WEBVTT

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00:00:02.020 --> 00:00:20.390

Rae Barton: Welcome everybody to this week's redlist, webinar. I am so thrilled to be joined by a marvelous Mr. Terry Taylor. He has been in mining for 35 years, and he's been a consultant for the past 10 years. He has a wealth of knowledge regarding reliability programs and

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00:00:20.689 --> 00:00:32.139

Rae Barton: help. It has helped many, many businesses get their reliability program set up and running and done a lot of consulting in that area. So we are so happy to have Terry here today. He is a wonderful partner and person

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00:00:32.380 --> 00:00:40.625

Rae Barton: before we get started. I wanted to make sure that we invited everybody to attend redlist. Attain. This is our yearly

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00:00:41.200 --> 00:00:43.489

Rae Barton: Customer and Partner Conference.

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00:00:44.050 --> 00:01:11.249

Rae Barton: and of course, if you're not a customer or a partner, yet you can also feel free to attend. It is a really wonderful event. It is in Provo, Utah during October 13.th Through 15th you can come network, learn from a lot from our workshops, and see kind of where the future of software is going in the reliability area. So if you'd like to attend that, feel free to join, look@go.get redlist.com forward slash attain 25.

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00:01:12.120 --> 00:01:23.150

Rae Barton: So we're gonna start our webinar today, Terry, I'm gonna pass the baton over to you to get started. And please, yeah, I hope everybody enjoys. Thank you for doing this.

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00:01:24.830 --> 00:01:26.236

Terry Taylor: Thanks. Ray.

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00:01:31.090 --> 00:01:39.420

Terry Taylor: so how? How effective is your current Pm program? And what what's really interesting

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00:01:39.620 --> 00:01:45.999

Terry Taylor: is that you know, it seems like everybody has a a Pm program, and

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00:01:46.120 --> 00:01:55.589

Terry Taylor: sometimes I get a call and and clients go. Well, we're having all this reactive maintenance. But we have a Pm program in place.

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00:01:55.840 --> 00:02:01.879

Terry Taylor: and it's you know, you could have a Pm program in place.

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00:02:02.420 --> 00:02:06.439

Terry Taylor: But you have to ask yourself, how rare is it working?

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00:02:06.960 --> 00:02:36.070

Terry Taylor: What is there something wrong with it? Are we? And I have seen so many different things that that can be problematic when it comes to your Pm. Problems. But if you're the real key is if you're having too much reactive work, I mean, that's a that's just a big red flag that says, Okay, if I've got a Pm program. I need to go see what's going on with it. It is. It is almost step one.

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00:02:36.200 --> 00:02:40.610

Terry Taylor: If you're if you're having a lot of reactive work. Okay?

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00:02:46.910 --> 00:02:49.220

Terry Taylor: So the

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00:02:50.420 --> 00:03:02.111

Terry Taylor: to define a Pm program there, I'm gonna step. Take a step back a little bit. There's there's 2 parts to it. There's

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00:03:03.170 --> 00:03:12.729

Terry Taylor: There's a there's a condition monitoring part, and there's an essential care part. And the essential care part is.

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00:03:13.660 --> 00:03:29.669

Terry Taylor: it's like it's like taking care of your car. That's kind of the best analogy I know. You know. You keep the right air pressure in your tires, you rotate your tires, you change your engine oil when you need to change the engine oil

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00:03:30.243 --> 00:03:57.090

Terry Taylor: even cleaning your car. You know it doesn't done your car run a lot better after you clean it. If you ever want to sell your car, go detail it before you sell it, because you may change your mind. It just seems to be better after you clean it. But all of those things are part of what we call essential care, and our equipment takes the same thing. It's things you have to do

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00:03:57.240 --> 00:04:00.890

Terry Taylor: that are essential to the life of that equipment.

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00:04:01.820 --> 00:04:02.519

Terry Taylor: And

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00:04:03.540 --> 00:04:16.610

Terry Taylor: the one big thing about that is you just wanna make sure you do those things right, because if you do them

wrong, it can create big problems. I'm gonna talk a little bit more about that in a minute.

