Appendix P

Ron Greenidge, Olympic – Interview Transcript

Pipeline Rupture and Fire
Bellingham, Washington
June 10, 1999
DCA-99-MP-008

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

In the Matter of:

PIPELINE RUPTURE and FIRE
BELLINGHAM
JUNE 1999

Recorded Interviews of:

RONALD MARK GREENRIDGE

March 13, 2001

BEFORE:

ALLAN C. BESHORE
NTSB, Chairman
PETER KATCHMAR, Pipeline Safety
LINDA PILKE-JARVIS, Ecology
JERRY SCHAU, B.P. Pipelines
GEOFFRE SMYTH, City of Bellingham
STEVEN WRIGHT, Brooks Petroleum

ORIGINAL

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P R O C E E D I N G S

8:15 a.m.)

INVESTIGATOR BESHORE: Ron, my name is Allan Beshore. I'm with the National Transportation Safety Board. I'm the Lead Investigator in the pipeline rupture and fire we had with the Bellingham in June of 1999.

I want to thank you for coming in to answer some questions. How we're going to do this is I'm going to start out, I'm going to ask you some questions. When I run out, we're going to go around the table and these other folks may have some follow-up questions for you.

So I'd like for them to introduce themselves so you know who they all are.

MR. KATCHMAR: Peter Katchmar with the Office of Pipeline Safety.

MS. PILKE-JARVIS: Hi. I'm Linda Pilke-Jarvis with the Department of Ecology.

MR. GREENRIDGE: Hi.

MR. SCHAU: Hi, Ron. I'm Jerry Schau, B.P.

MR. GREENRIDGE: Hi.

MR. SMYTH: Geof Smyth, City of Bellingham.

MR. WRIGHT: Steve Wright, with Brooks.

MR. GREENRIDGE: Hi.

E X A M I N A T I O N

BY MR. BESHORE:

Q And if you could just state your full name for the record.

A Ronald Mark Greenridge, BP Pipeline.

Q Do you have a representative here who can identify himself?

MR. MARTIN: Michael Martin, representing Mr. Greenridge.

BY MR. BESHORE:

Q Ron, how long have you been with Olympic?

A Twenty-eight plus years.

Q Can you just kind of briefly describe, you know, what you've done over the years, how you started, go through some of the different positions that you did?

A I started out January 1 of 1973 as a trainee as a station operator on the North End of the Pipeline. I worked for almost four years as an operator for Olympic. And, in November of '76, I transferred into the Maintenance as a mechanic trainee.

And worked out of the Renton, made office in Renton. And in 1981, I got my raise as a Mechanic. Basically, I worked the whole pipeline mechanical equipment from one end of the pipeline to the other.

And, in early 1995, in order to be closer to my area of responsibility, which was the first 80 miles of the pipeline as far as equipment went, I was transferred out to live up on the North End. And I've been there ever since.

Q So your title then is Maintenance Mechanic?

A Well, it's changed now. They call me --BP calls me a Field Specialist. But, I was a Mechanical Technician is what my rating is.

Q At the time of the accident. Let me ask you about some of the others. Now who do you report to?

A Currently?

Q Currently, yes.

A Currently, I report to Jerry Sweeney, who is -- I don't remember what Jerry's title is, but he's my supervisor.

Previously, I reported to David Justice and Jim Cargo. Prior to that, which was a long time, was Mr. George Mills. He's retired.

Q So you were reporting to Dave at the time of the accident?

A I believe so. I think it was Dave, yeah.

Q Yeah, Jim Cargo kind of talked a little bit about kind of dual reports in there.

A Yeah, it was.

David was more the day to day because he was in that area.

Q He was over Operations also, North End's part of the pipeline?

A That's correct.

Q Which included David?

A Yes, it did.

Q Let's talk a little bit about Bay View Station. Were you involved in any of the design of the station facilities?

A No, sir.

Q How about during the big stretch?

A Yes, I was involved. I was the company representative to the Mechanical as far as I was an inspector, basically, was my title.

Q So, by mechanical equipment, maybe you can just elaborate a little bit for us?

A Make sure that the valve equipment was installed correctly, the metering, the pumps and meters were installed and aligned properly.

In general, just oversee and make sure that the equipment was put in the way it was designed to be put in?

A But, it was all installed by a contractor? He had the actual duties?

A That's correct.

Q So you then witnessed or observed these valves? By "these valves", I'm going to refer to those on several occasions. What I want to talk about is the relief valves. There was four of them?

A Yes, sir.

Q In particular, RV-1919 was of interest to us. But I understand there were about three other valves that were kind of configured in some fashion.

A That's correct.

Q So I'll probably use the term "these valves" as we go along.

So you actually witnessed those being constructed, installed, inspected?

A Yes.

Q When did you -- were you involved in ordering the valves originally?

A No, I was not. The only thing I was involved in was they asked me what I would recommend as far as brands. The relief valves, however, I did not get involved with at all.

Q So you didn't have a recommendation for those?

A No.

Q By the other valves, would that be like the

control valves?

A The control valves, the valves in the facility itself, like the, well, the brand is where the -- all of the different valves are in the system. There's over a hundred valves. And those are more than fully closing.

Q Okay. When did you -- all right, let's just jump right into it here.

When did you all realize that the valves that were ordered were not what you needed?

A The surge relief valves?

Q The surge relief valves.

A That would have been in mid -- I don't remember the exact day. It was the middle of December of '98.

Q How did you become aware of that?

A We were in the process of putting product into the line in the facility at Bay View from the Ferndale line.

And the surge relief valve on the incoming side was going off at a very low pressure. And at that point, that's when we realized that it had the wrong rating in it.

Q So it was relieving at roughly 100 pounds?

A It was around 100-105 pounds. I'm not

certain exactly what the pressure was but it was very low

Q So that was the first time you guys kind of became aware that that wasn't going to work out. Right?

A That's correct.

Q So what did you do at that point?

A One of the other mechanics there -- there were two other mechanics and a trainee -- had a heavier rated spring for the pilot.

And I'm not sure if he had a complete pilot or if he had just the spring, but he knew it was the correct rated spring.

And we put that spring in that pilot and set it and it worked.

Q Was that RV1919?

A That was 1919.

Q So you had another spring that you put in.

A Correct.

Q You mentioned two other technicians who were --?

A Jim Fraley and Ken Carlton, and Chris Anderson was the trainee. He had just hired with the company approximately two months before.

Q Did they all report directly to Dave?

A No. Jim Fraley reported -- I don't even remember who the chief was in the South End, because Jim lived in Kelso. I don't remember who his boss was at that time.

Q Okay, so he came out from another region to help out?

A Right. To assist.

Q And how about you and Ken? Did you have similar responsibilities? Did you have like different areas?

A Ken Carlton?

Q Ken Carlton.

A Yes.

Q How did that come out?

A Ken basically took care of from Woodinville to, roughly, in the Tacoma area somewhere. And Ken and I collaborated a lot on work because there was a lot of things that needed, you know, routine projects that you had to do that involved more than one person. More than one mechanic.

Ken and I worked together a lot. I worked together with most of the people.

Q But, you were the guy for Bay View primarily? Is that fair?

A That's correct.

Q What about the other three relief valves? Did you have -- did you replace those frames as well, or were they popping open?

A Not at that time. It was several days later.

Q So you don't recall where this spring -- did it come from another valve or was it something you had in stock?

A The one that Fraley had?

Q Yeah.

A I can't remember if it was in a pilot that he had in his truck, you know, complete pilot, or if he just had the spring.

But, see, those guys had search relief valves on their system down there in the Vancouver-Portland area, and in this area, too. And the Bay View ones were the first ones for the North End.

So I did not have any spare parts for them because there was no need. If I got called out to come down here and take care of their stuff, I could just go to their warehouse and get the parts.

Q Did you guys order some springs at that point?

A Several hours later, early in the morning, I called Hoffman Industrial Supply, or Instrumentation Supply, HIS, Bob Watson.

Q Okay.

A He was our local supplier. And told Bob that what was going on and he sent me the springs to give me the correct pressure rating on the pilots at Bay View.

Q Let me just kind of ask you a little bit about that. Did you specify a particular spring that you wanted, or did you have a conversation about what you --

A Well, I told them basically what it was was, that they were relieving it at around 100 pounds. And I said that we wanted them to relieve at was I believe it was 650 pounds.

And it was a spring that was rated for 350-650 pounds. And he says, "I'll go ahead, I'll get those up to you." I think we UPS-RED overnight to get them.

INVESTIGATOR BESHORE: Well, let's go ahead and enter a couple of exhibits here, Mr. Martin.

Exhibit A would be the Compulsion Order.

(Whereupon, the above-entitled document, Exhibit A, was marked for identification.)

INVESTIGATOR BESHORE: Then, Exhibit B will be a copy of the e-mail here, Ron, that I'll give you,

and I'm going to ask you to look at. And that's page 2589. It's an e-mail that looks like you sent out to folks.

(Whereupon, the above-entitled document, Exhibit B, was marked for identification.)

BY MR. BESHORE:

Q Does that look familiar to you?

A Yes, it does.

Q Now, in that e-mail, you mentioned that you set the set point at 700 pounds.

A That's correct.

Q Do you recall where that setting came from? Was that something -- do you recall where that came from?

A I'm not exactly sure who it was. It could have been one of approximately three people that told me. I don't remember if they verbally told me or sent me an e-mail. I don't think an e-mail was sent.

It could have been Doug Bue, Craig Hamlet or Richard Klassen. I honestly don't remember which one of those three it was. But, one of them told me to reset it to 700 pounds.

Q What is it set at?

A Six-fifty.

Q So you hit this in relief valve 1919. You have already replaced the spring?

A That's correct.

Q Because Fraley had another spring?

A That's correct.

Q So you went out and you didn't replace the spring again?

A No.

Q Okay, so you just adjusted the set point to 650 --

A Right.

Q -- to 700?

A Correct.

Q Now the other three valves, had those springs already been replaced, or did you replace the springs at that time?

A They had all been replaced by this time.

Q So you didn't actually go out on that day and physically replace those four springs? They had already been replaced?

A They were done this day.

Q They were done that day. Is there any other form or documentation that you would routinely prepare for that kind of thing?

I know there's like a station maintenance request form that I've seen. Is that something that when you adjust set points like that, you would complete that form?

A Not then, no. A lot of work was done verbally. At least not that I remember.

Q Okay. And you can't recall which of those three folks? Just I guess Craig and Richard were in the engineering group?

