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A P P E A R A N C E S

MICHAEL A. VITALE, Attorney at Law
DANIEL S. PETERS, Attorney at Law
HERZOG, CREBS & MCGHEE
515 North Sixth Street
St. Louis, Missouri 63101
314-231-6700
FOR: Union Electric Company d/b/a AmerenUE

JAMES J. COOK, Attorney at Law
DAVID B. HENNEN, Attorney at Law
1901 Chouteau Avenue (MC 1310)
St. Louis, Missouri 63101
314-554-4673
FOR: AmerenUE

BRIAN H. MAY, Attorney at Law
YATES & MAY
101 South Hanley
St. Louis, Missouri 63105
314-225-8285
FOR: Zoltek Corporation

TERRY C. ALLEN, Attorney at Law
102 E. High Street
Jefferson City, Missouri 65110
573-636-9667
FOR: Zoltek Corporation

LERA L. SHEMWELL, Assistant General Counsel
P.O. Box 360
Jefferson City, Missouri 65102
573-751-6434
FOR: Staff of the Missouri Public Service Commission

1 JUDGE THOMPSON: Mr. Arnold, you're still on
2 the stand. We completed questions from the Bench from
3 Commissioner Gaw.

4 And I should -- I meant to inform the parties
5 yesterday, but I'll inform you now. When we finish with a
6 witness and we excuse them, that is subject to recall if one
7 of the Commissioners should come up with a question prior to
8 the end of the hearing. Okay?

9 I figured that your witnesses who have job
10 duties back at Zoltek in St. Louis would rather go there
11 then wait here just in case they're going to get asked some
12 additional questions. Okay? Very good.

13 And I have no questions for you, sir, so we
14 would then be ready for recross based on questions from the
15 Bench.

16 Ms. Shemwell?

17 MS. SHEMWELL: No questions, thank you.

18 JUDGE THOMPSON: Thank you. I'm going to
19 endeavor not to forget you today.

20 MS. SHEMWELL: Thank you. I appreciate that.

21 JUDGE THOMPSON: Ameren?

22 MR. PETERS: Thank you, your Honor.

23 MICHAEL ARNOLD testified as follows:

24 RECROSS-EXAMINATION BY MR PETERS:

25 Q. Mr. Arnold, Dan Peters again for AmerenUE.

1 A. Good morning.

2 Q. Good morning. We broke your testimony late
3 yesterday and I just had some notes, so maybe if I could
4 recollect. I believe you were also using the analogy about
5 comparing the problems at Zoltek to a residence and a clock
6 going off at the residence. Was that correct? When you
7 were asked by Commissioner Gaw about how you described the
8 service at AmerenUE, do you recall what your analogy was to
9 the reference?

10 A. I referred to the service that I have at home
11 relating to microwave clocks, oven clocks things like that.

12 Q. Okay. Right. And I'm sorry. Again, you're
13 an engineer?

14 A. Yes.

15 Q. What type of engineer are you?

16 A. Electrical.

17 Q. Electrical. Are you a registered professional
18 engineer?

19 A. No.

20 MS. SHEMWELL: Your Honor, this is beyond the
21 scope for recross.

22 JUDGE THOMPSON: I'm going to overrule the
23 objection. Please proceed.

24 BY MR. PETERS:

25 Q. So, again, the analogy that you were making

1 about the house and the clock going off, that is with a
2 total outage is when your clock would go off; is that
3 correct?

4 A. I'm not certain. If there's anything that's
5 slightly just a flicker or anything, the clock will reset.
6 I mean, just the slightest incident will reset the clock at
7 home.

8 Q. Are you aware of experiences by residents in
9 their homes of dimming of lights when a microwave is turned
10 on or a furnace turns on, something like that?

11 A. I believe I've seen that, yes.

12 Q. I have. And so, I mean, is that a common
13 understanding that in a home, in a residence, that lights
14 can dim when a furnace goes on, kicks on?

15 A. Sure. Every --

16 MR. MAY: Let me interrupt for a moment. I'd
17 like to object on the basis of relevancy. I'm not sure
18 where this line of questioning is leading, but nonetheless,
19 it doesn't seem relevant to the problems that Zoltek has
20 experienced at its Missouri Research Park facility.

21 JUDGE THOMPSON: Well, I think he's exploring
22 the example that was used admittedly by the last witness,
23 Mr. Agne, but I think that they have a right to explore this
24 to some degree. So I'll give you some leeway. Okay?

25 MR. PETERS: I appreciate that, your Honor.

1 JUDGE THOMPSON: Of course, it's not clocks
2 that they're complaining about.

3 MR. MAY: Your Honor, if I may also just for
4 the record state the objection that Ms. Shemwell had stated
5 as well. I believe that this is beyond the scope of, in
6 essence, the questions from the Bench that led to this
7 recross. If I understand this process, it's kind of like a
8 funnel, becoming narrow and narrower.

9 JUDGE THOMPSON: Indeed it does. That's a
10 very adapt analogy and may spark several hours of questions.

11 Please proceed.

12 BY MR. PETERS:

13 Q. And, Mr. Arnold, that's why I was asking
14 you -- again, we've had an overnight break, we ended and I
15 don't honestly recall your testimony. Correct me if I'm
16 wrong.

17 My recollection with Commissioner Gaw was you,
18 yourself used an analogy of the problems at Zoltek to
19 situations at a home?

20 A. Yes, sir. I stated I did.

21 Q. That's what I'm asking you about.

22 A. Yes. You also made reference to when the
23 furnace kicks on, lights may dim or whatever. That's
24 somewhat true. I would say more so with an air conditioner,
25 but I don't have to go reset my clocks.

1 Q. Okay. Okay. And as I questioned Mr. Agne,
2 you're not saying that you have had an experience where your
3 clock goes off on a regular basis or daily basis?

4 A. No.

5 Q. And your analogy to the clock going off at
6 your home, was it as Mr. Agne was, to just say the
7 frustration that a homeowner would encounter when they go
8 home and see that their clock is off?

9 A. No, sir. My reference was the fact that if I
10 have to reset my microwave two or three times a year, that's
11 all that I would say it happens.

12 Q. And you're comparing that to your problems at
13 Zoltek?

14 A. I say that we have more incidents of the same
15 type at Zoltek, yes.

16 MR. PETERS: Okay. Nothing further, your
17 Honor.

18 JUDGE THOMPSON: Thank you very much.

19 Redirect?

20 MR. MAY: No, your Honor. No questions.

21 JUDGE THOMPSON: Thank you.

22 You may step down, sir. You may leave, but as
23 I said, if a Commissioner should come in with a question for
24 you, we might have to get you back here.

