as an example, though, this particular set of graphs, very interesting graphs. They're called All Leaks by Cause and the Bates number is 1635, for my own record. Would this document here be something that the seven other states would complete and they would -- you'd be able to compare notes in a meeting, get together and say, hey, this is where we're at with this versus you folks? Is that something that would routinely be done?
A. Everybody does produce those same metrics, I believe. At times when we have got together, we've looked at different metrics and how they present across the different areas. The management of the metrics is the responsibility of the individuals who have ownership of the process in their states and jurisdictions.
Q. Okay.
A. But there is comparing of notes and, you know, discussion of how folks have positively impacted some of their figures.
Q. Okay. And do you do cross-state auditing where people from over there come over here, you go over there and you audit what they're doing, like the overall concepts? Like, would you look at their risk definition model versus your model? Are you looking at how -- you know, would they have this kind of report like you have, your portal? Is that type of thing -- are these things

shared?
A. We do all share and we do all visit over the different areas where we're respectively excelling to try and bring more of that into focus and common practice. As to audits, not an audit, per se, but certainly information sharing and collaboration, communication, and dialogue.
Q. Okay. Okay. That's all I have.
MR. McLAREN: Just a couple follow-up questions.
MR. EVANS: Yeah.
MR. McLAREN: This is Chris McLaren. Thank you, Roger.
BY MR. McLAREN:
Q. I was just looking at some of the KPIs that are provided on publicly available websites developed by the Pipeline Stakeholder Group that produced some. They provide average leaks, running trends, and things for operators and nations. And I think there's a lot of KPIs available, and that's a great topic, especially as we can drill down into a more granular level.
When we look at the information provided today by Atmos, a lot of these are the DIMP-required performance metrics that all divisions would have, and I think some analysis and understanding of -- of course, there's a lot of environmental factors, a lot of local threat factors that change how the divisions are going to react to data individually, and I think that's part of the performance-based program, the strength of it that DIMP is such that local entities can take local mitigation measures.

But I think a lot of the cross-auditing function is -- AGA that you all are a member of has done a lot with -- I don't know if you all have been involved with their cross-functional audits of different management system programs. And I think that the strength is always in having the internal employees of the operator perform those rather than consultants. Because then the information is brought back in-house, and that's really where the power is, is in the information, the knowledge.

Along those lines about KPIs and whatnot, we talked about some of the leading things that might have said is this -- why did this occur here, were there any predictive analytics that we use. And in that, what was the risk ranking of the main where the -- in the alleyway in the center of where the three incidents -- or the singular incident and the two unknown causes occurred, along that alleyway was there a risk ranking? Has the red box been put around it and said this is where we find it in our data, and were there any lessons learned from if that work had been performed on what we were seeing in that data prior to the accident?

A. So we do have a risk result for the segment that's generally bounded by Largo, Marsh, and then Durango and Espanola. The cumulative score for that segment was about 8, just a little shy of 8. Now, for context, our threshold for high risk, relative high risk as established through statistical methods was 89 for the active period in that given assessment period.

That particular segment had -- there was one leak that had

been associated with that segment. It was attributed to a failure of the joint, and it was a leak that was not very recent. It was an area of high population density. It was not near a church or a hospital or a school or a nursing home, as you all know from knowing that area.

So it was safe for the one leak that was present on it. It was not presenting as dissimilar from our broader steel infrastructure. There was not information associated with that segment or entrained with that segment, performance based or otherwise, which reflected -- as reflected in the risk score that gave reason to believe that the circumstances that unfolded were likely to occur.

Q. So I've got a couple of follow-up questions to that one. You may not be able to answer because of the preliminary nature of the findings. But when I look at the picture I see a 2-inch main with what looks like to me to be a circumferential crack. Would that be described within the failure types as a break?

A. We can look and see.

Q. Typically?

A. So if we look at that chapter, there will be a chart for break, and we would be calling that a --

Q. On what page?

A. I'm looking here. And forgive me, I want to make sure we give you the right -- let's see. And there are a couple charts to reference.

MR. EVANS: Page 26, perhaps?

MR. MARSHALL: Yeah, across 24, 25 and 26 are the sections that I'm reviewing. It is more typical in the way that our mapping occurs, you know, leak causes to fail types and thereon for a break to be associated with our cast iron pipe in the way that the mapping occurs.