A That's correct.

Q And Doug was operations manager at the time? Is that --?

A Yeah, Doug was -- yeah, he was operations and maintenance, basically. He was kind of my upper level supervisor. He was above my boss.

Q So Dave reported to him?

A Yes.

Q I think you mentioned that these were the first surge relief valves in your particular area. Or were these just the first Brooks or Fisher Rosemount valves?

Did you have other surge relief valves in your area?

A I had one and it was a Brooks, but it was not in service. And it was a very small one. But, it had

never been activated.

Q So you weren't familiar with -- well, this was your first involvement then with the 760 model...?

A No, no. I've worked on them before. But, not in my area.

Q In other parts of the system?

A That's correct.

Q When did you all become aware that the springs, you may need additional parts besides the springs to configure it to a set pressure of 700 pounds?

A Besides the spring was after the June 10 incident.

Q So you weren't aware that the pistons and the cover or whatever were also recommended to be replaced on that particular --

A That's correct.

Q -- pilot?

You don't recall anybody else mentioning anything along those lines, that they had conversations with anybody?

A Not to me.

Q Let's go back to the second 700 pounds. Just kind of describe -- can you just describe for me what the process is, how you would go about adjusting the

set point from 650 to 700?

A Well, we had installed some tubing, some fittings and valves and a quick couple connection on the -- between the main surge relief valve and the actual control pilot to allow us to isolate the pilot so that we could hook up a hydraulic deadweight tester to the pilot and set it according to a calibrated gauge, you know, not certify it but deadweight test the gauge.

And so, basically, it's just a little hydraulic pump and it's got a certified gauge on it. And the hose goes over and connects into the pilot.

And there's some valves that you shut off to isolate the pilot from the main valve.

And then, on top of the pilot, there's a lock nut with an adjustment screw that puts tension on the spring to either increase or decrease the pressure that the pilot opens up at.

And it's just a matter of basically pumping up the pump and watching your gauge and seeing where the gauge relieves at. And adjusting it accordingly to whether you're raising or lowering the pressure.

Q Do you recall whether it was -- I mean did you test it when you got there to see if it was set at 650, before you did anything?

A Oh, I'm sure I did, yeah.

Q And you don't -- that's -- nothing sticks in your mind as that being inaccurate?

A No.

Q And you adjusted the screw to adjust the set point. Then --

A Up to the 700?

Q Right.

A Correct.

Q Then you checked it again to see if it was set?

A I checked it several times to confirm that it was working.

Q Then, after that, I mean did you have occasion then at that point to go back to this relief valve, I mean after Bay View was on line, and do anything with it?

A Yeah, there was several times when I did some work to it.

Q Like what occasion?

A One occasion, and I don't remember which one of the surge reliefs it was, but one of them, a half-inch pipe nipple broke on top of the main valve.

Again, it was either the Anacortes or the Ferndale incoming. I don't remember which one it was.

And we had a minor spill into the containment area. And we went in and cleaned that up. And I replaced the nipple. And that pipe nipple is a schedule 80 pipe nipple, which is a relatively heavy duty nipple.

And I just didn't feel comfortable leaving the schedule 80 pipe nipples in there. So I, at a later date, which was like a week, or less than two weeks later, I went in and replaced all of those half-inch pipe nipples with schedule 160, which are even a heavier rating.

And as I was doing that, I was testing the pilots at the same time on each one of the surge relief valves, because it was an opportune time to do it. We had it all apart, so it was a good opportunity to just double-check.

Q So you were testing the set point on each of those?

A That's correct.

Q Did you go out because of any problems that they were having operating the system? Did that cause you to go out to test set points or take a look at the relief or anything?

A No.

Q When was the next time I guess you went out

and did anything with relief valve 1919, do you recall?

A Well, sometime between -- and, again, I'm a little gray on this. It could have been when I was replacing all those nipples with the schedule 160. Or it could have been at a later date.

But, sometime in there, I believe -- and prior to the June 10 incident -- the pressure was lowered back to 650 pounds. I don't remember the exact date.

Q Do you recall, you know, where that direction came from?

A It had to have been from engineering. That's all I can think of. Either Richard Klassen or Craig Hammet.

Q The engineering group, were they the ones then responsible for setting those set points? I mean for telling? Not setting the set points but for determining what the set points should be?

A Well, I don't want to make any assumptions but I would think that they would definitely be involved. Whether they made the final decision and sent the order out as per themselves, I couldn't tell you. I didn't get involved with that.

Q Okay, but that's not something that you were going to make that determination?

A Oh, no. No.

Q Somebody lets you know what --

A If they asked me, I would have made a recommendation but I wasn't asked.

Q Now, we have a purchase order here in December -- I have somewhere if you'd be interested in seeing it. But, there were eight springs and were 150 or 300-pound springs that were ordered.

Do you recall what those were for?

A I don't recall ordering any 150-350 pound springs.

Q Okay, it just happened to be in the purchase orders that we got. I thought maybe you would know.

So, after Bay View had come on line, did you have any conversations like with the control center or anybody about problems they were having with operating the pipeline?

A Not specifically, no.

Q Did you ever get, you know, get sent out to open up the incoming block valve? Did you do anything like that?

A No. No.

Q That would have been a different type of technician?

A That would have been Operations probably.

Q All right, so that would have probably been Operations --

A Unless there was a --

Q -- and not a Maintenance?

A Yes, unless there was a malfunction of it for some reason due to the equipment, they wouldn't have called us.

Q Okay, and you recall lowering the set point on the 1919 at some point?

A Yes.

Q Prior to the accident.

A That's correct.

Q Did it seem to be functioning properly, okay, as far as you could tell?

A Well, yeah, I have to say that because in my job, no news is good news. And if you don't hear anything, everything is functioning properly. I never heard of any problems with it at all.

Q All right. After the accident, let's talk about -- I've asked Michael, I know, but after the accident, when was the first time that you had occasion to go out to this particular relief valve, if you recall?

A It was when -- I don't remember the date but it was two or three weeks later when, I believe it was

Peter was one of the people that was there, wanted to test it in place.

And we tested it and then removed it at that point from the system.

Q Do you recall what you found during that test?

A Yeah. It was not -- it was not reliving at 650 pounds. It was relieving at 450 pounds.

Q Was there -- the system, was it full of liquid or had some of the liquid drained out of there to where it had air in it? Do you recall?

A I believe it was full product at that time.

Q And you didn't -- you checked the other in the Anacortes line and it --

A The other incoming relief?

Q The incoming relief?

A Right.

Q You tested it at that time?

A Right, that one was fine.

Q And how did you guys come to realize then that these other parts were necessary then, or not necessary but the cover and the piston and what not needed to be replaced in order for the --

A You mean on the pilot?

Q Yeah, the pilot.

A Again, I don't remember the exact date but I believe it was Richard Klassen is the one that told me. He said, "We've got to replace the piston and the body and the o-rings in the pilots."

And I'm pretty sure that he said he already had parts on the way.

Q And that was after the accident?

A Yes, it was. I think it was in July sometime.

Q There was some testing that was done by a contractor who did some flow testing and stuff. Were you involved in that?

A Yes, I was. Yes, I was.

Q And my understanding reading through the thing is that you guys tested the valve, like the incoming valve at Anacortes, as it was in place. And then replaced the additional parts and then tested it again.

Is that correct?

A Do you mean when we were testing the -- do you mean the contractor?

Q Right. Right. And doing the flow testing.

A That was done out in the backyard of the tank farm out there with water, and the parts had been replaced a long time before that.

Because I was unclear on it, the type of things we'd done before.

Q Okay, let me just show you this and then we'll -- this is something that -- what's the page number down there on the corner?

A It says 014983A.

Q You may not have ever seen that document. I don't know. Have you?

A No, I haven't seen it.

Q The first line I think it is on July 14, the incoming valve. Trash was in there.

Does that jog your memory on some additional testing that might have been done that you're aware of?

A That was not Anacortes line.

I don't know where that information came from because that valve had -- you would have had to have removed the valve to find out. And we didn't take that valve out.

Q Let me show you. That is like a little summary of what that testing was purported to be in July. Maybe, that would help. And then that's 14985 and this is 14986. And that then shows.

A Okay. All right, let me see.

Q I just want to be sure I understand what those reports are saying to us.

A I don't -- I'll go along with this work, but I don't agree with the date. It seemed like it was a lot later than that.

And I just for the life of me, I don't remember ever taking the Anacortes one out. I really don't.

Q Okay, but then you did take it out and test it with water, you said, in the yard?

A That was much, much later though. That was with the contractor that actually did all the hydrotesting on the Ferndale line.

And that was after early September of '99 when we did all of that testing.

Q And that was after you had replaced the parts?

A Oh, definitely. Definitely.

Q Now on May 12 -- I'm sorry. I say May 12 because that's when it was reported the date that you had adjusted the set pressure down. That was the date we had got from Olympic.

What paperwork would you have generated for that particular activity? Do you recall?

A I don't believe I generated any paperwork for it. I think I, well, I know I would have notified the dispatchers, operations controller, the work was being

done or had been completed.

They would have known I was working on it to start with because I was in the facility. And I would have notified them then when I was done. And I probably let my supervisor and possibly Doug Bue know that the work was done, or Richard Klassen, or whoever directed me to do that.

Q Okay, you would have just reported verbally back to them that this was done?

A That's correct.

There may have been some paperwork generated but I don't recall it.

Q And then you weren't out there again between that time and the accident, is that right, to work on that particular valve?

A No. No, because that had to have been after the -- I know it was after the nipple broke and that was fixed and all those pieces were replaced, those nipples were replaced, what they have there...

That could have been the same date for all I know.

Q Because you were there?

A Correct.

Q I guess, if other adjustments were made to that valve, would you expect, I mean, somebody, another

technician is not going to go in there and do something that you're not aware of.

A If they did it, it was after hours or on the weekend when I wasn't on call, for example. But, again, if that would have been the case, I would have been notified.

Q Okay, if they called Ken out for some reason and he did something, you feel like you would have been notified of that?

A That's correct. Oh, yes. Ken would have told me because that was just a common courtesy with everybody was if I got called into his area for a repair of a piece of equipment -- it doesn't make any difference what it is, he needs to be brought up to speed on what happened and, you know, what was done so that he knows that, okay, I need to reorder this part, for example.

And the seal failed at so many hours or whatever, so he knows, he has to be kept aware of that.