25 Mr. Spahn, David Spahn.

1 (Witness sworn.)
2 JUDGE THOMPSON: Thank you, sir. Please state
3 your name for the reporter and spell it.
4 THE WITNESS: David Spahn, S-p-a-h-n.
5 JUDGE THOMPSON: You may inquire.
6 MR. MAY: Thank you.
7 DAVID SPAHN testified as follows:
8 DIRECT EXAMINATION BY MR. MAY:
9 Q. Mr. Spahn, who's your employer?
10 A. Zoltek Corporation.
11 Q. And what is the position you occupy at Zoltek
12 Corporation?
13 A. Corporate manager of process engineering.
14 Q. Okay. I'm going to -- or I've handed to you,
15 I should say, what has been marked as Exhibit 7. Could you
16 identify that, please?
17 A. It's my Direct Testimony.
18 Q. And this is the written testimony that was
19 pre-filed in this matter; is that correct?
20 A. Yes, it is.
21 Q. And is that your signature that appears near
22 the back?
23 A. Yes, it is.
24 Q. And if these questions were asked of you
25 today, would you answer in substantially the same manner?

1 A. Yes, I would.

2 Q. Are there any corrections you wish to make to
3 this testimony?

4 A. No, there are not.

5 MR. MAY: Your Honor, in light of that, I'd
6 like to move for the admission of Exhibit 7, please.

7 JUDGE THOMPSON: Do I hear any objection to
8 the receipt of Exhibit No. 7?

9 MR. PETERS: No objection, your Honor.

10 JUDGE THOMPSON: Hearing no objections, the
11 same is received and made a part of the record of this
12 proceeding.

13 (EXHIBIT NO. 7 WAS RECEIVED INTO EVIDENCE.)

14 MR. MAY: Thank you, Judge.

15 BY MR. MAY:

16 Q. Mr. Spahn, I've also handed to you what's been
17 marked as Exhibit No. 8. Could you identify that, please?

18 A. It's my Surrebuttal Testimony.

19 Q. And this Surrebuttal Testimony was pre-filed
20 in this matter. Correct?

21 A. Yes.

22 Q. And is that your signature that appears near
23 the back or at the back?

24 A. Yes, it is.

25 Q. And if these questions were posed to you

1 today, would you answer in substantially the same manner?

2 A. Yes, I would.

3 Q. Are there any corrections you wish to make to
4 this?

5 A. No, there are not.

6 MR. MAY: Your Honor, I would move for the
7 admission of Exhibit No. 8.

8 JUDGE THOMPSON: Any objection to the receipt
9 of Exhibit No. 8?

10 MR. PETERS: No objection, your Honor.

11 MS. SHEMWELL: No, your Honor.

12 JUDGE THOMPSON: Hearing no objection, the
13 same is received and made a part of the record of this
14 proceeding.

15 (EXHIBIT NO. 8 WAS RECEIVED INTO EVIDENCE.)

16 MR. MAY: Your Honor, I wish at this time to
17 tender the witness.

18 JUDGE THOMPSON: Thank you.

19 Ms. Shemwell?

20 MS. SHEMWELL: No questions. Thank you, your
21 Honor.

22 JUDGE THOMPSON: Thank you.

23 Mr. Peters?

24 MR. PETERS: Thank you, your Honor.

25 CROSS-EXAMINATION BY MR. PETERS:

1 Q. Good morning, Mr. Spahn.

2 A. Good morning. My name is Dan Peters and I'll
3 be asking you questions on behalf of AmerenUE this morning.

4 Mr. Spahn, you were in this courtroom
5 yesterday as we took the testimony of Mr. Romy and Mr. Moran
6 and Mr. Arnold. Correct?

7 A. Yes, I was.

8 Q. And you also have attached to your Direct
9 Testimony a Schedule No. 1, which is labeled Exhibit DS-2.
10 Correct?

11 A. Yes, I do.

12 Q. And the schedule attached to your Direct
13 Testimony is similar in nature to the schedules attached to
14 the Direct Testimony that we asked those other witnesses
15 about. Correct?

16 A. I did not see their Direct Testimony.

17 Q. Okay. Are you familiar with a schedule that
18 Zoltek has proffered which shows 277 service quality
19 incidents since 1993?

20 A. I'm familiar with the schedule. I did not
21 count the number of incidents.

22 Q. Okay. Is it your understanding that your
23 schedule attached to your Direct Testimony is either part of
24 or incorporated into a larger schedule that rather than stop
25 at 1995, as yours does, goes on through 2001?

1 A. Yes.

2 Q. Okay. And did you prepare Schedule 1 to your
3 Direct Testimony?

4 A. Well, as we've gone through, the operators
5 logged instances, Wayne Agne collected the sheets as they
6 were completed and then they were transcribed to a document
7 very similar to this.

8 Q. My question to you was, did you prepare
9 Schedule 1 to your Direct Testimony?

10 A. I did not type it.

11 Q. Did you prepare it in any way? I mean, by
12 answering that you didn't --

13 A. Yes. I've reviewed the incidences.

14 Q. In what respects have you reviewed the
15 incidences in the Schedule 1 to your Direct Testimony?

16 A. Well, when we first started keeping this
17 document, it was because we were working cooperatively with
18 Union Electric. And, as a matter of fact, Union Electric
19 complimented us on -- on our document, the way we kept it,
20 the level of detail.

21 But then as things progressed, Union Electric
22 wanted to know about damages. So then we had to take this
23 document and we gave it to some accounting people that
24 reported to me and they went through all the plant log books
25 to check in each instance which of the plant's 50 pieces of

1 equipment went down for any particular incident. And so
2 during that comparison of this document to the log books,
3 each item was checked.

4 JUDGE THOMPSON: Thank you. Do we have enough
5 of these for the Commissioners?

6 MR. PETERS: Yes, we do. Do you want me to --

7 JUDGE THOMPSON: Yeah. Why don't you let me
8 have those now? Thank you, sir.

9 BY MR. PETERS:

10 Q. Mr. Spahn, I've handed you a document which
11 I'd ask it be marked as Exhibit 21 or 22.

12 JUDGE THOMPSON: This would be 22.

13 (EXHIBIT NO. 22 WAS MARKED FOR
14 IDENTIFICATION.)

15 BY MR. PETERS:

16 Q. Do you recall your deposition being taken in
17 this matter on August 15th, 2001?

18 A. Yes, I do.

19 Q. I'd ask you to look at page 46, please --
20 actually, start on page 45. Ask you to read from line 15 on
21 page 45 through page 46.

22 A. Question, How is --

23 Q. No. You don't have to read it out loud at
24 this time. Just read it and then I'll ask you some
25 questions.

1 Are you done?

2 A. Yes.

3 Q. And those questions pertain to the same

4 document, DS-2 Schedule 1 to your Direct Testimony, that I'm

5 asking you about right now. Correct?