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00:04:16.839 --> 00:04:41.170

Terry Taylor: But the other. The other side. The other thing that defines a Pm program is condition monitoring. So the the condition monitoring is really the big money maker, because this is where you want to detect problems early. So there's and then there's 2. There's 2 sides to condition monitoring. There's a subjective side

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00:04:41.700 --> 00:04:56.850

Terry Taylor: which is, look, listen, feel, and smell. And then there's the objective side. And that's where you use some kind of technology, some tool to do the condition monitoring

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00:04:56.870 --> 00:05:13.880

Terry Taylor: and the big. The big deal about that is that those tools usually will sense a problem, determine. You have a problem much sooner than our than our subjective look. Listen, feel and smell.

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00:05:13.990 --> 00:05:15.380

Terry Taylor: Okay, Gray.

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00:05:18.540 --> 00:05:19.690

Terry Taylor: So

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00:05:19.930 --> 00:05:44.070

Terry Taylor: to explain this a little bit more, I use the Pf curve so I don't know. Maybe you've seen a Pf curve. Maybe you haven't. But a Pf. Curve gets its name from the P. That you see in the middle of the slide. That's the potential failure point. That's when something happens to a component.

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00:05:44.280 --> 00:05:45.799

Terry Taylor: It could be

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00:05:46.300 --> 00:05:56.800

Terry Taylor: it could be some kind of a it could be an over speed. It could be an overload. It could be a lot of things. But this is the point

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00:05:58.100 --> 00:06:03.179

Terry Taylor: when that component starts to fail. Now.

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00:06:03.610 --> 00:06:09.360

Terry Taylor: difficult to determine exactly when that P point is.

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00:06:09.360 --> 00:06:34.300

Terry Taylor: But you want to determine it as soon as possible after it happens, the F is functional failure. So the F is when you actually get down to the point where it's smoking. It's hot. You can hear the noise. I mean, it's that's where that react that you're getting into that reactive maintenance

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00:06:34.620 --> 00:06:36.550

Terry Taylor: part of the Pf. Curve.

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00:06:36.670 --> 00:06:38.090

Terry Taylor: So

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00:06:38.540 --> 00:06:47.610

Terry Taylor: back up again, and and you see the green installation point that resistance to failure and part of that is determined

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00:06:47.860 --> 00:07:07.769

Terry Taylor: how well you install a component. If you do things that we call precision maintenance, that you do your alignments correctly, that you do the right torque values that you do the right torque sequence that you install things correctly. You put the right oil in it. You put clean oil in it.

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00:07:07.950 --> 00:07:23.029

Terry Taylor: You can move that installation, point up or down that that axis depending on how well you put that, how well you do the job of installing that equipment, and that's called resistance to failure.

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00:07:23.300 --> 00:07:24.640

Terry Taylor: So

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00:07:24.710 --> 00:07:53.439

Terry Taylor: we install a component there and then we start to run that component. And so now it's starting on its life. It's going down the down the road it's producing, it's turning, it's twisting, it's moving. And we're all that time we're doing our preventive maintenance. We're doing these things. The essential care. We're doing the things condition, monitoring wise. It's exactly what you do with your car. Same thing.

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00:07:53.800 --> 00:08:05.673

Terry Taylor: And in the in the condition monitoring part, you're really trying to determine that potential failure point and the

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00:08:06.200 --> 00:08:13.880

Terry Taylor: and whenever. And so there's a lot of testing that goes on with the Pm program. And you go, well, we're not finding any failures.

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00:08:14.120 --> 00:08:16.340

Terry Taylor: Well, that's good.

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00:08:16.730 --> 00:08:26.630

Terry Taylor: But what some people do is they start to back off of their Pm. Program because they're not finding failures. And it's it's the worst thing you can do.

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00:08:26.740 --> 00:08:44.949

Terry Taylor: because eventually every everything fails. Right? So you hit that potential failure point. And hopefully, soon afterwards, you're doing some kind of proactive testing. And you determine, hey, we've got a problem.

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00:08:45.630 --> 00:08:55.250

Terry Taylor: And and we'll just take all analysis, for instance, excuse me, analysis.

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00:08:55.820 --> 00:09:08.170

Terry Taylor: and we're doing that all through the life. If this contains oil, you're probably doing oil analysis all through this IP interval. But and you're not really seeing any change. But all of a sudden

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00:09:08.510 --> 00:09:11.910

Terry Taylor: you you send them a sample and there's a change.

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00:09:12.180 --> 00:09:21.309

Terry Taylor: That's what you're looking for. That's telling you. Something has changed in that component something's going on.

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00:09:21.520 --> 00:09:26.379

Terry Taylor: Now you're on that that Pf curve, and

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00:09:27.510 --> 00:09:35.760

Terry Taylor: may, you know a decision may be made to ratchet up the frequency of oil testing, because.