Q On the day of the accident, what were you doing on that day, do you recall?

A I was in Renton that morning for some type of a meeting. I don't even remember what it was. But, then on the way home that afternoon, I stopped up in 'Homish' at the Ford dealership, because I was getting

ready to order a new truck.

And I talked to them. And by the time that I got back on the freeway, it was time to go home, so I just went home. And I was at home when I was notified.

Q Okay. Then when were you notified? Do you recall?

A It was sometime between -- I believe between 4:30 and 5 o'clock that afternoon.

Q How did you respond to that?

A I called. I got on the radio and I called the operations controller to confirm the information. And then immediately got in my truck and headed north. I was told to go to MOFO-16 block valve.

And about Lake 'Sandwich', which is what? Fifteen miles south of there approximately, I got diverted back to the Allyn Station facility to pick up the company's spill response code and go to the Coast Guard office at Bellingham Bay and liaise with the Coast Guard.

Q And that's what you proceeded to do at that point?

A At that point, I went back. I got the spill response code. And it took me considerably longer to get to Bellingham because by that time, the freeway was closed and I ended up going up the old driveway, which

is chuckin' in drive. And ended up -- I don't know what time it was. It was still light, I know that -- at the Coast Guard office.

And then ended up going to the mouth of Latah Creek and working with Clean Sound, putting a boom across and then monitoring it all night.

Q Clean Sound is the contractor?

A Clean Sound Co-Op, yes.

Q Okay. Well, I think I'm running low on questions here, so I'm going to go ahead and turn this over to Peter.

Do you have any questions, Peter?

E X A M I N A T I O N

BY MR. KATCHMAR:

Q Hi, Ron.

A How're you doing?

Q Good. Please understand that we are not here as accusatory in any way, shape or form. We're trying to, you know, discover some things. And please bear with me. With the way I ask these questions, I'm really not being accusatory in any way, but it may come out that way.

So I just want to preface my questions.

A I have my nitro.

(Laughter.)

Q So, yeah, I'm going to apologize before I put my foot in my mouth. So, anyway.

A Peter and I, in case none of you know, Peter and I have had our differences over the last year and a half. But we seem to be ironing them out.

Q Oh, yeah.

Ron, you're a maintenance worker on the valves and things like that. You were unaware of any of the operations problems at Bay View, or were you aware of any of the operations problems at Bay View?

A I was aware of some problems but they didn't come to me and talk to me. I wasn't their supervisor.

I had asked some questions. My biggest concern was that it was a huge facility of Olympic personnel we're not all that familiar with because it was a ... requirement. It was our first experience.

Q Right.

A And my only thoughts were that maybe we needed to get 'Ekalon' more involved as far as training and so forth, maybe send some of the operations people to facilities that they had that were similar so that they could have a better understanding.

Q Yeah, we've heard a lot about that, too.

In your mind, the valve, the isolation valve 1901, that closed all those times?

A I've heard that rumor. I've never been able to back it up with any facts. I don't know.

Q Okay, my question was going to be why do you think that would have closed.

A Well, I hate to speculate. I really do. But... Michael?

MR. MARTIN: They're just taking information that you have.

MR. GREENRIDGE: If you go back to June 10--

INVESTIGATOR BESHORE: For the record, Tony Barber will be here. Tony is also working for the investigation.

MR. GREENRIDGE: I guess my thoughts would be that if you go back to June 10, everything that I have seen confirms my thought that the equipment functioned very 'simplistically'.

I'm not an engineer but I know that when you get a surge through a pipe like that, it's going to go like that (snapping fingers).

And when it got to Bay View, the surge relief valve functioned the way it was supposed to do, it opened and went into the tank. But, while it was in the process of doing that, the surge was still going up the line towards Ferndale.

And it's not that far, as you know, from

where that surge relief valve, you know, is back to the pressure switch at that particular 1901 valve that you're talking about, which was set I believe at 700 pounds.

And it wouldn't take much for it to go there to that pressure switch. The minute that switch is tripped, that valve is going to go closed. That's what it's told to do.

MR. KATCHMAR: Right.

MR. GREENRIDGE: And if this is what they're talking about, all these repeated shutdowns, then there had to have been a reason for it. It functioned fine on June 10. It did what it was supposed to do.

You have to remember also that's not a real fast-operating valve. It's going to be clam-closed like that. So the surge, you know, it's still got a chance to go back and continue on up the line.

That's what I feel happened. And, you know, and if there was anything prior to that time, it was probably because it was being told to go closed by the equipment.

June 10, it worked. Why wouldn't it have worked prior?

BY MR. KATCHMAR:

Q Right, that's the question. And that valve,

we were told, went closed like 41 times?

A I heard the rumors. I had not been told anything about it prior to the incident.

Q Right. But, the over-pressure protection inside the station was that relief valve.

A Yes. Well, there were several of them, yeah, but that was one.

Q Several, right. So, if the pressure is climbing inside the station, once it gets to 650?

A Those relief valve should pop off and keep the pressure there, so it really shouldn't hit 700 pounds. Correct?

Q Theoretically, you're right. In reality, I don't think that's the way it works. Again, I am not an engineer. But, common sense tells me that you're going to have a time delay while your equipment opens.

You've got a section of 16-inch pipe from the surge relief valve all the way through the station to the tank, 209, that's full of product and it's stagnant. It's sitting there.

You've got to get that flowing. You've got, you know, it doesn't just happen immediately.

A You just think there might be a design problem with something in there?

Q Well, not being an engineer and not being a

design engineer for a facility like that, I couldn't say yes or no. But, there's probably better ways to design it, yes.

A Okay. Another question. You were in on the construction. Again, not to be accusatory or anything, but it appears that the control valve right upstream of this relief valve had a stop on it? And the one that discharged did not have a stop on it?

Q I believe you're correct.

A We were told that they were originally supposed to be -- the discharge was supposed to have a stop and the one up there wasn't.

Q Yeah, I heard something --

A Was there a changeorder or something of why they got put in backwards?

Q No. That I wasn't aware of. I believe that I checked serial numbers on the equipment before it was installed during the installation and afterwards.

And, to my knowledge, they were put in the way they were directed to as far as, you know, the serial numbers and the equipment goes.

Q So you matched those with the drawings.

A Correct. Yes.

Q Did you ever flow-test any of these relief valves?

A Not until after we put product in the system when we discovered -- you're talking about the relief valves; correct?

Q Right. And you said that when you first put product in there, you realized that they popped off at 105 pounds?

A That's correct.

Q But that wasn't really a flow test, I guess.

A No.

Q It was more, it was just that it happened.

A It just happened.

Q All of a sudden, you were in a void and you said, well, wait a minute, why is this happening? You said, oh, okay, we need to set the pressure up higher.

A That's when I discovered we had the wrong springs in there. The reason why they were never tested or set or flow-tested prior to that is they react completely differently with no product in them, and all the air is let out -- or not let out, I should say -- than they would if they were full of product with the air bled out.

And there was no sense in trying to test it.

Q So that was a plan?

A That was the plan, was to get the product in. Then, you know, I guess I was going -- this is where I

probably screwed up because I probably should have made a closer note of the pressure settings on the pilots. At least on those four. And, I didn't. And that's my fault and I take the blame for that.

However, the problem was corrected prior to putting product in the -- you know, using the facility.

But, there was no sense in trying to test them with no product because they just won't function correctly. Not in my mind anyway because even putting, you know, fill the pilot up with hydraulic fluid and test it but are you actually making the thing work the way it's supposed to? Because there's no product in this thing.

So we just felt the best way to do it was after there was product in the system. We could get all the air bled out. And you have to keep in mind this was an all-night job, and there was a lot of air to bleed out the whole facility.

We were hoping to get to a point where we had it all through, you know, the whole facility and heading out the other, you know, the outed block valve, where we could close the facility in with some pressure on it and just start bleeding the air off of everything.

When that surge relief starting going off, I

knew it was 105 pounds. I remember. That's when we realized we had a problem. We shut it in because we couldn't go any further until we got that fixed.

Q But, you were surprised? I guess everybody was surprised that it went off at 105 pounds?

A Yeah, until we found -- we looked at the pilot and realized -- when we went out and looked at the pilot, Craig Ammen got some drawings out. He was in the building.

He comes out, he says, "I found the problem." And that's, you know, that's when I realized that we had a problem. That's when Fraley found the spring was stuck.

Q Did you look at the difference between the two springs? You know, the guy, Fraley, whatever his name was, Jim, he said, "Found another spring and it's in here."

How did he know that was a high-pressure spring?

A Because that's the ratings, the spring rating that he uses down on his area, on the surge reliefs he has down there. So he wouldn't have anything --

Q They were 350 to 650?

A Three-fifty to six-fifty, that's correct.

Q Now there's been some -- you'd have to

confirm this with Fraley but there's been some controversy about whether he had a whole complete pilot that he just robbed the spring out for me, or if he just had the spring.

I don't remember. I thought he just had a spring. But I've heard he's got, you know, since then that he had a whole pilot and he removed the spring out of it and gave me the spring.

Whatever it was, while he was either getting it out of his truck or taking it out of the pilot that he had, I was taking the other one apart.

At that time, I did not question his, you know, confidence that it was the correct spring. You know, he's not a stupid person, he's very knowledgeable.

And I don't recall testing or comparing the two of them at that time.

Since then, I have. And, you know, I felt the difference between them. But, maybe I was just --

A It's really...I don't know.

(Record paused.)

BY MR. KATCHMAR:

Q Craig was there the whole time when you were doing this?

A That night? Yeah, Craig was there.

Q So he obviously, that was the big issue was the relief valve?

A At that point, right. That's what it was.

Q So he was standing over you supervising, I would assume.

A Well, we were -- I don't even remember to tell you what we were doing exactly. But, we were, you know, in the facility. And that's when we -- I think maybe one of the operators might have come out of the building, because somebody was monitoring the computer, you know, the screen, and making sure that everything was working properly there.

And somebody came out, I believe, and I don't remember which one it was. It could have been -- it was either Hawley or Perry came out and said, "Hey, we're getting flow from the surge relief into the tank."

Q Well, so you weren't shut in any more? You were flowing?

A No, we were still filling the station.

Q Oh.

A We were still filling the facility at that point when we realized, you know, that it was going off. And so then we walked over to where it was because we weren't standing there when all this had

begun.

And, sure enough, of course we could hear it then going off. And so I went ahead I believe at that point and I closed the incoming block to it. And I don't remember what I did but we, you know, we did some stuff.