6 A. That is correct.

7 Q. I'd ask you to look at line 1 -- starting on

8 line 1 on page 46. Okay? If you could follow and I'll ask

9 you the same questions.

10 Mr. Spahn, you didn't type out Exhibit DS-2,

11 did you?

12 A. No, I did not.

13 Q. You didn't dictate DS-2, did you?

14 A. No, I did not.

15 Q. You did not look at another document and then

16 write down the information that is now contained in DS-2,

17 did you?

18 A. No, I did not.

19 Q. The first time you saw this document was when

20 it was given to you by your attorney. Correct?

21 A. Maybe.

22 Q. Then I'll read the question at line 11. The

23 question asked you in your deposition was, The first time

24 you saw this document was when it was given to you by your

25 attorney? And your answer, That is correct.

1 But your answer today is maybe?

2 A. Correct.

3 Q. Okay. At line 14 -- and let me ask you, you
4 recall that your deposition was taken under oath before a
5 court reporter. Correct?

6 A. Yes, I do.

7 Q. Okay. Line 14, At that time, you did not then
8 go and look at the documents that allegedly contained the
9 information that is now summarized in this document DS-2; is
10 that correct?

11 A. That is correct.

12 Q. Line 19, you did not -- you did nothing to
13 ensure that the DS-2 accurately summarizes the service
14 quality incidents; is that correct?

15 A. No, that is not correct.

16 Q. Line 23, what did you do to independently
17 determine that DS-2 accurately summarized the service
18 quality incidents?

19 A. Well --

20 Q. Your answer was, I made sure that the summary
21 I generated was accurate. Correct?

22 A. What line are you on?

23 JUDGE THOMPSON: And what page are you on?

24 MR. PETERS: We just moved on to page 47. The
25 question was bottom of 46. The answer was on the top of 47.

1 JUDGE THOMPSON: Thank you.

2 BY MR. PETERS:

3 Q. I'll read it again, Mr. Spahn. Line 23 on
4 page 46, What did you do to independently determine that
5 DS-2 accurately summarizes the service quality incidents?
6 And your answer to that question was, I made sure that the
7 summary I generated was accurate.

8 That's correct. Right?

9 A. Yes.

10 Q. Next question, But as we sit here today, you
11 didn't compare those two?

12 And you said that was correct?

13 A. That is correct.

14 Q. And the comparison was between DS-2 that we're
15 speaking about today and some summary document that you said
16 was prepared. Correct?

17 A. Correct.

18 Q. And we don't have that summary document?

19 A. Somehow I feel like we're in semantics.

20 Q. Mr. Spahn --

21 A. I need a definition of prepared.

22 Q. -- I think --

23 JUDGE THOMPSON: Just a moment, please. Just
24 a moment, please. You may inquire and you may answer the
25 questions you're asked, yes, no, I don't know. If the

1 question calls for a narrative, you may give the narrative
2 response. If you are in distress, then your counsel should
3 jump in and help you out.

4 Please proceed.

5 THE WITNESS: And what if I don't know the
6 definition of what he means by prepared?

7 JUDGE THOMPSON: Then I think you say, I don't
8 understand your question.

9 THE WITNESS: Okay.

10 BY MR. PETERS:

11 Q. Mr. Spahn, you've previously testified -- is
12 it correct that you've previously testified that you did not
13 compare DS-2 to, as you referred to it, a -- let me get your
14 wording -- strike that.

15 MR. PETERS: I'll start over, Judge.

16 JUDGE THOMPSON: You may.

17 BY MR. PETERS:

18 Q. Again, I'm asking you in response to the
19 question that was at the bottom of page 46. And the answer,
20 you said, I made sure that the summary I generated was
21 accurate. And then you answered that you didn't compare
22 your summary to DS-2.

23 I'm asking you, was that correct, that you did
24 not compare DS-2 to the summary you generated? And you've
25 said that's correct. Right?

1 A. If this --

2 Q. Mr. Spahn, I think that's a yes or no
3 question. If you don't understand the question, please let
4 me know and I'll rephrase it.

5 A. I don't know.

6 Q. Okay. Let me go at it this way, because these
7 were not me asking you a word that you couldn't understand.
8 I'm asking you about the words that you used that shows in
9 your deposition.

10 Line 1 of page 47 you said, I made sure that
11 the summary I generated was accurate. Those are your words.
12 Correct?

13 A. Yes.

14 Q. And what I'm getting at is that that summary
15 that you're referring to in that line, I have not seen it.
16 Do we have that summary here today, to your knowledge?

17 MR. MAY: Your Honor, I would object at this
18 time to the form of the question. And I think part of this
19 confusion stems from the fact that counsel is saying he
20 doesn't have a particular document. I don't think Mr. Spahn
21 is in a position to confirm or deny what counsel may or may
22 not have.

23 We have provided various documents in response
24 to data requests from Union Electric. I mean, to expect
25 Mr. Spahn at this time to sit here and confirm or deny what

1 Mr. Peters may or may not have I think is impossible, so
2 object to the form of the question.

3 JUDGE THOMPSON: Why don't you rephrase your
4 question?

5 MR. PETERS: Thank you, your Honor. I
6 appreciate that. I think that's valid.

7 BY MR. PETERS:

8 Q. Mr. Spahn, you're referring to a summary that
9 you generated in that line 1 of page 47 of your deposition.
10 Was that summary a written document?

11 A. Yes.

12 Q. Okay. Then let's just end this with, as you
13 said in your deposition, when you were given DS-2 by your
14 attorney or Zoltek's attorney, you didn't compare DS-2 to
15 that summary you're referring to?

16 A. That is correct.

17 Q. Okay. Mr. Spahn, this Schedule 1 to your
18 Direct Testimony refers to service quality incidents. Where
19 did the term "service quality incidents" come from?

20 A. I believe it came from Mike Moran.

21 Q. That's fine. Could I just ask you to look at
22 page 23 of your deposition, line 19 and see if that
23 refreshes your recollection? Read through 25 -- line 25.
24 Have you read line 19 through 25 of your deposition?

25 A. Yes, I have.

1 Q. Is it possible that you're unsure if that term
2 "service quality incident" came from Mr. Moran or not?

3 A. In my deposition I said I believe it came from
4 Mike Arnold. Yesterday Mike Moran told me that it came from
5 him.

6 Q. Okay.

7 A. And you also had court testimony that it came
8 from him.

9 Q. Okay. Thank you. What is your understanding
10 of the meaning of the term "service quality incidents"?

11 A. Any effect on the lights in the building.

12 Q. Okay. I understand that you participated in
13 the design of all of the equipment at Zoltek; is that true?

14 A. That's not true.

15 Q. Did you participate in the design of any of
16 the equipment at Zoltek?

17 A. Yes.

18 Q. When did you participate in the design of
19 equipment at Zoltek?

20 A. I've worked there for 10 years, so various
21 times throughout my tenure.

22 Q. Are you still employed at Zoltek today?

23 A. Yes, I am.

24 Q. Okay. So you would have participated in the
25 design starting in 1991?

1 A. Well, this is 2002 and I started in 1992, but
2 it's not August of '92 when I started, so I've worked there
3 nine and a half years.