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00:09:35.890 --> 00:09:42.450

Terry Taylor: you know the 1st question that most people ask an analyst

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00:09:42.640 --> 00:10:06.870

Terry Taylor: who's saying that's reporting that we've got a problem. The 1st thing we're going to ask. Well, how long have we got? Well, that's the 1 million dollar question, I mean, no one really knows. How long have you got till it reaches that functional. Excuse me failure. So you ratchet up the testing so you can tell what the slope on the curve is.

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00:10:07.310 --> 00:10:08.480

Terry Taylor: Oh.

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00:10:09.510 --> 00:10:16.970

Terry Taylor: and and I use a pretty good example out of mining where we where we did exactly that. But

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00:10:17.240 --> 00:10:23.459

Terry Taylor: but this Pf. Curve, the longer you can run that P point out

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00:10:23.660 --> 00:10:33.630

Terry Taylor: you're just making money on that component. You get longer life on your component and and the

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00:10:36.710 --> 00:10:41.500

Terry Taylor: and the thing that's gonna help you get to there is that essential care

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00:10:41.650 --> 00:10:55.299

Terry Taylor: that you're doing those things right. And you're going to get maximum life out of that component. But eventually you will reach that P point and the condition monitoring will help you figure out where that is.

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00:10:55.400 --> 00:10:58.269

Terry Taylor: and the and the other thing about

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00:10:58.720 --> 00:11:09.150

Terry Taylor: that P point. And finding that problem early, detecting the problem early. Now you give your planners a chance to plan the repair

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00:11:09.360 --> 00:11:19.600

Terry Taylor: and schedule the repair before you reach functional failure. So that's just that's saving money, and it's safer

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00:11:19.930 --> 00:11:35.930

Terry Taylor: if we get into that reactive maintenance part. I mean, it's it's costly. And honestly, people take chances. People take risks when they do that kind of work. It's just. It's totally unsafe. I work for

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00:11:36.390 --> 00:11:39.669

Terry Taylor: 2 different mining companies

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00:11:40.230 --> 00:11:52.459

Terry Taylor: that we set national safety records and and reliability wasn't the only thing we were doing. But it was a big component in us reaching those goals.

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00:11:53.500 --> 00:11:54.920

Terry Taylor: Okay, right?

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00:11:59.310 --> 00:12:01.940

Terry Taylor: So here's here's essential care.

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00:12:04.770 --> 00:12:10.639

Terry Taylor: This is, those are those are some of the components with essential care. Cleaning

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00:12:11.260 --> 00:12:14.059

Terry Taylor: number one, you want the equipment clean.

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00:12:14.831 --> 00:12:21.249

Terry Taylor: And and for several reasons. I don't know if you've ever heard this or not.

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00:12:22.380 --> 00:12:28.489

Terry Taylor: But there is a theory that says forever, 10 degrees C,

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00:12:28.770 --> 00:12:39.419

Terry Taylor: which is about 37 degrees F. But for every 10 degrees C. You raise the temperature on a electric motor, you reduce the life in half.

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00:12:39.890 --> 00:12:48.259

Terry Taylor: So you know, we see motors all the time out in industry that are just covered in muck all the all the

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00:12:48.480 --> 00:12:55.740

Terry Taylor: fins that are on the outside of a motor and they're covered. That's a bad deal.

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00:12:56.280 --> 00:13:13.570

Terry Taylor: You want to keep them clean, and the other reasons for the inspection, you know, to see things, and cleaning is very important operating how we operate the equipment. Do you? Do you have standard operating procedures for

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00:13:13.860 --> 00:13:25.800

Terry Taylor: just say shutting down the equipment or starting up the equipment. How many times does production come in and want to speed the process up happens all the time

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00:13:26.870 --> 00:13:39.949

Terry Taylor: operating correctly, very, very important. Just like the way we drive our car, how we drive our car. It's an essential care part of the part of the car

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00:13:40.200 --> 00:13:46.610

Terry Taylor: lubrication. Here's probably the single biggest of

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00:13:47.600 --> 00:14:05.210

Terry Taylor: problem area that we see. I I'm I've just finished up last week working for a client they. They're all over North America. It's actually a French company. They're all over the world. But we were doing a project here in North America.