Craig went in the building. He did a little, you know, whatever he did, came out and says, "I found the problem."

And that's when Fraley said, "Hey, I've got a spring. Let's put this spring in here."

And I had my dead weight tester with me just in case we had a problem.

Q Okay, so go through that now. You went ahead and took the spring out, put the other spring in, and then?

A And then tested it up, brought it up and just kept adjusting it down until I had 650 pounds on it. And we tried it time and time again. There were like four to five times at that point, and it worked great.

So I said, "Cool, we got it taken care of. But I've got these other three -- the Anacortes incoming and the 16 and 20-inch outgoing, B-20, B-16 outgoing, that have to be at the same pressure."

And they weren't, you know, of course the

Anacortes line we weren't putting any product in. It's just on the Ferndale leg. But, the other one wasn't going off because we hadn't got to that point yet.

We were still airing -- we were still getting--

Q No product got there yet?

A No. We were still getting -- well, there may have been a little bit but there was no pressure on it.

So we were busy getting the air out of the rest of the facility at that point. So I don't know what time in the morning this was. It was fairly -- it was still dark, I know that. It was pouring down rain.

And we got 1919 taken care of as far as the spring goes. At some point there that morning just before daylight, I left there and went over to my office at Allyn Station to get -- to make a phone call to Bob Watson, AHS. And it was fairly early in the morning when I talked to Bob. I don't remember what time it was.

And that's when I told him what was going on and said, "We need to get this stuff going right away." And I said, "If you can do it, UPS red it overnight because I've got to get this stuff together."

I don't -- I'm not real clear -- it's been quite a while and I've been through a lot of stuff

since then -- what day this was in the morning. But, I knew it was it had to be like mid-week, sometime in there, because Friday was going to be my last workday. I was going on vacation. I hadn't had any vacation that year.

And I wanted to hang around until we got product in the Bay View. And then I was taking off for a couple of weeks.

So I wanted to get this taken care of before I went on vacation. I wanted to get those other three springs replaced.

And Bob assured me that he'd have them up to me the next morning. And I believe that -- so that had to have been like Thursday morning, or something like that, because I think Friday was -- according to that, it was Friday, the 18th, because that day I replaced those other springs, set everything to the --

Q That's the day you set them up to 700 pounds?

A That's correct. That day right there, whatever date that was.

Q The 18th.

A Yeah. And that's when I went on vacation and didn't come back until January 6 or something.

So that's the best that I can recall the sequence of events. That's pretty much the way it

went.

Q During these initial commissioning of Bay View, it appears that the valve might have shut -- the isolation valve might have shut a couple of times just early on, even the day, maybe the 18th? You're starting to run product through it and the valve went closed?

A I don't recall that. It may have happened but I don't recall it.

Q I guess I'm wondering. In the e-mail, it says "I'm putting the pressure up to 700 pounds," or "I have set the pressure at 700 pounds. Everything should be okay."

Why wouldn't they lower the pressure?

A Do you mean to 650?

Q Well, it was at 650, correct?

A Correct.

Q Well, it wasn't under and then you put new springs in and you set them at 650.

A That's correct.

Q And then you set it up, that one -- or did you set all of them?

A I believe it was all four of them.

Q But, anyway, you went from 650 to 700 and said that should take care of the problems.

Does that say that should take care of it? Or you should be okay now?

I'm wondering why you wouldn't have gone to 600 instead of up to -- down to 600 instead of going up to 700.

A Well, you'd have to ask engineering or whoever it was told me to do that. I would assume it had to have been engineering had something to do with that.

I questioned the 700-pound setting simply because the spring was rated for 350-650. And they says, "Well..." oh, God, I wish I could remember who it was." But they said "Go ahead and try it and see if it works there. And if it works, then we'll leave it there."

And I don't even know if they said they were going to leave it there permanently or not. But, they said, "Let's give it a try."

Q I just want to ask one more time about we understand -- I understand that you do the static testing. I've seen you do that.

A Correct.

Q Did you ever do any flow testing where you were setting the adjustment screws and things like that to try to make it run smoother or anything like that?

A No. There is a sensitivity block in there where you can adjust the, you know, how fast or whether it's, you know, sits there once a cycle or how fast it opens and closes.

But, they operated very smooth when we did -- we did some minor flow testing on them. I backed the pressure way off on the pilot so that we could bring the pressure up coming into the facility and watch it flow, make sure that it was working smooth.

And I never adjusted any of the sensitivities because it seemed to be real smooth right from the factory. And then I just put it back to the 650 or, in this case, to 700 pounds.

But, I'm very adamant that I do know that the pressure was dropped to 650 pounds prior to June 10. That is -- there's no doubt in my mind there.

Q We have a document that you sent us either e-mail or May 12?

A I believe that's probably correct. And I believe that was the time when I was replacing those schedule 80s to the 160s.

Q That was on the Anacortes, right?

A Yeah, I believe that was on the Anacortes one that broke.

Q I think Joe Subsence said he came out, the

Department of Ecology?

A Yeah. Yeah, he did. That's correct.

Q Just a point of clarification.

Anything you did out there you were directed to do?

A That is correct.

MR. KATCHMAR: At this point, I have nothing further. Thank you.

INVESTIGATOR BESHORE: Linda, do you have any questions?

MS. PILKE: Thanks. Yes, just have a couple of follow-ups.

INVESTIGATOR BESHORE: Sure.

E X A M I N A T I O N

BY MS. PILKE:

Q What is your understanding of the purpose of Olympic constructing the BP station?

A The facility itself? Well, they were talking about what they -- I'm sure you know the term as "fungibility" of product where you have four refineries that we deal with, that we bring product out of.

And they wanted to get like everybody together on, for example, diesel, all of their, you know, the diesel to be -- I guess it would be the basic stock come into the facility so that they could store

it in one tank and it would allow us to better schedule our flow through the system.

And it probably some way or other had something to do with scheduling for the proposed cross-gas gauge pipeline.

I think it was basically the fungibility because that was giving scheduling and shippers a lot of problems trying to get product down through the system. And not, you know, contaminate any one product from one refinery with another.

Q I just wanted to clarify a couple of things that you said about your involvement in the design and construction and then operation of the Bay View station.

Were you involved in purchasing of the relief valves?

A No, I was not.

Q So the valves were already purchased when you began your job of installing them?

A I don't know if they were purchased at that time but I knew what equipment, you know, as far as the relief valves were concerned, was going into the facility.

I don't know who it was that made a recommendation on that particular brand, but that's

what we've used throughout the system.

So, you know, that's probably one of the reasons why they used this. They're very reliable. You know, I have to tell you that. They are a very reliable valve.

Q You mentioned something about comparing serial numbers to a drawing to ensure, to make sure that you were installing the right valve in the right place.

Could you clarify that because I didn't quite understand it?

A Well, each piece of equipment, you know, like the -- well, let's just go with 1919 -- has a serial number. And the contractor -- now where he got his information from, I don't know. But, the contractor was the foreman, actually did all the installation work, he would have a list of which piece of equipment went to what location.

And as I recall, it was all done by serial number on the equipment. And then I would just make sure that that particular valve was put in at the correct location. That was part of the work that I did.

Q So it was from a list and not a drawing?

A It could have been from a drawing but I don't

have the drawing, or I never did see the drawing. I probably should have clarified that.

Q Did you have access to manuals from the company that talked about installation and maintenance of those valves?

A Oh, yeah, I'm sure they were there. Yeah. They were in the facility. They probably came with the equipment when the equipment was delivered.

Q Where would you guys, in general, store those kinds of manuals?

A Well, in the case of Bay View, I think the manuals and so forth were stored at Bay View. Generally, with the pipeline in my area, I keep that type of paperwork, you know, the books and manuals, price lists and so forth, for my equipment at my office.

Q Can you just give me a little bit more detail? Do you store them in filing cabinets? Do you store them in binders? Are they on a shelf in your office?

A Again, I don't remember when this was done but at Bay View, it would have been quite a ways through the Bay View construction because the building wasn't occupied until basically late in the year,

during the construction.

They were put in three-ring binders and they were set on like a little cabinet in the hallway of the facility. That's where.

And they were also -- I think, prior to that, they were in -- I think they might have been in file cabinets in the construction shack for the contractor, in the engineering, Jacob's Engineering trailer at Westport.

Q Would it be important for the folks in the control center to know what the set points of these valves were?

A Yeah, probably. That would be a first statement.

Q So it still isn't kind of clear to me how you would notify those folks who needed to know that information when you adjusted the set point of the valves.

A An e-mail. I believe that was sent to all employees, was it not?

MR. MARTIN: Yes, it was.

MR. GREENRIDGE: And they read it in there.

BY MS. PILKE:

Q How would that information be documented in a more permanent manner? So, for example, people get the

e-mail. But, you know, how does it become institutionalized?

A Each piece of equipment that falls under DOT regulations must have a maintenance record of some sort for basically the life of the equipment.

So, for example, on a DOT maintained block valve on the pipeline where you have to check it twice a year and inspect it and, you know, make sure everything is correct on it, you have to log that information in every, you know, twice a year.

You know, there's a folder that has all of those records for whatever that piece of equipment is. And that, at the time that we're talking here, that paperwork had not been generated yet. It was in the works for Bay View. It may have been something that should have been done, you know, and been ready to go in facility, but it wasn't.

Q At the time of the installation and the initial valve adjustment, that paperwork hadn't been generated?

A No, it was being worked on but it was not done at that time.

Q By June 10, had that paperwork been --?

A Yes, most definitely. I'm not going to speak for the entire facility. But, I know for the surge

relief valves, it was generated prior to June 10.

Q Were you responsible for that paperwork?

A No, I was not.

Q Who was?

A I believe it was Sandy Connell had a lot to do with it.

Q So how would Sandy become aware that set points had changed?

A Well, she probably got that e-mail for one thing. But I would have to -- I don't know. I'm not going to speculate because I don't work out of the Renton office and I don't deal with those people on a daily basis, so I don't want to speculate on that.

Q Okay. So how would -- I'm still confused about how a person from a control room would have access to that information or that file, that DOT-required method of keeping track of those set points.

A Well, if you're talking about the permanent records, the permanent records are still in Renton. And if they have any reason to go in and look in those records, they're there.

I guess you could probably call Sandy the keeper of the records. I would assume that they would have just as much access to those records as anybody else within the company that has a reason to look at

it.