So it is a -- you know, not having seen the final reports or having a lot more detail in front of me, we're always looking at how the risk model works and ways to consider an improvement or enhancement, or just make sure that it's providing us the right information. And in this case, it would be no different than any other case. We would continue to strive to do that as information about this specific situation came more into focus.

BY MR. McLAREN:

Q. So a circumferential crack is something that you would typically see on a cast iron, is what you're referring to, and am I to understand that a break would not typically be associated with a steel, coated steel main?

A. I don't believe -- not having all the information in front of me, I don't -- I believe it is more frequent for our cast iron to be subject to breakage than our ~~steal~~ steel assets.

Q. Okay. And then to -- and thank you for that reference to the associated tables to support the cause and type definitions. So 89 during 2017, when you performed your analysis, was sort of a criteria point that you used to differentiate between high

priority and non high priority items?
A. That's correct. Yes.
Q. And so, really glad that you're able to define the criteria. Could you speak a little more to that criteria, specifically on the consequence side? It seems like you're able to, in that criteria for your number, drive more of the consequence value in because what you mentioned was that this area did not have any of the identified sites or, in DIMP vernacular, the transmission IM speak. Maybe that could have been why?
A. When you compare it to other segments that are presenting as relative high risk, it does have a lower consequence value as established in the way that our tool operates. Other segments that are at the upper tiers of risk are a lot of the times near hospitals, churches, schools and nursing homes. Now, a segment with a service performance history, lots of leaks and clamps, will also be reflected in those results absent the presence of a hospital, church, school or nursing home.

So in the process of tuning the tool to balance all those considerations appropriately, you'll have, I guess in terms you're familiar with, low likelihood/high consequence that will arise sometimes, and also high likelihood comparative to a church, a hospital or a school by lower consequence as, you know, calculated by the tool.
Q. Absolutely. You did mention that this segment also probably suffered from a low -- or had a low probability score because

there was only one joint failure on that segment in the alley?
A. Yes, only one in that section.
Q. And that had been some time ago?
A. Correct.
Q. I'm just kind of going down to look at some of the leak data that you had provided us by year, excluding excavation, and -- okay. Kind of the last question I have is based on your expertise. Within this area of Dallas, we can go 1 mile, 5 miles, what are the three most significant threats to the integrity of the system in this area on the threat side, in your opinion?
A. So we do typically look at that more globally, on a system-wide basis. Predominantly being steel in this area, you know, I would offer to you that excavation damage is far and above the most prominent threat acting across the whole system. Second to that, corrosion.

We do have quite a bit of leakage that as you review the annual report related to stripped threads and gaskets and O-rings, things that provide a lot of leaks but don't necessarily result in unfortunate incidents of the type we're discussing. And we do see some material ~~in~~ and joint failures across our steel assets.

MR. McLAREN: Thank you, Roger.

MR. EVANS: Okay. Jim?

BY MR. COLLINS:

Q. Jim Collins, Railroad Commission of Texas. I had one clarification that kind of needed -- so the DIM Program mainly

focuses on the mains and any service lines installed after 2011, is that what I read in your curriculum?

A. So the way I would describe it is the DIM Program comprehensively covers all of the efforts, both based on risk analysis and the operator judgment, and exclusively ops mobilized pieces. As to the part about service lines, so we analyze the service lines through a separate modeling exercise. So the bulk of what's described in there is described on the mains process, and then there is an alternative methodology that's utilized for service lines that's appropriate for the way that data and information is available.

Q. Okay. So the main is the Optimain?

A. That's correct.

Q. What's the service?

A. The service is an in-house developed model that we utilize.

Q. All right. And are those -- the service part, the in-house part, is it reflected in the graphs that you gave us?

A. The positive benefits of the actions that stimulate from running that risk model and doing things about it, mobilizing replacement activities and things like that are reflected in the metrics.

Q. Okay. Thank you.

A. You're welcome.

BY MR. McDILL:

Q. John McDill with Atmos Energy. Just to kind of reconfirm on

some of the discussions a little bit earlier, we -- as you do the analysis, you're really -- the outcomes of that for the relative higher risk segments that are identified, those are very granular in nature, correct?