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00:14:06.150 --> 00:14:06.825

Terry Taylor: and 81

00:14:08.320 --> 00:14:24.800

Terry Taylor: they have they don't have. It's not each place. Each location is not real big, but it's big enough, but there's not a single person on each one of those sites that's ever been trained in fundamental basic

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00:14:24.860 --> 00:14:38.470

Terry Taylor: good practices, lubrication. And it was really evident. And they're inducing failures into their equipment by some of their practices that are not good.

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00:14:38.740 --> 00:14:43.470

Terry Taylor: But you've got to do. You gotta do this thing right. You'd be better off

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00:14:44.080 --> 00:14:54.390

Terry Taylor: not to be adding dirty oil, even though it's me into a into a component than just letting the letting the oil run. But

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00:14:56.080 --> 00:14:57.980

Terry Taylor: yeah, lubrication.

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00:14:58.150 --> 00:15:05.710

Terry Taylor: It's really relatively easy to do. But you just you gotta know what you're doing and you gotta keep it clean.

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00:15:06.010 --> 00:15:08.730

Terry Taylor: That's number one filtration.

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00:15:09.490 --> 00:15:12.569

Terry Taylor: We run into this quite a bit. And

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00:15:13.800 --> 00:15:22.779

Terry Taylor: let me just say, all filters are not created equal. That is a fact. And there's there's some basic things that that

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00:15:23.180 --> 00:15:32.139

Terry Taylor: that people organizations need to understand that when the when the guy comes into purchasing and and

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00:15:32.440 --> 00:15:35.157

Terry Taylor: he's got a he's got a

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00:15:35.840 --> 00:15:42.989

Terry Taylor: a less costly filter, and he can replace the filters you have in the plant, which they could be

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00:15:43.180 --> 00:15:51.330

Terry Taylor: the most expensive filters ever. But they're doing a great job. You switch them out trying to save a dollar.

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00:15:51.690 --> 00:16:04.380

Terry Taylor: You could be making a really bad mistake. And there's there's ways that you gauge filters one against another, and it's called a beta rating.

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00:16:04.500 --> 00:16:13.430

Terry Taylor: and you want to be sure you're using good quality filters, but we see cheap filters all the time in industry, and it's

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00:16:13.820 --> 00:16:18.009

Terry Taylor: you're not making money buying cheap filters, that's fact.

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00:16:18.120 --> 00:16:37.079

Terry Taylor: Then there's adjustments. There's certain adjustments that you need to make throughout that IP interval on that equipment. When you look at that Pf curve that IP interval. There's adjustments that you make through there on equipment. You want to be sure those are made right, and equipment kept in the right adjustment.

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00:16:37.500 --> 00:16:42.889

Terry Taylor: precision, maintenance, alignment, balancing.

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00:16:43.260 --> 00:16:52.350

Terry Taylor: You know what we hear a lot talk about alignment on motors and go well, how are you? How are you doing the shaft alignment on there?

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00:16:52.550 --> 00:17:01.119

Terry Taylor: Oh, we're just using the straight edge. Well, okay, that's not precision alignment. And in one.

101

00:17:01.320 --> 00:17:16.980

Terry Taylor: when you get finished it will run, but it's not going to run as well as it could, but those are things that we call essential care. You just got to do them right if you want to get maximum life out of your equipment. But it's all

102

00:17:16.980 --> 00:17:32.710

Terry Taylor: it's all set into your Pm program. What's the interval? What's the oil type. What's the right quantity? What's the iso? Cleanliness, ratings for those things?

103

00:17:32.710 --> 00:17:44.159

Terry Taylor: Etc. Etc. I mean, it's it's all part of your Pm program. One of the things with operators is operator basic care. And we just have them doing some very fundamental

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00:17:44.160 --> 00:17:47.870

Terry Taylor: things. But they need to know 105

00:17:48.680 --> 00:17:50.959

Terry Taylor: they need to do those things right?

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00:17:51.280 --> 00:17:55.049

Terry Taylor: So essential care. Let's go to the next slide, ray.

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00:17:58.950 --> 00:18:06.780

Terry Taylor: So this is the big money maker condition monitoring. This is where your Pm program will

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00:18:07.180 --> 00:18:28.100

Terry Taylor: really make you money, and the way you make money with condition monitoring is you don't let that equipment get into that and that Pf, curve get into that functional failure. You catch that. You detect that problem early where you can plan and schedule the work plan and scheduled work.