It wasn't any big secret or anything like that.

Q Do you have any familiarity with the operations in Maintenance Manual?

A For 'Lintick'?

Q Right.

A Sure.

Q So, in what way do you either use that manual or contribute to the information that's maintained in that manual?

A Well, if I am out doing my maintenance work, whether it's DOT maintenance or just routine maintenance work, and I need to know the set point of something, the setting of a thermal relief valve or a surge relief valve, or whatever, that information should be in that book for that particular facility that I'm working at.

So I could go to that book and say, well, here it is, you know. It's the thermal relief valve on top of unit number three at Ferndale station. Set it 1650 or whatever it may be.

And then I just go ahead and do my work, whether it's testing it or repairing it or whatever. And then, when it comes to the DOT work, I'll log that

down on the DOT records.

Q So is it fair to say that the folks in the control center would also have access to the operations in maintenance manual?

A Yes, I would believe so.

Q And was it your responsibility to provide the information to the person who maintained that operations and maintenance manual?

A Only to the extent that if I was asked, for example, to confirm the setting of something. I'm not the one that would tell them what to set the equipment. You know, set the pressure at, for example, on a relief valve. That would be up to them to determine.

I'm basically the person that confirms it if there's a question about something, or repairs if it's broken.

Q Prior to June 10, are you aware whether or not the changes in the set points for valves were recorded in Operations Maintenance Manual?

A No, I'm not aware of it, no.

Q How familiar are you with Operations and Maintenance Manual prior to June 10?

A Well, I was in their 're-facility'. If you want to get specific about Bay View, I wasn't that

familiar with the Bay View Operations Manual. I was familiar with the system, the facility itself. But, not the book.

Q What's your recollection about how frequently the manual was updated?

A It seemed to me like it was an ongoing process, something that they were working on constantly.

Q How would you be notified that a change had been made to the manual?

A Well, if it involved the equipment I worked on and there was a change in it, they would notify me either by telephone or e-mail or whatever that I needed to change the setting, or whatever it was.

Q When you say "they", who in your mind was responsible for maintaining the manual or notifying people?

A I knew you were going to pin me down.

(Laughter.)

I have to say Engineering would have to be involved in it.

Q I know it's been a long time but do you recall any sort of changes to the manual that were made just prior to June 10? We have had other folks from Olympic tell us that there was a big change in

Operations and Maintenance Manual right before June 10 because of a planned inspection by Office of Pipeline Safety.

Do you recall that?

A No, I don't recall that at all. It's a small company. It's a narrow margin of people you're looking at, and rumors fly everywhere. It's a little Payton Place.

(Laughter.)

I don't pay attention to rumors. It's not worth my time. So, if there was rumors going around about that, it went in one ear and out the other. I just don't listen to it.

Q Okay. Yeah, I guess I was thinking so much in terms of rumors but in terms of, you know, function for your job. You know, it would seem that staying on top of that manual would be important.

A Yeah, it is but my -- the equipment that I work on, it never changes. The only thing that changes would be the settings. And if there was a change in the settings -- for example, a pilot on a surge relief valve or a thermal relief valve setting, I would definitely be notified if there was a change, because I'm the one that's ultimately responsible for doing that. You know, implementing the change that they tell

me to do.

So, yeah, in that sense, I would know about it, most definitely. But, it wasn't -- how do I say this? I'm not trying to be a smart Aleck, or anything like that. But, it wasn't my daily routine to go through that book, I guess is what I'm trying to say.

I would, you know, if I had a question about something, I'd go right to the book because the book was supposed to have the answers.

And, again, like I said, they were working on it all the time. It seemed to me like they were.

MS. PILKE: That's all the questions I have. Thank you.

INVESTIGATOR BESHORE: Let's take a quick, five-minute break here.

(Recess.)

INVESTIGATOR BESHORE: Back on the record.

Ed? Jerry, do you have any questions?

MR. SCHAU: Just one.

E X A M I N A T I O N

BY MR. SCHAU:

Q I'm trying to understand the procedure that you use for calibrating these. You said you had this pipe so that you could go back and forth. You guys bled the pilot valve and then you connected a deadly

test and you had a certified gauge at the same time.

What I'm not understanding is what were you testing against. Were you testing against a dead -- did you actually spin the wheel that was on the deadweight tester to set the pressure, or were you using a gauge?

A No, we have the weights, you know, for the dead weight tester that we use to calibrate the gauge.

Q Okay.

A And that's done, generally, it's done annually. Sometimes, it's done more often than that. Their actual -- the brand name is 3D, and their test gauges.

And we will test, you know, and adjust it against the dead weights and then we go out -- rather than, you know, it's rather cumbersome trying to haul around a dead weight tester and all those dead weights to do your testing when you can calibrate a gauge, you know.

Q Then what do you use for raising the hydraulic pressure?

A It's a hand pump. The dead weight tester, it's the same one but it's actually -- all it is is a hydraulic rule hand pump, is all it really is.

Q Right.

A And we just use that with that calibrated gauge.

Q So you basically use your deadweight test, you just don't use the weights?

A That's correct.

MR. SCHAU: Okay. That's it.

INVESTIGATOR BESHORE: Geoff.

MR. GEOFFRE SMYTH: Yes, I just have a couple of quick questions.

E X A M I N A T I O N

BY MR. SMYTH:

Q You said you worked for Olympic for how long?

A I started January 1, 1973.

Q So that was almost thirty years?

A Twenty-eight years.

Q And we know that Olympics changed management during a few of those years. How often in the eighties and nineties do you remember the engineering department changing personnel?

Did that happen a lot, or was that kind of a consistent, steady base of employee?

A I can't remember when Craig came into the Engineering Department. But, basically, the top four jobs, I think it was, like the manager, superintendent of Operations, superintendent of Maintenance -- which

was a labor-combined job, and I believe, the Engineer are generally employees of the parent company.

In this case, it was Avalon. I don't recall exactly when Craig showed up there but he was there for quite a while.

Q How about Richard?

A Richard was originally an employee of Mobil that came in -- I believe Richard came in the seventies as an -- and he became an Olympic employee. I think he was a dispatcher and then he went into Operations, and then he worked, you know, into the Engineering.

And Richard's been around for a long time.

Q And in your involvement with them, how competent, like the people on the ground like yourself or the operators that you mentioned, Perry or Hawley, if you might have been talking to them -- what was the talk among the crews and the confidence that the Engineering Department had when they told you to do something, or if they came outside and they were there working a problem with you?

Did you have a lot of confidence in them?

A Yes. Yes. We all think very highly of Richard and Craig. They're very competent.

Q And was it standard procedure so that if something like Bay View had happened that Engineering

would be there at all times?

A Do you mean because of the accident or because of the construction?

Q No, during the construction.

A He was involved at all levels from the beginning. He wasn't there every day, but he was involved with it.

Q So did you report directly to him when you saw something on the inspection level that wasn't going right? Or did you go through your supervisor?

A I went through Craig.

Q So you didn't need to talk to them on your supervisors' data?

A No, not unless it would involve something that would involve David. It's like on an Operations level. But, if there was construction or engineering procedure or, you know, equipment problem or something like that, I'd go get Craig.

And I'd always get a good answer from Craig, too. He was very helpful.

Q All right. And do you remember during the construction or shortly thereafter if any of the operators were -- from the control center or actually on site -- did they come out and perform a tour or did you ever get any training with the facility? Did you

remember being involved in any of that?

A You know, I remember something vaguely after we put product in the system. And, obviously, prior to June 10. But I really don't remember specifically what it was.

I didn't -- I tried not to get myself really heavily involved with operations of the facilities -- any of the facilities. I had four years as an operator so I was fairly confident in my knowledge and ability to do what needed to be done.

And I was very confident in my knowledge of the equipment at Bay View, because I was there from the time they'd first broke the ground.

But I didn't get involved in the day to day operations, unless there was something that they needed my help on. I'd give them a hand. They're pretty much on their own.

Q So, basically, you were just -- when a problem arose, you actually just fixed that problem. You know, if something broke or something was reported malfunctioning? Then you'd come out and handle that?

A Right.

Q Do you remember any instances when the I mean field operator made any adjustments or did anything that required you to step in and help them?

A On the equipment?

Q Yeah.

A No, they wouldn't do it.

Q So the operators of the Bay View station wouldn't make adjustments to the equipment? They were just --

A No. No. If they did, they did it on their own. They didn't do it with anybody's knowledge because that was just -- they flat would not do it.

MR. SMYTH: That's all I've got.

INVESTIGATOR BESHORE: Steve, do you have any questions?

MR. WRIGHT: No, I don't think so.

INVESTIGATOR BESHORE: Tony, do you have anything?

E X A M I N A T I O N

BY MR. BARBER:

Q Just going back to operation and maintenance manuals, for each of the stations, is there a paper copy there, probably?

A Yes.

Q And in each one of them, is there a section on that station? For instance, is there a separate section for the Bay View station in the operation/ maintenance manual, and a separate section for Allyn

station, and so forth?

A I'm not -- I don't believe that if you go to, for example, the Bay View facility, if you'll find any of the operations and maintenance manual for Allyn Station or Ferndale Station.

I think what you would find there would be for that particular facility. You may find some drawings that show, like a line drawing with the system, you know, from one station to the other.

For the most part, it's just basically for that one facility.

Q Then, as far as being electronically available, are you able to, out in the field in any of the stations, are you able to had to assist those by computer? Or do you go to the paper?

A It depends upon what's the most convenient. Currently, it would probably be electronically.

Q What about prior to?

A Probably paper. It would probably be paper.

Q So you're saying prior to June 10, you would access the O&M Manual, the paper copy, rather than the electronic version?

A Correct. At the time 'DAVIE' was put into service, I think that's when the electronic version was just starting -- I think DAVIE basically was a guinea

pig for that as far as the electronic version of it.

I'm not a computer person so I tend to stick with the paper, because I know the paper's there. But, I would check it now electronically to find out what the updates are. You know, to confirm, like if somebody -- well, things have changed so much now, it's not even worth going into it. A lot of changes.

MR. BARBER: I don't have any more questions.

INVESTIGATOR BESHORE: Okay, I've got a few follow-up questions here that I wanted to kind of ask you about.

E X A M I N A T I O N

BY MR. BESHORE:

Q The control valves, like 1904, are you involved -- do they have any adjustments that you can adjust in order like dampening, you know, how they respond? Is that something that you would be involved in doing?

A It's all electronic. It's electrical people that do that.