4 Q. Well, roughly when would you say was the first
5 point where you started participating in the design of the
6 equipment at Zoltek?

7 A. August '93.

8 Q. Okay. Was that prior to the Missouri Research
9 Park facility beginning operation?

10 A. It was already in operation.

11 Q. Okay. Can you describe your level of
12 participation in the design of the equipment at Zoltek?

13 A. My level is primarily process, design for
14 safety, quality, productivity, cost optimization.

15 Q. And are you referring to the process
16 manufacturing equipment? In other words, we've heard
17 testimony about oxidizers and furnaces and CCL. Is that the
18 equipment that you participated in the design of?

19 A. Yes. Our process is much more similar to
20 Monsanto chemical plant than a put-all-these-pieces-together
21 type of plant. So it's more process than manufacturing.

22 Q. Okay. And you're saying that there's
23 different pieces of equipment that are put together to make
24 an oxidizer. Is that what you're saying?

25 A. Well, there's different components.

1 Q. And Zoltek designed that equipment and put
2 those parts together to make up the design of the oxidizer?

3 A. They purchased equipment and modified the
4 design to suit their raw material, their climate, their
5 safety requirements, their quality requirements, their
6 productivity requirements.

7 Q. Okay. And is it true that you do not recall
8 any load testing or sensitivity testing being done to that
9 equipment prior to the beginning of the operation at
10 Missouri Research Park?

11 A. I just testified I wasn't there at the
12 beginning of the operation.

13 Q. Okay. Do you have any knowledge of any load
14 testing or sensitivity testing being done on Zoltek's
15 equipment at the Missouri Research Park?

16 A. I don't remember. Maybe, maybe not.

17 Q. Okay.

18 A. Vague memories.

19 Q. But you can't say that -- I'll take that then
20 that you can't say that there was load testing or
21 sensitivity testing then?

22 A. That is correct.

23 Q. Okay. I'd like to get back to the Schedule 1
24 to your Direct Testimony. You can't tell the Commission
25 today how many of the service quality incidents listed on

1 your Schedule 1 resulted in shutting down the manufacturing
2 process at Zoltek, can you?

3 A. I cannot, but we've already provided all that
4 documentation to you twice -- or to UE's --

5 Q. Okay.

6 A. -- representatives.

7 Q. What is your knowledge of the duration of a
8 service quality incident as far as affecting the equipment
9 at Zoltek? Do you believe that the duration of a service
10 quality incident is relevant to the problems experienced at
11 Zoltek?

12 A. Different durations cause different problems
13 depending on where the process of the equipment is in its
14 process. We have continuous processes, we have batch
15 processes.

16 Q. Well --

17 A. The effect can be different on the same
18 machine at different times.

19 Q. Have you come to an understanding of any
20 particular durations that you can say if electricity's
21 affected for a certain period of time, it's going to shut
22 down this equipment or not that equipment?

23 A. Yes.

24 Q. And what is that?

25 A. Well, currently the batch furnaces have --

1 well, for the batch furnaces it would be approximately three
2 seconds or five seconds, I don't remember. And for the
3 11 -- or that's for the 10 batch furnaces.

4 And for the 11 oxidizers, which are gas fired,
5 which makes them more sensitive because you can't
6 automatically restart gas-fired equipment, it just varies.
7 Can be some extremely short periods of time.

8 For the textile plant, which is probably more
9 what you think of when you think of a manufacturing plant,
10 machine shuts down, you flip a switch and it starts winding
11 material again versus the other ones where you're
12 interrupting a chemical reaction.

13 The milling process, again, you flip a switch
14 and away it goes. The continuous -- the CCL, which Mr. Rummy
15 referred to, which now has been converted to Ox 12 which has
16 the capacity of -- same capacity as the other 11 oxidizers
17 combined, it will typically -- call it ride through, restart
18 itself automatically if the duration of the outage -- and,
19 again, I don't remember -- three to five seconds.

20 Q. So are you saying that the duration of a
21 service quality incident does matter; in other words, that
22 once the incident goes beyond a certain time duration, it's
23 more likely to have an effect on a particular piece of
24 equipment?

25 A. Yes.

1 Q. Now, let me back up. You are an engineer.
2 Correct?
3 A. Correct.
4 Q. And what type of engineer?
5 A. Mechanical.
6 Q. Okay. And you've held numerous engineering
7 positions at Zoltek. Correct?
8 A. That is correct.
9 Q. Are you a registered professional engineer?
10 A. I'm not registered.
11 Q. Okay. I believe you -- are you skilled in
12 power distribution?
13 A. I'm not skilled in power distribution.
14 Q. And I believe because of that, you wouldn't be
15 able to comment on what Union Electric could have done to
16 address Zoltek's problems; is that correct?
17 A. Well, I know that if -- going back to the
18 mechanical, if you have a large facility, you put your
19 firewater system on a loop so that if you have a break in
20 the line, you don't have your whole plant exposed to loss of
21 firewater.
22 And the same thing, if Union Electric had put
23 us on a loop as was testified was in the contract but then
24 was testified by Mike Moran that in 2000 -- summer of 2000
25 there was no loop because they split Tetra and Zoltek

1 because they were the two biggest users, the quality of our
2 service would have been improved in the summer of 2000.

3 Q. Mr. Spahn, could you please look at page 43,
4 line 16? Read through line 21, please.

5 A. Okay.

6 Q. I'll ask you the same question.

7 Mr. Spahn, could you testify as to anything
8 that Union Electric should have done that they did not do to
9 solve these alleged problems?

10 A. I'm sorry. I missed the question.

11 Q. I'm reading from your deposition, page 43,
12 line 16.

13 Could you testify as to anything that Union
14 Electric should have done that they did not do to solve
15 these alleged problems?

16 Was it your answer that you're not skilled in
17 the power distribution so you can't comment?

18 A. That is true, but I -- what I referenced was
19 testimony I heard in this courtroom yesterday, so I've been
20 educated since August 15th, 2001.

21 Q. Let's be clear, Mr. Spahn. I think for the
22 record when you're asked questions today, we're asking about
23 your personal knowledge. If you're referring to the
24 knowledge of someone else, it's not your own personal
25 knowledge but that you heard from someone else, could you

1 let us know that?