A. That is correct.

Q. Down to segment levels of up to what distance?

A. Up to, typically, 2,000 feet or less.

Q. Right. And just remind me, approximately how many miles of pipe does Mid-Tex operate?

A. It's about 31,000 miles of pipe.

Q. Okay. And so the outcome of the analysis of data that goes in through leak discoveries or leak management programs, other data that's collected through the field, all that goes into the analysis of the complete mileage applied?

A. Yes, it does.

Q. And reveals granular levels of risk, correct?

A. Yes. And that's the intention.

Q. Okay. All right. Thank you.

A. You're welcome.

MR. TOBIN: Before we finish, there was just one thing that I just wanted to check with the witness, if I could, to make sure that nothing was misstated?

MR. EVANS: Yes.

MR. TOBIN: If we could just --

MR. EVANS: Off the record.

MR. TOBIN: -- stay off record just for a moment? You can keep the recorder running. We'll be right back.

MR. EVANS: We're off record with Andrew.

(Off the record.)

(On the record.)

MR. EVANS: Back on the record with Andrew Marshall.

MR. McDILL:

Q. John McDill with Atmos Energy. Andrew, just one clarifying question with regard to the dimensions, approximate dimensions of the map sheet. I think you said earlier a quarter mile?

A. Yes, that's correct. I would want to correct that to more accurately reflect that they are about a half mile by a half mile as opposed to a quarter mile by a quarter mile.

Q. Or do you know approximate footage those might be? I mean, there may be variable dimensions based on where they're located, but is it approximately -- well, a half mile by half mile is 2500 feet or so?

A. 2500 feet or so by 2500 feet.

Q. Okay.

A. Would be about the typical size.

Q. Okay. And there are some variability, as you mentioned, because it may be bound by some streets or --

A. Yes.

Q. Okay.

A. Correct.

Q. Great. Thank you.

A. You're welcome.

MR. EVANS: This is Roger Evans. One last thing that I have is -- and this is -- I can just image this during the page turn. I want to capture exactly what we discussed about how this line is risk ranked in the alleyway. You gave it a score. It has a history. There were no hospitals, schools, nursing homes around it.

I would like you, as a document request, if you could supply that story so that story can be captured accurately for the report, for the factual and the report. I want that to be -- I don't want to use my own words and my own notes. I'd rather have you folks at least get -- state those facts for me. Everything you know about that alleyway line.

MR. McDILL: State the facts that went into the calculation?

MR. EVANS: Yes.

MR. McDILL: Okay.

MR. MARSHALL: It'll be equivalent to what you're pointing to, Jim.

MR. EVANS: Yeah, if we can do that, that would be wonderful.

MR. McDILL: Okay.

MR. EVANS: And that is all I have. Is there anything else you'd like to say, sir?

Anybody else have anything else?

MR. COLLINS: No questions.

MR. McLAREN: No questions.

MR. McDILL: No questions.

MR. MARSHALL: Very good. I appreciate the opportunity to visit today and share with you some of the great work that Atmos is doing. You know, we've learned a lot by the great publications that NTSB has put out, as well as PHMSA, and it's helped us become even more safe and more of a prudent operator than we are today, our industry peers who participate through SGA and through the AGA.

And, you know, one of the things that I think is the hallmark that we do in this area specifically is around our company data and information. You know, we have invested a lot, quite a bit of money and quite a bit of man hours in trying to make sure that we have the best data available for the risk analysis approaches, as well as our folks in the field so that they can make the best decisions about the local operations and maintenance of the system. When you think about the matters of conflation and getting the mains in the right place, making sure that our leaks can be appropriately associated with our mains, and working through the processes to make sure that whoever needs it, for whatever purpose, they have, you know, current, timely, accurate information in order to execute their work.

So I look forward to seeing you all's recommendations and report and appreciate the chance to visit today.

MR. EVANS: Thank you so much. That completes the interview.

(Whereupon, the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	NATURAL GAS-FUELED EXPLOSION OF RESIDENCE, DALLAS, TEXAS FEBRUARY 23, 2018 Interview of Andrew Marshall
ACCIDENT NO.:	PLD18FR002
PLACE:	Plano, Texas
DATE:	April 25, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Lisa Fuerstenberg
Transcriber