Q Okay, so the control response is electronic?

A Yes.

Q It's not physical?

A No, it's all done electronically.

Q Now prior to the accident, had you noticed on

any of the pilot operators that had the 100 stamped on there, on the four relief valves, the pilot operators? They had like "100" stamped on the side of them to indicate their pressure rating?

A Oh, you mean like a tag on them?

Q Well, it's stamped right in the body of the thing -- isn't it, Steve? No. Okay. All right.

MR. WRIGHT: There is a name plate. There's a name plate on it that says what it is, I guess.

INVESTIGATOR BESHORE: Like the model, like 1760?

MR. WRIGHT: No, it actually has the pressure rating, I think.

MR. GREENRIDGE: Yeah, it's a little thin tag about yea wide.

MR. WRIGHT: It's black with a white writing, I think, and it says "low pressure 80" or 70 or 100, or something like that.

MR. GREENRIDGE: I know the tags that you're talking about. And I don't think either they were still on at that point or I just didn't pay any attention to them. I don't know.

Like I say, I take responsibility for not noticing that prior to putting them in service. I should have noticed that, but I didn't.

BY MR. BESHORE:

Q Okay, when you guys first noticed that they were set at 100 pounds, did you get out like any of the literature on the valves and look at that? Or did you just immediately, you know, think it's probably the spring?

Did you get out the literature and look at it?

A No. No, we didn't do that.

Q Okay.

A At the time, thinking I was as familiar as I was with the pilot, you know, being they're in the rest of the system here, we just figured it was a spring needed to be replaced.

I didn't know anything about having to have a piston or anything like that replaced in addition to that, at that time.

Q Just based on your experience, you guys, you know?

A We just kind of talked amongst ourselves and said, you know, "Hey, I've got this 350-650 spring. Let's put it in." And it worked.

Since then, I've now known that I need to replace the, you know, the piston, too. But, that was after the incident.

Q What I'm going to ask you to do is I've got -- this is a brochure that Brooks provided. It's on, well, it's called Handbook on Pressure Loss and Valve-Sizing.

But, the main thing I want to do is go to like figure 2 or 3 there and just ask you, Ron, to kind of show us your test -- where you would isolate the pilot, where you would apply the hydraulics to increase the pressure.

And if you could just on one of those sketches, kind of draw that for me to help me out.

A Okay. It would be a valve at this location and this is -- this actually is your downstream that goes to the body of the valve. Is that not correct?

That's the way I see it. This comes off the top. So this would be your relief back to the downstream.

Q That's actually the sense line right there in this particular picture.

A Figure 3 is a little different.

Q Which in your valves is the sensor goes upstream.

A I'm sorry. Here we go. This is it here. This is the one. You'd have a valve here, you'd have a shut-off valve here and a shut-off valve here.

And it would be at this point approximately right here where we put a valve for our sense line. And that's where we would hook up our pressure to the pilot -- no, that's not correct. That's not correct.

(Perusing documents.)

At any rate, you would close off your inlet valve, your top of the piston. You would leave this one open because that's where it relieves -- the pilot relieves out. And you would pressure up.

That's got to be where you'd put it in. I'm trying to visualize it in my head. And you would pressure up your dead-weight tester and pump up the stress, which would allow the pilot to relieve. You know, to pop up at whatever it's going to pop off at. And it would relieve back to the discharge site, or the downstream side.

Q I'm going to have to ask you to kind of label that stuff a little bit so we can look at that later and make sense of it when we're reading back through this.

So you've got where the tap comes off of the pipeline. You've got a shut-off valve there?

A That's correct.

Q And then the top of the main relief valve piston, there's a shut-off valve there?

A Shut-off valve there.

Q The line under the downstream side then would be open then, and then that's your discharge out of the pilot?

A Correct. If you didn't have that open, the pilot wouldn't be able to relieve itself when he tested it.

Q Then, if you could put just maybe a "p" or something where you're pumping the hydraulic in there to increase the pressure.

I'm just trying to visualize and make sure that that's correct.

MR. MARTIN: You don't have any of those photos with you from the 25th?

INVESTIGATOR BESHORE: No. No, I don't.

MR. MARTIN: Okay. I didn't bring any stuff.

MR. GREENRIDGE: I think this sense line is going to be... have you got a picture of it?

MR. MARTIN: I'm looking. I don't know if I brought any photos.

MR. GREENRIDGE: Looking at the schematic and looking at it face to face is two different things to me. But I believe that you've got to pressure up the product, obviously.

BY MR. BESHORE:

Q Is that needle valve actually in a sensing line, or is that internal into the pipe?

A This one?

Q Yeah.

A See, that's what I don't understand about this. We don't even have that on there. That's on the -- well, no, we do, too. We do, too.

INVESTIGATOR BESHORE: Let's go ahead and just go off the record for a minute and let him mark.

(Record paused.)

MR. GREENRIDGE: Okay. You have to close the in-lap from the mainland or what I would call the sensing side. And the top of the piston. And you have to leave the discharge off of the pilot open so it has some place to relieve to when you pump it up.

And then you can set your settings, you know, by your spring on the top of the pilot.

I'm not so sure I've got this drawn exactly the way it should be. But, basically, I put the valves, the three valves, in. And then we had a t-fitting with a shut-off valve and a quick couple for the deadweight tester.

BY MR. BESHORE:

Q And you increased the pressure on the inlet side of the pilot --

A Correct, to allow --

Q -- until the pilot operates?

A Yes, until it popped off.

Q All right, I'll just label that --

A It's probably not very good, but...

INVESTIGATOR BESHORE: Greenridge Exhibit C, I think.

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(Whereupon, the above-entitled document, Exhibit G-C, was marked for identification.)

BY MR. BESHORE:

Q Now you mentioned that when you went out and reduced the set point from 700 down to 650, you don't remember who it was that you talked to that gave you that direction.

Is that correct?

A It would have to have been one of those three people.

Q Do you remember why?

A No. You know, I really don't.

Q So that either you don't remember or they didn't tell you?

A It was one or the other. I do remember when I was told to set it at 700, I questioned it. I do remember that.

Q Okay, because of the range for the spring?

A That's correct.

Q And then I just want to make sure you weren't aware of any times during the operation of the Bay View where the pressure exceeded whatever you had the relief valve set at? You weren't aware of any --

A No.

Q So, when it was set at 700 pounds, to your knowledge, you weren't aware of it ever exceeding 700 pounds?

A Not to my knowledge, no.

Q And then the same after, when you set it back to 650, you're not aware of any times when that exceeded 650?

A No.

INVESTIGATOR BESHORE: Does anybody have any other follow-up questions? Linda does. Okay, Linda.

R E E X A M I N A T I O N

BY MS. PILKE:

Q I think I just had two. Could you elaborate on something that you just said about questioning the setting at 700? Tell us what you recall about that.

Who did you question that to? Why did you question? And what was their response?

A Well, again, I don't remember which person it was that I talked to about that. That was -- that's a year and a half ago, and I don't remember that at all, who it was.

But, the only reason why I questioned it was because the spring rating was 350 pounds to 650 pounds. And we were going beyond that maximum rating. And I don't know what my words were but it was probably something to the extent of:

"Are you aware that's beyond the rating of the spring?" You know, probably not those exact words.

And that would have been the only reason why I would have questioned it.

Q And then what was the response?

A "Give it a try and see if it works. If it works, we'll try it there," you know, or "leave it there."

I don't know if it was something they wanted to leave permanently or if it was just an experiment or what. But, it did work. It did function the way, you know, it would have at 650 pounds as far as my testing goes.

Q But, the other thing I wanted to ask you

about was whether you could sort of give me a description of the preventative maintenance program for prior to June 10.

A We had a pretty good preventative maintenance program. I did a lot of it. But, I don't know as if we wrote anything down. But, you know, I mean just years of working on the equipment told you what, you know, pretty much what your reliability of certain pieces of equipment was.

And so you had kind of a pretty good idea what needed to be taken care of at a specific -- maybe not a specific time but, you know, like we had some pumps that were put into the pipeline in 1965 and 1970 that by running some efficiency tests on them, we knew that we were, you know, the clearances, run the rotating it and putting it in those pumps was starting to open up.

So the pumps weren't running as efficient as they should have been running as far as on the curve.

So we determined by running some of those efficiency tests that we needed to take these pumps out when it was convenient for, you know, for the scheduling system and take them down and have them completely rebuilt and put back into service.

And other things were just common sense. You

know, you know you've got to change the oil on your equipment at a certain, you know, two or three times a year on the pumps and motors.

Other pieces of equipment, you may only change the oil once a year on them, and everything is just fine.

So that's pretty much the way it was. And we -- when I first went into Maintenance, you could just about guarantee that three or four times a week you were getting called out to do some work after hours or on weekends, whatever.

The last probably ten years, since we started doing -- getting real serious with preventative maintenance. There's never been a problem.

I have some pumps that have been in service since 1965 that have the original mechanical seals on them. And to the manufacturer, John Crane, they're astounded by this. But, they don't leak.

I've taken them apart to inspect them. They don't need to be replaced. I put them back in. It's one of the old sayings, "If it ain't broke, don't fix it." You know, if it works beautiful, leave it alone.

Other pumps, you may go six months and a seal blows on it. But, you get to know which ones are the problem ones and which ones are the reliable ones, you

know.

And this turned out that after we implemented this PM work, we just almost eliminated the

E 3***

that again? After you implemented the recent preventative?

A Within the last ten years. It was kind of a goal of the Maintenance Department was to get the call-outs cut...

Q So what I hear you describing is a problem that isn't necessarily... problems. It's just really--

Q Say that again? After you implemented the recent preventative maintenance?

A Within the last ten years. It was kind of a goal of the Maintenance Department, was to get the call-outs cut...

Q So what I hear you describing is a problem that isn't necessarily institutionalized and formalized, but you relied on your experience and your

familiarity with the equipment to know how -- to sort of develop preventative maintenance schedules?

A That's correct. There was some PM procedure, I believe, written down. I think it went back as far as the Mobil. And we tried. Paperwork is not my forte'. Let's put it that way. I don't like to sit down and work all day long on doing paperwork.

I enjoy doing mechanical work. I like to go out and work with my hands, with my tools and equipment.

I guess you could say in that sense we depended -- and I'm not the only mechanic that's like that. They're all like that. We probably depended on other people to develop the paperwork for us. Frankly, we were too busy.