2 A. Yes. But I did. I referenced Mr. Rummy and I
3 referenced --

4 Q. No. I --

5 A. -- Mike Moran.

6 Q. Okay. That's fair. I appreciate that. By as
7 far as we continue, if you learned something for the first
8 time yesterday from the testimony of someone else, I'd
9 appreciate it if you'd let me know that because we seem to
10 have conflicting answers to the deposition.

11 A. I will continue to answer as I did in the last
12 one, where I informed you what I learned yesterday.

13 Q. Okay. I appreciate that. So the answer that
14 you gave me the first time when I asked you about what UE
15 could do, that was from testimony you heard yesterday?

16 A. That is correct.

17 Q. Thank you. Now, you can't testify that UE has
18 not attempted to improve service for Zoltek. Correct?

19 A. I could not testify to that.

20 Q. Do you recall meeting with Mr. Wakeman of
21 Union Electric in the 1997 time frame?

22 A. Yes, I do.

23 Q. Would that meeting have occurred in
24 approximately April of 1997?

25 A. I have no idea.

1 Q. Okay. Do you recall Mr. Wakeman in the
2 meeting offering to do a power quality investigation to
3 assist Zoltek in determining the cause of the problems?

4 A. I remember him offering to put monitoring on
5 our equipment.

6 Q. Do you recall him following up with either
7 phone calls and/or letters asking you if Zoltek wanted to
8 move forward with Union Electric conducting its power
9 quality investigation, or as you say, the monitoring?

10 A. I remember him following up with phone calls
11 and letters for what would have been the third time Union
12 Electric was in our plant monitoring.

13 Q. And do you recall informing Mr. Wakeman at
14 some point that Zoltek was not interested in Union Electric
15 doing the monitoring or power quality investigation?

16 A. No, I do not.

17 Q. Okay. What happened then to those discussions
18 that you were having with Mr. Wakeman in regards to their
19 proposal to come in and do some monitoring or some
20 investigation?

21 A. I don't remember. And that's with respect to
22 my personal conversations.

23 Q. So you do recall though that Mr. Wakeman did
24 follow-up with you and had requested Zoltek's agreement and
25 approval of Union Electric coming in and doing monitoring in

1 the 1997 time frame?

2 A. Yes. For the third --

3 Q. And did that monitoring occur in the 1997 time
4 frame?

5 A. I have no idea.

6 Q. You have no idea?

7 A. Don't remember. I know there was a court
8 order.

9 Q. And the court order was in 2000. Correct?

10 A. I have no idea.

11 Q. Well, did the monitoring occur in 2000? Do
12 you recall that?

13 A. I don't remember.

14 MR. PETERS: Okay. Your Honor, I'd like to
15 approach the witness.

16 JUDGE THOMPSON: You may approach.

17 MR. PETERS: And I'll hand him what we'll mark
18 as Exhibit 23.

19 JUDGE THOMPSON: Very well.

20 (EXHIBIT NO. 23 WAS MARKED FOR

21 IDENTIFICATION.)

22 BY MR. PETERS:

23 Q. Mr. Spahn, I've handed you actually a couple
24 letters, one dated June 4th, 1997 and one dated October 4th,
25 1997, which we have marked as Exhibit 23. They appear to be

1 addressed to you, Mr. David Spahn at Zoltek, and signed and
2 sent by David Wakeman of Union Electric. Do you recall
3 receiving those letters?

4 A. Yes, I do.

5 Q. Okay. Mr. Spahn, again, you cannot tell the
6 Commission today how many of the service quality incidents
7 on your Schedule 1 resulted in power outages or equipment
8 outages at Zoltek. Correct?

9 A. I could if I was allowed to review the
10 documents that we have in our possession and you have in
11 your possession.

12 Q. Are you referring to the exhibit that
13 Mr. Moran testified to with Mr. Vitale?

14 A. No. I'm referring to things that haven't been
15 offered as exhibits that would correspond to these dates.

16 Q. Okay. Well, do you have an independent
17 recollection then of how many of the incidents listed on
18 Schedule 1 resulted in equipment outages at Zoltek?

19 A. I have independent recollection of some of
20 them.

21 Q. Which ones?

22 A. Let's see. Well, what I'd have to -- well,
23 let me see if I can find one. I would -- I believe I have a
24 recollection of No. 10.

25 Q. Okay. And can you describe that, please?

1 A. Union Electric was pumping water out of some
2 piece of equipment, some piece of switch gear, they splashed
3 water into the switch gear, it blew the fuse on the Union
4 Electric switch gear. Union Electric didn't carry spare
5 fuses and so there was extended outage while they -- Union
6 Electric brought more fuses to their switch gear.

7 Q. Any other of the entries on Schedule 1 to your
8 Direct Testimony that you recall specifically?

9 JUDGE THOMPSON: Excuse me a moment. When you
10 refer to "Schedule 1," are you referring to, in fact,
11 Schedule DS-2?

12 MR. PETERS: Yes, your Honor. I thought you
13 had instructed us early on to refer to the exhibits to the
14 Direct Testimony as schedules and --

15 JUDGE THOMPSON: It is indeed a schedule, but
16 you're calling it Schedule 1, whereas, it's clearly marked
17 DS-2.

18 MR. PETERS: My understanding --

19 JUDGE THOMPSON: Is that the one you mean?

20 MR. PETERS: Yes.

21 JUDGE THOMPSON: And we're short one copy of
22 Exhibit 23, so if we could come up another one of those, and
23 you can do it during the break. That's fine. Thank you.

24 BY MR. PETERS:

25 Q. Mr. Spahn, you understand when I've been

1 referring to Schedule 1 of your Direct Testimony, I've been
2 referring to Schedule DS-2 to your Direct Testimony; is that
3 correct?

4 A. Yes. That's what I understood. The -- there
5 are -- there's an event in November of '93 where there were
6 multiple outages, multiple lights flickered in a period of a
7 few hours. And I remember two instances in the '93/'94 time
8 frame where that occurred.

9 And then line 64 in early '95, there's
10 17 blips, but I'm not sure I -- I remember what the
11 instances were, but I'd have to -- well, one of them was
12 what Mr. Rummy referred to as when the line that runs all the
13 way from Highway 94 down to Defiance had a fault in it.

14 And the way Union Electric attempted to
15 troubleshoot defaults was continually close the breaker, put
16 a new fuse in and people stood around and watched for
17 sparks. And then there was a second incident where there
18 was the same thing that happened that resulted in multiple
19 outages.