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00:18:28.510 --> 00:18:33.090

Terry Taylor: You know, I've heard I've heard consultants say, up to 10 times

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00:18:33.650 --> 00:18:49.640

Terry Taylor: less money than than the same job doing in a reactive environment. I I've got an example. It's it's really a good example. We just don't have time for it right now. But I can show, and these are real dollars

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00:18:50.140 --> 00:18:55.170

Terry Taylor: that, we saved 60% of a of a

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00:18:55.390 --> 00:19:05.519

Terry Taylor: functional failure where a component was changed out. We did it, planned and scheduled. It was. It was 40% of the cost of that.

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00:19:06.910 --> 00:19:18.279

Terry Taylor: that reactive repair. And that reactive repair was around $300,000. So you say, you you. So you cut that by 60%, you saved a lot of money.

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00:19:18.810 --> 00:19:31.550

Terry Taylor: and and to a person that was on that job. This was in an underground mine. They said it was so much safer than they'd ever done that job before. So.

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00:19:32.330 --> 00:19:39.400

Terry Taylor: but this is this is a big component. Here is the subjective look, listen, feel, and smell.

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00:19:39.620 --> 00:19:52.949

Terry Taylor: and and often what we see in industry is that we'll have or the company will assign the newest, least experienced employee

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00:19:53.220 --> 00:20:09.670

Terry Taylor: in to do the Pm's, and it is the biggest mistake you can make. People have to know what they're looking at. They have to know how the equipment functions they have to know how the equipment fails. And and

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00:20:09.860 --> 00:20:16.110

Terry Taylor: oh, I just the best peering program I've ever seen in my life ever been around.

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00:20:16.370 --> 00:20:23.150

Terry Taylor: I had them. I had the best mechanics, the best electricians

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00:20:23.440 --> 00:20:37.559

Terry Taylor: we're doing the Pm. Program at our mine. And and when I we went home at night, at the end of the day, we knew exactly what the state of all of our equipment was.

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00:20:37.680 --> 00:20:45.040

Terry Taylor: we were confident that it was going to run through the night, or run through the weekend, or through the holiday, or whatever it was.

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00:20:45.240 --> 00:20:49.280

Terry Taylor: and and it was.

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00:20:49.700 --> 00:21:08.039

Terry Taylor: Those people made it happen. They made it work. It was. It was well done. But you have to. You have to have experienced people on there. And and I would just make a case. It needs to be the best of the experience. People on there.

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00:21:08.230 --> 00:21:12.190

Terry Taylor: The same way with condition monitoring.

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00:21:12.930 --> 00:21:15.069

Terry Taylor: The people have to be trained.

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00:21:15.540 --> 00:21:40.219

Terry Taylor: And and just like I'll go back to oil samples. Oil analysis is a great technology. But it all starts with that person that takes the oil sample to send it into the lab that has to be done correctly, and it has to be done the same way time and time again, because you're looking for that change

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00:21:40.500 --> 00:21:42.179

Terry Taylor: and you won't.

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00:21:42.600 --> 00:21:56.349

Terry Taylor: The change isn't how you change. Taking the sample that's going to show you a change, too. But that's not

what you're looking for. But you've just got to know what you're doing. Vibration.

129

00:21:56.760 --> 00:22:14.750

Terry Taylor: ultrasound infrared motor circuit analysis, any current. There are so many technologies that are out there, and some apply in some industries and some don't apply in some industries, some don't make sense. But you really want

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00:22:15.050 --> 00:22:21.300

Terry Taylor: you really want to do the condition monitoring with the objective tools

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00:22:21.910 --> 00:22:32.490

Terry Taylor: because it's gonna detect problems so much earlier, you're going to detect a problem closer to that P point on that pf, curve

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00:22:33.770 --> 00:22:55.859

Terry Taylor: subjective, absolutely. And there's some things subjectively that you look at the you can't. You can't use a an objective tool on them. It's just. And the only way you're gonna know what to look at is have that experience. So condition, monitoring absolutely the money maker

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00:22:57.196 --> 00:23:13.660

Terry Taylor: And and this is a big part of what's missing. When I when I get a call from a client, they said, Oh, we've got too much. We've got a Pm program. But we're having all this reactive work. You probably point to this right here is not being

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00:23:14.460 --> 00:23:19.150

Terry Taylor: executed. Very well, okay, right?

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00:23:22.570 --> 00:23:29.109

Terry Taylor: So if your reactive maintenance is too high.