Q Would you -- what do you think about -- how would you evaluate the consistency between stations with a system like that, the consistency in preventative maintenance?

You have a system where you're relying on people's experience and their personal knowledge. Was there a lot of consistency in the way preventative maintenance was done?

A A whole lot. Primarily, there's been three performing the annex over the years, at least the last

ten or fifteen years. Every one of us is very familiar with all the equipment.

I'd work on every piece of equipment on this pipeline from Cherry Point to Portland at one time or another.

And a lot of the equipment is the same stuff. You find the same pumps at Castle Rock that you would at Tacoma, Olympia or Renton, you know, Allyn station.

You develop a procedure, each mechanic. We like to think of ourselves as independents, but we do work together often. And we all know how each person is -- and we all depend on each other to keep the reliability of that equipment up, because none of us like to work on overtime.

Q Have you in the last ten years that you talked about, the really fine-tuning the preventative maintenance program, have you ever had new folks that you were training to do your job, the mechanical work?

A I've had some responsibility -- not responsibility. I've done some of the training for all of the mechanics.

Q So how would you train them on a preventative maintenance program?

A I would try to get them out every time there is a problem with something, whatever piece of

equipment it was. I would try to make sure that the trainee was there to experience what, how to fix it.

Almost invariably, it would come up, like "Well, how often does this happen?" You know, and you can tell them, "Well, this is a real oddball. We say we don't have this very often, but this happens quite a bit."

Then, after a few years, they get to learn themselves.

Q Have you ever in that same ten-year period been involved in some kind of a routine maintenance on equipment that were where a spill resulted, you know, oil to the ground?

A For maintenance?

Q Right.

A Nothing major. I might have spilled a can of oil or something like that. Oh, I take that back. I don't know, a few years ago, I was changing a seal, suggesting a seal on a vertical component.

And the meeting ridge broke and I spilled, I don't know, ten, twenty gallons of gasoline underground. It was contained to a particular area.

Actually, this is probably within the last year that that was reported.

Q Let me just back up and ask one follow-up

question on this trainee, this idea about the trainee.

Would it be part of your process to let the trainees know where the manuals for these pieces of equipment are located?

And also, second half of the question, to actually have the manuals with you when you're doing the preventative maintenance work?

A They would know where it is, yes.

And on number two, as far as having it with me, it would depend on the equipment I was working on.

Q What would it depend on?

A The main reason that those books were used were in finding what the pressure setting would be, for example. There is some information in there, I believe, or used to be anyway, that said like "Change oil on the mainline pumps twice a year," or whatever, that kind of thing.

But, whether that was -- I don't believe it was ever used for that. It was primarily for finding the settings...

Q Was part of your job working with the internal inspection tools that the company used?

A No.

MS. PILKE: That's all of my questions.

INVESTIGATOR BESHORE: Geoff.

E X A M I N A T I O N

BY MR. SMYTH:

Q Can we just go back to when you were changing that spring out initially the first time. And you mentioned that you didn't know whether the gentleman, I believe his name was Jim, got the spring from, whether he had it in his truck or whether it was inside a piston and he might have taken it apart.

Then you speculated saying that there's talk that he might have taken it apart. That maybe might be a big deal now or something.

Do you know why there'd be -- people would be talking about whether or not he had a spring versus whether he took it apart?

A No. It's basically a case of "he said/she said". I said, when I was interviewed previously, that I thought he had the spring. I've since heard that the said that he had the entire pilot assembly, that he took the spring out.

Q Do you think that through the knowledge that Ken or yourself or some of your maintenance people, you might have known that you needed to change more than just a spring?

I mean if you had these valves in other services and locations? You're saying Jim had these

valves on his?

A I don't think any of us were aware. I'm not going to speculate for the other guys. But, my gut feeling is no.

INVESTIGATOR BESHORE: Peter?

E X A M I N A T I O N

BY MR. KATCHMAR:

Q Ron, I have three questions.

Who would normally communicate with Hoffman Instruments Supply?

A Whichever one was distributing parts. Ken Carlton ordered parts...Fraley, Upshur. Brady probably ordered parts.

Q Okay, so you would -- whoever --

A If it was for my equipment, I would order my parts from HIS. And if it was for Carlton's, he would order equipment from --

Q Okay. Did you ever receive faxes from them, communications back from them confirming your order?

A I talked to them and ordered the parts on the phone, had a conversation. I never had any electronic conversations.

Q No, I meant communication, you know, like you ordered this and he'd send you something confirming the order? You know, fax you a copy of a purchase order

thing or something?

A Well, no. I don't think so.

Q You would just, you know, the part would just show up?

A I'd give a P.O. number and he'd put the P.O. number. And when the part came in, it was a shipping order or, you know, shipping list, or whatever you want to call it.

Q Where would that part come to at Olympic?

A It would usually come to my shop at Allyn station -- if it was for me.

Q It wasn't like everything came to Renton and you had to go down there to pick up your part?

A No. See, we took care of our own equipment as far as ordering parts, and so forth. Once in a while, if one of the guys was ordering some stuff that we used a lot of -- like O-rings, for example -- our supplier for O-rings is right around the corner.

So it was real handy, say, for Ken, if he's ordering a bunch of O-rings for a certain size valve, A-valve or something, and he'd give me a holler and say, "Hey, are you getting the, you know, what's your supply on these parts."

And he'd go ahead and he'd get me some. And then, you know, it would have his P.O. number or

whatever on there, but he would order enough to where he could have his, and then he'd get some for me. Things like that.

But, for the most part, I ordered my own parts.

Q Would you have to go through David Justice if a certain dollar figure was reached or something, to say, "Hey, Dave, I've got to do this" and he'd --?

A Oh, yeah.

Q For everything?

A No. No. I had a lot of -- we all had a lot of freedom as far as when it came to purchasing equipment. Basically, they rely on us to have the parts there. They rely on us to have everything that we need to repair something, or replace it, whatever the case may be.

And they let us use our judgment on what parts to keep in stock. High-ticket items, high-dollar items, I definitely start with David and move up from there.

Q You said over and over that in your opinion the RVs were working properly.

A That's correct.

Q What makes you so sure that they were working properly?

A The day there that we took that out up there, Doug Bue showed me documentation taken off of the Bay View computer and it showed that valve relieved. And it showed it relieving at 655 pounds.

Well, you know, five pounds from what I had it set at, that could be the thickness of the needle gauge that I was using. And it showed it definitely surging off to the tank.

Q What documentation did he show you?

A It was the line sheet that they took where they show the, you know, the different surge relief valves, or the different line pressures into and out of the station.

And it showed -- I believe it showed the spike, and it showed the 655 pounds as to what the surge relieved at.

And I believe it also showed, you know, the flow switch on the surge relief valve activated. And they had barrels -- I don't know how many -- but they had product going to the tank 209.

And that was all documented on there. I wish I had a copy of it.

Q We've got a lot of data from the BLC, but can you -- when you saw that, was there a pressure trend?

A Yes, it was a trend.

Q Can you explain what it looked like? The hard job was building until it got to 650. Then, did it drop?

A It was actually, it was a fairly straight line, and then it just showed the spike. And when it hit the spike, it also indicated that, you know, the relief valve opened at 650 pounds.

Then you saw a drop. And I'm not sure, but it seemed like I saw a little bit of a climb again. And then I think it climbed some more when the incoming block valve, by the time it finally got closed.

But, it did show that, you know, the flow switch was tripped on the surge relief valve.

Q You're talking about the day of the accident?

A That's correct, June 10.

Q The data for the day of the accident?

A The data from June 10, that's correct. And that was the day -- that was like two weeks later or something. Whatever the date was that we pulled that valve open. Michael was there, you were there, and I don't remember the exact date. I think it was the 28th. Yeah, that rings a bell. And that's when Doug showed it to me.

Q You don't remember it oscillating, the pressure going up and down and up and down?

A I don't recall that.
Q But, in your mind, whatever Doug showed you--
A Had proved to me that it worked, yeah.
Q And how about before that? You know, like after you set the relief valve to 700 pounds?
A I never saw any trending. That was the first time I had seen any trending off of the POC.
Q In your mind, you've stated that it was working properly as far as you knew?
A That's correct. That's correct.
Q Since you commissioned in December?
A Yes. And previous testing -- or post-testing after the accident has proved to me that it worked.
Q It even showed it went to lower pressure?
A Oh, yeah. Yeah, it did, which in our case would be to our advantage.
Q Yeah. Well, that was why I asked why do you think they told you to set it from 650 to 700 instead of 600?
A I don't know. I wish I could answer that but I just -- I don't have any answer.
Q Did you all ever have a manufacturer come out and go over maintenance with anything -- a pump, a valve?
A For Bay View, you mean, or for any --

Q Let's go back to what Linda was asking about the P.M. and all that. You were training these guys pretty much OJT. Whenever anything would happen, you would make sure the trainee was there.

Did anybody ever do like a workshop where they may ask somebody to come in, like a pump manufacturer?

A Oh, yeah. In fact, we're very fortunate in this area. In Portland, you have Salzer-Bingham pumps. We have a lot of Salzer pumps. And they have a service center down there. Besides the factory where they actually build all of the Bingham pumps, they also have a service center where they'll work on any brand, any type of pump.

They are our maintenance rep, you know, for our pump repair. And all of us -- well, I take that back. I'm not going to say all of us, but Ken Carlton and I, for example, had both been to I believe it was a three-day school at Salzer Pumps in Portland.

I think Chris Anderson and Jim Fraley -- I'm not sure if they've been or they're going. I can't remember for sure. I really couldn't tell you.

Q Do you have anything on valves?

A Oh, yeah. I've been to schools in Texas. We've had people out at the facilities going over valve

maintenance, and so forth.

Q Specifically, on relief valves? I'm talking prior to the accident.

A I don't think so, no. If it was, it was quite a long time ago, you know. But I don't really know for sure. I can't remember.

Q I'm going to make a statement and ask you to discuss it:

In this discussion today, you haven't mentioned David Justice a lot. And, you know, he's your immediate supervisor. I'm just wondering was there a good relationship between the two of you?

A Yeah.

Q Or was -- you mentioned also I guess that you worked independently. You could.

A That's correct.

Q I'm just wondering about the relationship. I mean, you know, whenever I talk about my job, I mention my boss all the time. And I just noticed that you haven't. I was just wondering maybe why.

A David Justice hired on with Olympic approximately three or four months after I hired on. He worked in the Portland area. Later on, he moved up to the 'CTAC' area and then Renton. And then, eventually, he took over as the North End supervisor.