20 Q. Are you identifying particular entries on your
21 exhibit in reference to those descriptions?

22 A. Well, so I would -- I believe that --

23 Q. Mr. Spahn, I was asking you a yes or no
24 question. You just described two --

25 JUDGE THOMPSON: I thought you asked him to

1 identify the numbers of the ones that --

2 MR. PETERS: No. He just told us about two
3 incidences and I was asking him if he was referring to
4 particular entries on there and if he was, we could look at
5 which ones they were.

6 THE WITNESS: Well, give me a second. You're
7 asking me to remember back eight years.

8 BY MR. PETERS:

9 Q. No. Let's just start this way. You described
10 two situations there in your last answer. I'm just asking,
11 when you gave those descriptions, were you --

12 JUDGE THOMPSON: I think the witness has said
13 he needs -- he's testifying to, if I understand correctly,
14 events that he remembers. And you're asking him, I believe,
15 to match those to the events listed on the form and he would
16 like a moment of time to review the form in order to
17 determine whether or not the events he remembers are, in
18 fact, represented there. And I believe I will give him that
19 time. So take a moment, sir. Go ahead and --

20 THE WITNESS: Okay. Can I mark on these?

21 MR. PETERS: Sure.

22 JUDGE THOMPSON: Why don't we take a break?

23 MS. SHEMWELL: A short break, five minutes?

24 JUDGE THOMPSON: A short break, because of
25 course, our witness will not be able to enjoy it so it's

1 really not fair, but go ahead and take five.

2 MS. SHEMWELL: Thank you, your Honor.

3 (A RECESS WAS TAKEN.)

4 JUDGE THOMPSON: You may inquire, sir.

5 MR. PETERS: Thank you, your Honor.

6 BY MR. PETERS:

7 Q. Mr. Spahn, I believe you were taking some time
8 to see if you could recall specific entries on your exhibit
9 to your testimony to correlate those two incidents you
10 described.

11 A. Right. Items -- from my Exhibit DS-2, Items
12 38 through 42 was one of them and it's one Mr. Rummy alluded
13 to and also one we discussed with Mr. Carr of UE in a
14 meeting where there was default on the -- Zoltek shared a
15 feeder line that went all the way down to Defiance and there
16 was a fault on the line going to Defiance at dark -- in the
17 dark.

18 And Union Electric told us that in order to
19 find out where the line was down, they had to continually
20 reclose the breaker, install new fuses and watch to see
21 where it sparked. And then items -- and we learned the
22 reason for 38 through 42 from Union Electric telling us.

23 And 78 through 83 were a similar incident. At
24 least that's what I was told by the person I talked to at
25 Union Electric.

1 Q. Okay. So for those two references that you
2 gave, 78 through 83, and 37 through 42, you're saying those
3 weren't situations that you observed yourself, but you heard
4 about them from someone else?

5 A. Could you repeat the question?

6 Q. I think you were saying on 78 through 83, that
7 example that you gave, you said you didn't see it yourself,
8 but someone told you that's what happened?

9 A. Well, I saw the blips -- or at least the last
10 half of them because when you have that going on at the
11 plant, they call you even though it's four o'clock in the
12 morning and you come in.

13 And so then I called UE and, you know, was on
14 hold for an hour as you normally are when they're
15 experiencing problems. And when I finally got through, the
16 lady told me that there was a fault on the line and they
17 were attempting to find it.

18 Q. Okay. Would you agree also that when -- even
19 when Zoltek was designing the system back in '92 or '93,
20 that it understood that there is no perfect electrical
21 service and that sags and possibly even outages should be
22 anticipated?

23 MR.MAY: Your Honor, I'm going to object to
24 this question. I believe the witness's testimony previously
25 was that he was not familiar with the early design process

1 so I don't know if it's within his knowledge to answer this
2 particular question.

3 JUDGE THOMPSON: You may answer, if you know.

4 THE WITNESS: Zoltek moved this plant. This
5 wasn't a grass roots plant. Zoltek moved this plant from
6 Lowell, Massachusettes. And so I would assume that if they
7 experienced similar problems in Lowell, Massachusettes, they
8 would have incorporated that into the design because they
9 made a number of improvements to the prior --

10 BY MR. PETERS:

11 Q. Okay. My question's a little bit different.
12 I'm asking you what your personal understanding is. And if
13 you don't know, that's fine. I'm saying -- because you're
14 not -- I'm not trying to make you an electrical engineer if
15 you're not or something that you're not.

16 A. Right.

17 Q. I'm just asking you if you know, would you
18 have an opinion or belief. Would you think and believe that
19 as Zoltek was designing their facility and system out at
20 Missouri Research Park, that it could anticipate sags in the
21 electric service and possibly outages at times?

22 A. They could anticipate the event, but not the
23 frequency.

24 Q. Okay. So you're saying -- correct me if I'm
25 wrong, but you're saying they could anticipate sags?

1 A. Yes.

2 Q. And by "sags" we mean variations or dips in
3 the level of electrical service coming into or within the
4 plant?

5 A. By sags, since I'm not an electrical engineer,
6 I mean the lights blinking.

7 Q. Okay. How about outages? And what's your
8 understanding of an outage versus a sag?

9 A. It's -- to me, it's the effect on -- to me, it
10 doesn't make any difference if the processes in the plant
11 are affected.

12 Q. Okay. I'm not quite following you so let me
13 try and understand what you're saying. I'm sure you're not
14 saying that if the equipment in Zoltek goes down, that
15 that's not relevant. That is relevant. Correct?

16 A. Yes.

17 Q. Okay. Could you try and explain to me what
18 you meant there, that --

19 A. That if -- take the 11 oxidizers, for example.
20 That material predominantly goes to aircraft brakes. We
21 cannot start those machines with material in them. If -- if
22 the situation is such that we can't immediately get those
23 things back to temperature, back to air flow, back to speed,
24 which is hindered since they're gas fired and you got purge
25 cycles, that we have to strip all the material out of the

1 machine, restring it with material we use to start it up,
2 preheat it and then start running our material back through
3 because start-up and shut-down material is not acceptable
4 for the aircraft brake industry.

5 So to me, what -- when I say it doesn't matter
6 is if I have to go through that process, it really doesn't
7 matter if it was a five-second outage that caused it or a
8 five-hour.

9 Q. Okay.

10 A. Except for -- I take that back. If it's only
11 a five-second outage, it allows us to bring the process down
12 or finish bringing it down more under control versus a
13 five-hour outage, you'd lose your ability to bring the
14 process down under control. And so then it can take
15 additional time before you can restart it.

16 Q. Okay. And so from your testimony and other
17 testimony that I've heard in this matter from Zoltek, my
18 understanding is what you're saying is that with the
19 oxidizers -- strike that. Let me start again.