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00:23:30.230 --> 00:23:35.510

Terry Taylor: Oh, the answer is, yes, you should assess

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00:23:36.110 --> 00:24:05.689

Terry Taylor: your current Pm. Program. There is. There is no doubt about it that you need to. You need to assess that if your reactive maintenance labor hours are 10% or more of your total maintenance hours, and a lot of people don't measure that. I mean as a maintenance manager. I always wanted to see how my labor was allocated, how much labor is spending here. How much here, how much here?

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00:24:05.930 --> 00:24:11.220

Terry Taylor: And you really, you really want to do that. But we would say, if

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00:24:11.380 --> 00:24:16.839

Terry Taylor: you're always going to have some component, some element of reactive maintenance.

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00:24:16.950 --> 00:24:18.740

Terry Taylor: And this is where

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00:24:19.970 --> 00:24:40.300

Terry Taylor: we we say that you're in best in class territory. If 10% or less of your total labor hours in maintenance are spent on reactive maintenance. If it's higher than that. Yeah, you need to. You need to make the effort to assess your your current Pm. Program

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00:24:40.440 --> 00:24:44.680

Terry Taylor: and one of the one of the other things.

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00:24:45.580 --> 00:24:58.289

Terry Taylor: and it's 1 of the 1st things I do. If I come into a client, and they want me to look at. You know why they're having so much reactive work. I go look at the backlog of corrective work orders.

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00:24:59.050 --> 00:25:01.510

Terry Taylor: look into the system. And and

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00:25:02.330 --> 00:25:13.079

Terry Taylor: and and here's 1 thing I look for, if there's a bunch of correcting work orders in there that were created by the product by the operators, by the operating group.

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00:25:13.200 --> 00:25:19.399

Terry Taylor: That kind of tells me we're not catching problems early.

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00:25:20.070 --> 00:25:37.609

Terry Taylor: And because typically an operator is not going to see a problem unless it's there's smoke, and there's heat, and there's noise and and all those things that are down in that functional failure area. And that says you're not detecting problems early enough.

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00:25:39.110 --> 00:25:46.929

Terry Taylor: And that's a that's that's a real good clue that the Pm program is just simply not working.

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00:25:47.690 --> 00:25:48.240

Terry Taylor: So

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00:25:49.540 --> 00:25:57.830

Terry Taylor: yeah, if your reactive maintenance is too high. You absolutely need to need to go in and assess your current Pm program.

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00:25:58.000 --> 00:26:06.580

Terry Taylor: If the reacting maintenance hours labor hours is greater than 10%. Yeah, go look at your Pm program.

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00:26:07.130 --> 00:26:16.270

Terry Taylor: And I'm gonna be real honest with you. One of the other things that we typically see if

153

00:26:17.340 --> 00:26:34.550

Terry Taylor: if the the reactive maintenance is too high and and there is an existing Pm program, there's 2 things. One is the the craftsmen that are out there don't believe in the Pm program.

154

00:26:35.050 --> 00:26:42.200

Terry Taylor: and they will tell you it's not a very good Pm program, and we see that quite a bit. And when that happens.

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00:26:42.540 --> 00:26:49.569

Terry Taylor: there's people that will pencil whip the Pm's and your own compliance. Numbers might be good.

156

00:26:50.090 --> 00:27:03.470

Terry Taylor: They might. You go? Well, let's say we're doing our Pm's. Yeah, well, that's just comes out. It just means you close the work orders the Pm work orders. So you gotta you gotta look for that.

157

00:27:04.740 --> 00:27:05.910

Terry Taylor: Okay?

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00:27:08.810 --> 00:27:10.180

Terry Taylor: Questions.

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00:27:12.930 --> 00:27:15.728

Rae Barton: I do actually have a couple of questions. Terry.

160

00:27:16.040 --> 00:27:16.680

Terry Taylor: Okay.

161

00:27:16.680 --> 00:27:19.199

Rae Barton: If you were to start from scratch

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00:27:19.835 --> 00:27:26.440

Rae Barton: how would you? How would you go about that? Would you do a pilot program? Would you go all in, what would you do?

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00:27:27.170 --> 00:27:34.309

Terry Taylor: Yeah, would do a pilot program. And actually, I've got a white paper. 164

00:27:35.480 --> 00:27:43.409

Terry Taylor: that I've written on. If you start with a clean sheet of paper. This is how you build the Pm. Program.