But, David and I have been very good friends for many, many years. And David trusts me to do my work. I trust him to take care of me as he being my supervisor.

He didn't know all that much about my job and I didn't expect him to know much about my job. But, on the other hand, I didn't know all that much about his job either. You know.

David left us alone, all of us basically, to do our job if we knew what we were doing. If he saw something he didn't like, he'd ask about it.

I talk to David quite a bit. At that time, David was living down here and working out of the Renton office. You know, he didn't move up to Mount Vernon until much later.

But I talked to David several times a week. He would come up several times a week, you know. And he always wanted to know if everything was okay.

I'm not going to say David was the best supervisor I ever had. But he was by far a long way from the worst.

And I knew David would go to bat for me. And if I needed a chewing out, I'd get it. But, we always remained friends. We still are.

MR. KATCHMAR: Good answer. Thank you very

much. That's all I have, Allan.

INVESTIGATOR BESHORE: Anybody else?

I have a couple, and Peter kind of alluded to it a little bit, but I want to ask a couple of pretty direct, I guess.

E X A M I N A T I O N

BY MR. BESHORE:

Q Prior to the accident, did you ever have any conversations -- I know we kind of bordered on it, but prior to the accident, did you ever have any conversations with Hoffman about additional parts that were necessary besides those springs?

A With Hoffman at Instrument?

Q With Hoffman.

A No.

Q Or with anybody?

A No, sir.

Q So you had no knowledge that there was additional parts necessary until after the accident?

A Until after the accident.

INVESTIGATOR BESHORE: Okay, I just wanted that to be clear.

MR. BESHORE: Okay, then my final question is, if there's anything else that we haven't asked you about that you've thought about over the last year and

a half that you think we might need to know in order to figure out what happened here?

MR. GREENRIDGE: There's lots of things I'd like to say but they would basically show me defending the company.

INVESTIGATOR BESHORE: That's fine.

MR. GREENRIDGE: I'm sorry. You have to understand I'm a little emotional still about this whole thing, these kids. But you also have to understand I have a lot of loyalties to this company. I feel like they've been shit on -- excuse my language.

Well, people's reputations have been really damaged by what has happened and I think it's totally unfair. Everybody -- everybody within this company -- that's had anything to do with this has worked their tails off.

And I just want to know when they're going to go after the contractor that caused this.

That's all I've got to say. I'm sorry.

INVESTIGATOR BESHORE: Okay. Well, thank you again.

(Mr. Greenridge excused.)

(Whereupon, the Interview concluded.)

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REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before: NTSB

In the Matter of:

PIPELINE RUPTURE

were held as herein appears and that this is the original transcript thereof for the file of the Department, Commission, Administrative Law Judge or the Agency.

EXECUTIVE COURT REPORTERS, INC.
1320 Fenwick Lane, Suite 702
Silver Spring, MD 20910
(301) 565-0064

Official Reporter

Dated: MARCH 13, 2001

National Transportation Safety Board

Washington, D.C. 20594

In the Matter of the National Transportation Safety Board Investigation of the Pipeline Accident Occurring in Bellingham, Washington, on June 10, 1999.

COMPULSION ORDER

It appearing to the satisfaction of the Chairman of the National Transportation Safety Board:

1. That Ronald Greenidge has been called to testify or provide other information in this matter;

2. That Ronald Greenidge has refused or is likely to refuse to testify or provide other information, on the basis of his privilege against self-incrimination;

3. That in the judgment of the Chairman of the National Transportation Safety Board, the testimony or other information from Ronald Greenidge may be necessary to the public interest; and

4. That this order has been issued with the approval of the Attorney General or her designated representative, pursuant to 18 USC Section 6003 and 28 CFR Section 0.175.

NOW, THEREFORE, IT IS ORDERED, pursuant to 18 USC Section 6002 and 6004, that Ronald Greenidge appear and give testimony or provide other information which he has refused or is likely to refuse to provide or give on the basis of his privilege against self-incrimination as to all matters about which he may be questioned in this matter.

IT IS FURTHER ORDERED that in accordance with the provisions of 18 USC Section 6002, Ronald Greenidge shall forever be immune from the use of such testimony or information or any information directly or indirectly derived from such testimony against him in any prosecution, penalty or forfeiture, either State or Federal or otherwise; but the witness shall not be exempt from prosecution for perjury, giving a false statement or contempt committed while giving testimony or producing evidence under this order.

Dated this 6th day of September, 2000.

Jim Hall
Chairman

Greenidge Exhibit A

Lotus cc:Mail for todd smith

Date: 12/18/98
Sender: Ron Greenidge
To: #All Olympic Employees
Priority: Normal
Subject: Bayview surge relief valves and On call coverage

Author: Ron Greenidge at renton_opl
Date: 12/18/98 2:26:29 PM
Priority: Normal
To: Mail List - #All Olympic Employees
Subject: Bayview surge relief valves and On call coverage

The Bayview/Ferndale incoming surge relief and the Bayview/Ferndale outgoing surge relief are active and set to relieve at seven hundred pounds, This means that both sides (incoming and outgoing) pipelines are protected against any high surges. You may use one or both pumps as you wish at Bayview. On another subject, Ken Carlton will cover my area and take my call-outs and my on-call weekend while I am on vacation. I wil return to work on Wednesday, Jan. 6th, 1999. Merry Christmas and Happy New Year to all my friends at Olympic.

ACB

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Greenidge Exhibit B

HOW TO GET A LOWER PRESSURE DROP

The explanation of Curve A included pilot operated valves with Y or Z port vented to a sump, atmosphere or pump suction. (See Figure 2.)

When Y or Z-port is vented to a low pressure source as described, this reduces the hydraulic pressure on the spring side of the piston. The differential force across the piston is (P1 minus P3). Any time (P1 minus P3) is equal to or greater than the pressure drop shown for Curves B, C, and D at the point they intersect Curve A, the main valve is full open, regardless of flow rate.

Examples:

Curve B — If (P1 - P3) is equal to or greater than 10 psid, the main valve is full open.

Curve C — If (P1 - P3) is equal to or greater than 17.5 psid, the main valve is full open.

Curve D — If (P1 - P3) is equal to or greater than 40 psid, the main valve is full open.

Figure 3 represents most installations with Z-port vented to the valve body outlet. The pressure loss across the valve will follow Curve B, C, or D (non-control state).

INTRODUCTION TO VALVE SIZING

Valve sizing breaks down into two (2) categories:

A) Sizing on-off or open-close type valves which do not perform any control functions. Generally the pressure drop is the main factor, and valve size is not critical. Two-stage electric operated valves (Models 787, 788, and 789) are considered on-off valves and follow this procedure.

B) Sizing modulating control valves (most common for pressure reducing and relief valves). All modulating valves are used purposely for inducing a pressure drop (constant or intermittent) greater than shown on Curves C or D.

Figure 4 shows a typical pump system and why control valves are required. In this illustration, a pressure reducing valve is required to control the outlet pressure of the system. The pump curve illustrates the pressure loss of each component in the system with the valve absorbing the pressure not required.

Control valves are sized to get good control. An undersized valve will never deliver the full flow rate. An oversized valve will be throttling near the closed position which will sharply narrow the controllable flow range. The full control range of the valve will not be utilized. When the piston throttles very close to the seat, high fluid velocities occur which can cause erosive damage and erratic control.

The accepted method of valve sizing is the "Cv" approach. **"Cv" is a capacity coefficient which is defined as: The number of US gpm of water which will flow through a wide open valve with a pressure drop of 1 psi across the valve.** The Cv of our valves is in the following chart.

Valve Size	2"	3"	4"	6"	8"	10"	12"	16"
Cv - GPM	**86**	**186**	**309**	**688**	**1296**	**2040**	**2920**	**5360**

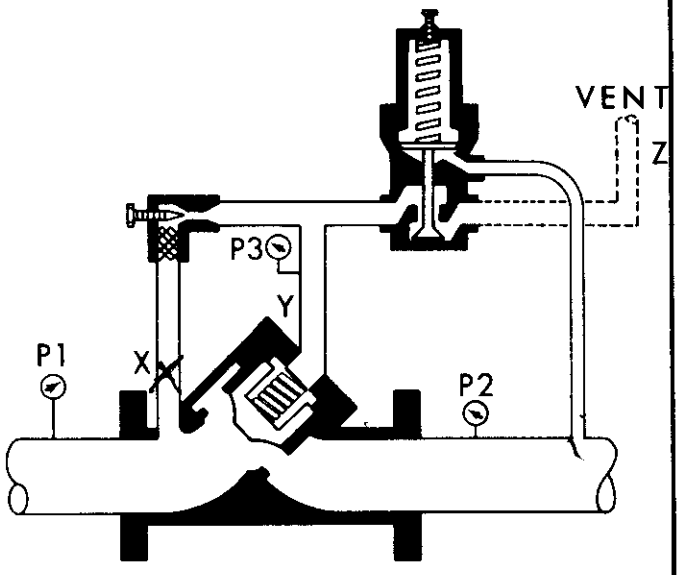

Figure 2

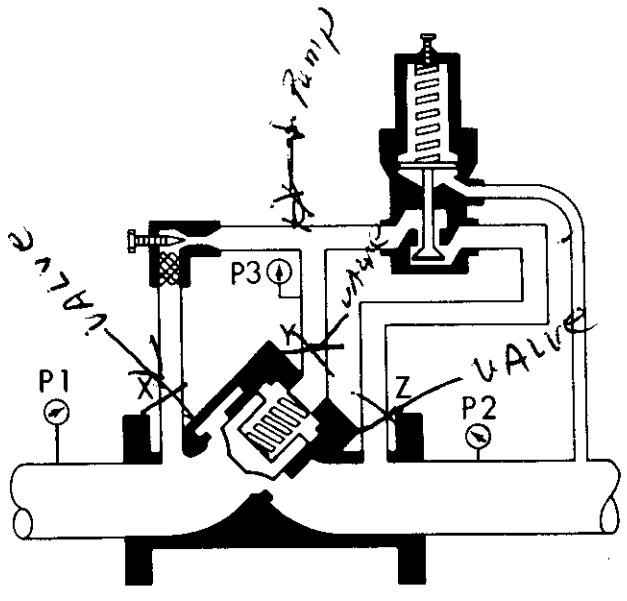

Figure 3

GREENIDGE EXHIBIT C