20 I think what you're saying is the real problem
21 that you're concerned about, and you don't care what it's
22 caused by, is when an oxidizer goes down for such a period
23 of time that you have to take the product out of the
24 oxidizer --

25 A. That's correct.

1 Q. -- and scrap it?

2 A. And start from scratch essentially.

3 Q. And you're saying you lose that product, that
4 you can't salvage the product that's in that oxidizer?

5 A. And you also lose all that production time.
6 And that equipment for the last many years has been
7 100 percent sold out. And aircraft brake stuff you have to
8 qualify equipment. We couldn't just go build three more
9 oxidizers and use them to make material.

10 Q. Okay.

11 A. It's those machines that have to make material
12 for those programs.

13 Q. Okay. So it's the -- what really matters to
14 you or is of utmost concern to you is when there's a problem
15 with the oxidizer going down, you have to take out the
16 material, you lose it, you can't salvage it and that
17 oxidizer is down for an extended period of time losing
18 production time. Correct?

19 A. Correct.

20 Q. Okay. How many times has that happened since
21 1993?

22 A. Well, I don't -- as I testified, we've
23 provided you with the records. But when you look at number
24 of service quality incidents, as they're called on this
25 form, you have to multiply it by however many oxidizers were

1 running at that time. So, for example, yesterday there was
2 a reference made --

3 MR. PETERS: Your Honor --

4 THE WITNESS: Okay.

5 MR. PETERS: -- I would ask -- I'd object that
6 he's not responding to my question. I just asked him how
7 many times that process he's concerned about has happened.

8 JUDGE THOMPSON: Well, I think that he was
9 attempting to answer the question, so I'm going to overrule
10 the objection.

11 MR. PETERS: Thank you, your Honor.

12 BY MR. PETERS:

13 Q. Go ahead, Mr. Spahn.

14 A. Well, so you have to multiply not just by the
15 number of outages that cause problems, but you have to
16 multiply by however many oxidizers were running at the time,
17 how many batches were running at the time, the CCL. And
18 we've provided you -- or you've subpoenaed that information
19 twice before -- or UE's previous law firm subpoenaed it, you
20 subpoenaed it, so I assume you have it.

21 Q. Okay. Mr. Spahn, I don't know that I have or
22 not and I assume you don't know if I've actually seen that
23 or not, because I don't know what you're talking about as
24 far as documentation on that.

25 I'm asking you how many times this occurrence

1 happened that you described that you're concerned about
2 where you lose the product, it's not salvageable. Can you
3 tell the Commission how many times that has happened since
4 1993?

5 MR. MAY: Your Honor, I object at this time.
6 I believe this question's been asked and answered. The
7 witness answered it to the best of his ability and
8 apparently counsel doesn't like the answer.

9 JUDGE THOMPSON: Mr. May, the witness answered
10 by telling us how he calculates that number, and what
11 counsel clearly wants is a number.

12 So having told us how you calculate it, if you
13 know the number, please answer. If you do not know, then
14 that's your answer.

15 THE WITNESS: I do not know an exact number.

16 JUDGE THOMPSON: Thank you, sir.

17 BY MR. PETERS:

18 Q. Thank you. Now, again, you're a mechanical
19 engineer and you have been involved in design of the
20 facility in a certain respect and have been with Zoltek
21 since 1993. Correct?

22 A. '92.

23 Q. '92. Okay. Thank you. Again, this situation
24 you're describing where the oxidizer goes down for an
25 extended period of time, you lose product, it can't be

1 salvaged, the machine's down, couldn't that also be caused
2 by mechanical failure as opposed to an electrical failure?

3 A. Yes.

4 Q. On page 4 of your Direct Testimony you talk
5 about -- I think you kind of describe that occurrence at the
6 top of page 4 and then in line 9 through 14 you talk about a
7 loss of electricity causes the pump to fail resulting in
8 over-pressurization of the vessel, a relief valve on the
9 vessel blows and allows the hot gas to escape. The hot
10 temperature destroys the relief valve and it must be
11 replaced. And you go on and say that this process takes
12 36 hours.

13 How many times has that series of events
14 occurred since 1993?

15 A. Again, I haven't added up the number of times
16 that are in the documents you subpoenaed from us.

17 Q. Okay. So, again, you can't tell us today how
18 many times that process you describe on lines 9 through 14
19 at page 4 of your testimony, how many times that happened?

20 A. No.

21 Q. Okay.

22 A. But there are 10 batches.

23 Q. Okay. And you're saying that line 9 through
24 14 on page 4, that description refers to the batch process
25 as opposed to the oxidizers. Correct?

1 A. Yes.

2 Q. And you refer then also to the loss of
3 electricity can cause the pump to fail which starts off that
4 series of events that you're describing there in lines 9
5 through 14. Correct?

6 A. Correct.

7 Q. And obviously it's true that that pump could
8 fail mechanically as well. Correct?

9 A. Correct.

10 Q. I've seen some testimony -- I don't know if
11 you have the same belief or not, just let me know. There's
12 been some description in the testimony that talks about
13 these problems that are reflected on page 4 of your
14 testimony and it seems to say that there can be a very dire
15 situation out there, very climactic, that there could be
16 fires that result, bursting of -- rupturing of certain
17 vessels, that sound to me like the employees would be in
18 great danger of, you know, being burned by fire or being,
19 you know, almost injured from shrapnel from a rupturing. Is
20 that a correct understanding?

21 A. If the situation wasn't controlled, yes.

22 Q. Something like that could occur. If Zoltek
23 was designing its system, it couldn't allow for that to
24 happen, could it? I mean, it couldn't allow its employees
25 to work in an environment where that could happen, could

1 they?

2 A. It's kind of like a do you still beat your
3 wife question, because --

4 Q. Well, let me --

5 A. I've worked also --

6 JUDGE THOMPSON: He's answering your question.

7 THE WITNESS: -- in the power industry and
8 boilers have ruptures and yet the power industry proceeds.
9 You know, I've worked in the nuclear industry and there's
10 Three-Mile Island, there's Chernobyl and yet Callaway
11 supplies power to the grid.

12 And so as boilers have relief valves, it's
13 stated in my Direct Testimony that you're referencing, that
14 our vessels have relief valves. And so there are safety
15 features built into the design of the equipment of the
16 vessel.

17 BY MR. PETERS:

18 Q. Okay. Now, it's my understanding from the
19 testimony, that some of the Zoltek personnel who have
20 testified in this matter are saying that it's possible as a
21 result of electrical sags or outages, that these fires and
22 ruptures could occur that would cause potential great danger
23 or harm to the employees of Zoltek. Is that correct?

24 A. That is correct.

25 Q. How could then -- and you've agreed that -- I

1 mean, Zoltek would know that sags and possibly outages would
2 be possible in their processes out at the Research Park.
3 Correct?