165

00:27:43.580 --> 00:27:50.052

Terry Taylor: and anybody that wants that excuse me

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00:27:51.000 --> 00:28:01.430

Terry Taylor: anybody that wants that. I'll be glad to share that white paper with them. I wrote it a few years ago, but I've I've used this exact same process

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00:28:01.470 --> 00:28:06.378

Terry Taylor: multiple multiple times on some of some.

168

00:28:07.080 --> 00:28:34.550

Terry Taylor: I did. One project for a gas company was a gas compressor station that included a 40,000 horsepower Rolls Royce jet turbine, and used the same process, and then I've used it on a simple D machine in a paper mill that was would fit in most bedrooms. It was not very big at all, it works the same way. So yeah, but I'll

169

00:28:34.620 --> 00:28:36.450

Terry Taylor: I wouldn't start with a pilot.

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00:28:36.880 --> 00:28:41.039

Rae Barton: Okay? And what's your strategy for building a Pm program?

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00:28:42.340 --> 00:28:46.400

Terry Taylor: The strategy is really about.

172

00:28:47.590 --> 00:28:52.830

Terry Taylor: and and it kind of talks about that in the in the white paper. But

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00:28:53.210 --> 00:28:59.810

Terry Taylor: you want to break whatever the facility is, if it's a paper mill, if it's a corn.

174

00:29:00.010 --> 00:29:10.950

Terry Taylor: if it's a you know, if you're manufacturing, if it's a food processing plant, you want to break the plant down into bite-sized pieces.

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00:29:13.540 --> 00:29:25.240

Terry Taylor: and then you take that piece, that part of the the plant, and then you get you recruit the right people in the room, and always try to recruit

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00:29:25.390 --> 00:29:39.280

Terry Taylor: the best, most knowledgeable maintenance mechanic in that area, the most knowledgeable electrician in that area, the most knowledgeable operator in that area

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00:29:39.590 --> 00:29:46.060

Terry Taylor: and and if they have a process engineer, I'd probably include them.

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00:29:46.640 --> 00:30:04.009

Terry Taylor: But then we go through and we we look at every piece of equipment that's in that area, 1 1 piece of equipment at a time. We break it down into components because it's always the components that fail. It's not the equipment.

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00:30:04.160 --> 00:30:09.610

Terry Taylor: So you break that component down. And then you start looking at

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00:30:09.920 --> 00:30:21.040

Terry Taylor: how does it fail? What are the failure modes? You know that in in reliability centered maintenance they look at failure, modes, failure, effects. We look at the failure modes

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00:30:21.200 --> 00:30:28.650

Terry Taylor: and and we know what? The because we have the operator in there. They help us with the priorities and the

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00:30:28.950 --> 00:30:37.410

Terry Taylor: and the you know how critical that equipment is. So we know, you know some certainly more critical than others.

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00:30:37.550 --> 00:30:47.719

Terry Taylor: but we start breaking it down into how does it fail? And what is a task? Proactive task we can do to determine

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00:30:47.930 --> 00:31:00.990

Terry Taylor: when we hit that F point when we hit that because that's our functional failure point. And and we want to find that detect that problem early. And then we look at the essential care of those components.

185

00:31:01.200 --> 00:31:19.760

Terry Taylor: you know, does, is it? Does it contain oil? Okay? What kind of oil does it have an oil glass? Or does it have an oil plug, or does it have a dipstick, or whatever it is? And we put in there the task so that we? We do the right checks throughout that IP interval

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00:31:20.470 --> 00:31:32.559

Terry Taylor: and and make sure we're doing the essential care. Right? Operator checks. Who's going to do these tasks. Is the operator going to do? It's usually where we start, and then we go down to the

187

00:31:32.770 --> 00:32:02.699

Terry Taylor: the crafts mechanics, electricians. Maybe we need a special skill set. Maybe we call in a contractor, but we break it all down. And the frequency, how often do we need to do that task? We're very purposeful in how we, in selecting that task. And we put this all on a spreadsheet, and at the end of the project it's really easy to break it down. We break it down 1st by the resource type.

188

00:32:02.710 --> 00:32:16.479

Terry Taylor: and then we break it down by the frequency, and then we break it down by. Does the equipment need to be shut down to do these tasks? Or can you do those tasks on the run, and we will do everything possible on the run.

189

00:32:17.840 --> 00:32:39.100

Terry Taylor: But it it it's all explained in this white paper, and it it works beautiful. It works really good. And and I'm you know, and I go into a plant, and I know how to facilitate this. I'm not the expert on the equipment and all that. I know a lot of stuff, but I don't know what they know.

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00:32:39.950 --> 00:32:43.889

Terry Taylor: And and it, it just works really well.

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00:32:44.390 --> 00:32:47.500

Terry Taylor: Been very successful with these Pm programs.

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00:32:48.950 --> 00:33:08.089

Rae Barton: One last question for you, Terry. What's the kind of longevity that you see, when you know you've got this functional failure point, how much longer. Do you feel like someone can spread a piece of equipment before that complete failure, and they have to change it out when they're doing the proper work that needs to be done for essential care and and the the other types of care.

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00:33:10.140 --> 00:33:13.769

Terry Taylor: If I understand the question right? It was.

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00:33:13.920 --> 00:33:30.310

Terry Taylor: how long between the functional failure and complete failure? And that's usually very short, because as soon as you start seeing the smoke. And you're hearing the noise. People get real nervous. And it's there. I mean, it's

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00:33:31.190 --> 00:33:45.170

Terry Taylor: it's gonna be reactive maintenance. They're gonna want that done very, very quickly. And so you you. And when that happens, you lose all the good stuff that comes with planning and scheduling

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00:33:45.380 --> 00:33:52.199

Terry Taylor: the safety, the low cost, the efficiency, the you just all that goes out the window.

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00:33:53.940 --> 00:33:54.820

Terry Taylor: So

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00:33:55.900 --> 00:34:16.170

Terry Taylor: I don't know just. I've just seen so many people they just and and I will be, too. I'd be nervous, too, if I let things up there making noise, and and if it goes down I mean catastrophically fails, and in the middle of the night you're gonna be down for a while, and and

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00:34:16.480 --> 00:34:19.769

Terry Taylor: you know what's downtime cost per hour.

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00:34:20.219 --> 00:34:38.289

Terry Taylor: It different industries are different, but some of them I mean, I hear, I hear 10,000 tens of thousands of dollars an hour in a lot of different places. So yeah, that makes people nervous when we get down into those

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00:34:38.520 --> 00:34:41.600

Terry Taylor: those failure that down to that functional failure.

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00:34:43.120 --> 00:34:45.629

Terry Taylor: I don't know if that answered the question. I hope it did.

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00:34:45.630 --> 00:34:56.570

Rae Barton: No, it did so. If I understand correctly, you're actually extending the time before that. If you're looking after the equipment properly, you're extending the time before that functional failure.

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00:34:57.050 --> 00:34:58.109

Rae Barton: And then, yeah, even

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00:34:58.490 --> 00:35:04.179

Rae Barton: catch when the functional failure happens and planning out the work to change it out before you get a catastrophic one.

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00:35:04.650 --> 00:35:09.180

Terry Taylor: Yeah. But when you hit functional failure it's pretty much game over.

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00:35:09.180 --> 00:35:09.500

Rae Barton: Yeah.

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00:35:09.500 --> 00:35:11.590

Terry Taylor: There's there's not much time.

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00:35:13.070 --> 00:35:16.840

Rae Barton: Okay, right?

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00:35:19.492 --> 00:35:34.560

Rae Barton: We do have some action items for the people that have attended today. If you would like to to access that white paper that Terry has written. Please feel free to contact him. His email is T. Taylor at Taylor. reliability.org

211

00:35:34.980 --> 00:35:56.400

Rae Barton: if you need help digitizing your Pm program, you can reach out to me. I work for red List. We specialize in digitizing people's facilities. And we we use people like Terry to help us understand the criticality, the best loops that you could use, understanding how to get that set up appropriately, and that we we facilitate the digitizing of your facility.

212

00:35:56.660 --> 00:36:08.920

Rae Barton: And then my email is ray.barton@getredlist.com. And then again, I wanted to invite you guys to attain again. That's October you can go to go dot get redlist.com forward slash attain 25.

213

00:36:10.330 --> 00:36:14.140

Rae Barton: Thank you so much, Terry, for being with us today and presenting on.

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00:36:14.140 --> 00:36:14.633

Terry Taylor: Do it.

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00:36:14.880 --> 00:36:25.460

Rae Barton: The knowledge that you've got and thank you so much for everybody for joining today and taking your time out of your day to to sit with us. We really appreciate you, and we hope you have a wonderful rest of your day.

216

00:36:25.820 --> 00:36:26.780

Terry Taylor: Thank you.