4 A. Correct.

5 Q. I don't understand how Zoltek could choose to
6 go into a for-profit business of manufacturing carbon and
7 asking its employees to work in that environment if it knew
8 that it was possible for sags and outages to cause these
9 fires and ruptures without making sure there was no
10 possibility of it happening.

11 MR. MAY: Your Honor, object to the --

12 THE WITNESS: The same --

13 MR. MAY: -- form of the question. I don't
14 believe there's been a question posed and I believe it's
15 counsel testifying.

16 JUDGE THOMPSON: Well, cross-examination is
17 always counsel testifying, at least if counsel's doing it
18 right. And I think there was a question there.

19 Could you please read that back?

20 THE COURT REPORTER: "Question: I don't
21 understand how Zoltek could choose to go into a for-profit
22 business of manufacturing carbon and asking its employees to
23 work in that environment if it knew that it was possible for
24 sags and outages to cause these fires and ruptures without
25 making sure there was no possibility of it happening."

1 JUDGE THOMPSON: Okay. I think your problem
2 is that that sounds like a rhetorical question, gosh, how
3 could you do this? Is that the sort of question you're
4 asking?

5 MR. PETERS: I didn't get to put on the ending
6 of it.

7 BY MR. PETERS:

8 Q. I'm asking, do you think that Zoltek has
9 actually done that?

10 MR. MAY: Your Honor, I would object again.
11 That question has been asked and answered by the witness, if
12 you recall his earlier comment prefacing it by saying it
13 likes a do you still beat your wife type question. That
14 question was answered by the witness.

15 JUDGE THOMPSON: I recall the witness saying
16 that, but I don't know that I could really characterize that
17 as responsive to the question. I understand the witness's
18 quandary given the question.

19 And I think what you're getting at, and
20 correct me if I'm wrong, is whether or not the witness
21 considers Zoltek's manufacturing process to be unreasonably
22 dangerous. Is that perhaps what you're aiming at?

23 MR. PETERS: Yeah. That's another way of
24 phrasing it.

25 JUDGE THOMPSON: So why don't you ask him that

1 question?

2 BY MR. PETERS:

3 Q. Mr. Spahn, do you believe that Zoltek knows
4 that it's putting its employee in an environment where it's
5 possible that because of electric sags and outages that they
6 will be burned by fire or hurt by ruptures of metal
7 equipment?

8 A. In 10 years at the facility, no one's ever
9 been injured by fires or ruptures of equipment. It's a
10 statistics thing. Three people were supposed to die in the
11 building of the Arch.

12 MR. PETERS: Thank you. That's all I have.

13 JUDGE THOMPSON: Thank you, Mr. Peters.

14 Questions from the Bench? That would be me.

15 QUESTIONS BY JUDGE THOMPSON:

16 Q. Mr. Spahn, you're still employed with Zoltek.
17 Correct?

18 A. Yes, I am.

19 Q. And what is your position presently?

20 A. I manage -- corporate manager process
21 engineering for the carbon fiber production parts of the
22 company.

23 Q. And is your work station located in the
24 corporate headquarters or in the manufacturing facility?

25 A. Corporate headquarters.

1 Q. And you have held, have you not, several
2 positions in the course of 10 years of employment?

3 A. Yes, I have.

4 Q. And was there a time when your work station
5 was located in the manufacturing facility?

6 A. Yes, it was.

7 Q. Can you roughly tell me what time period was?

8 A. Well, '92 through '97.

9 Q. And did you hold different positions during
10 that time or were you in one particular position?

11 A. Different positions.

12 Q. What was your initial position with Zoltek?

13 A. Engineering manager at the facility.

14 Q. And what was your promotion or your change to
15 a different position after that? What was your next
16 position, if you recall?

17 A. I -- I do. It's just we flipflop titles all
18 the time, so -- you know, but I was in charge of the
19 facility, plant manager, operations manager.

20 Q. So similar to the position Mr. Moran held
21 until recently?

22 A. Yes.

23 Q. In fact, were you his immediate predecessor in
24 that position?

25 A. No, I was not.

1 Q. Who was intervening, if you know?
2 A. Mike Welscott.
3 Q. Okay. And was he the only person intervening
4 or was there anyone else?
5 A. Only Mike Welscott.
6 Q. Now, as the plant operations manager, are you
7 in charge of all the manufacturing processes that go on in
8 the plant?
9 A. It flipflops at various times in that
10 sometimes there's also an engineering manager that reports
11 to someone --
12 Q. Okay.
13 A. -- reports to Mister -- or to the president or
14 other times there isn't an engineering manager and the plant
15 manager manages everything, so --
16 Q. So the structure of the organization of Zoltek
17 has been fluid over this period?
18 A. Yes.
19 Q. And when you were the operations manager, did
20 you report to someone who was on the plant side or someone
21 in the corporate headquarters?
22 A. Someone in the corporate headquarters.
23 Q. So were you effectively the top person at the
24 plant site?
25 A. Yes.

1 Q. You were in charge of that immediate facility,
2 in general?

3 A. Yes.

4 Q. Okay. And your chief responsibility then was
5 to keep the process going successfully?

6 A. I'd say safety and quality --

7 Q. Within --

8 A. -- productivity and cost.

9 Q. I understand. Within the various
10 parameters --

11 A. Right.

12 Q. -- established by management, it was your job
13 to make the product?

14 A. Yes.

15 Q. And were there production goals?

16 A. Yes.

17 Q. Okay. Now, you said you were not with Zoltek
18 from the very beginning; is that right?

19 A. Well, I started in '92 and about half the
20 equipment in the plant was running at that time --

21 Q. So there was --

22 A. -- or even finished, making it operational.

23 Q. Okay. So they were still in the start-up
24 mode?

25 A. Yes.

1 Q. Okay. But you also said that this plant was
2 moved from Massachusettes?

3 A. Yes.

4 Q. You were not part of Zoltek at that time?

5 A. That is correct.

6 Q. Do you have any -- have you ever heard or do
7 you know why the move was made?

8 A. Well, probably a couple reasons. One, they
9 were in a rental building. And Mr. Rummy, I believe, had
10 only owned the company for a year, two years, something like
11 that and St. Louis is his home.

12 Q. I understand. So in your experience then
13 during the period that you were located at the plant, would
14 you characterize the general level of electrical service as
15 satisfactory or unsatisfactory?

16 A. Unsatisfactory.

17 Q. And is it your opinion that it was, in fact,
18 unsatisfactory throughout that period that you were the
19 operations manager?

20 A. It would come and go, because it's kind of the
21 same thing as Mike Moran testified to except they started
22 doing that a different way. In the summer months -- or as
23 load increased whether it encompassed spring, summer, fall,
24 they would put us on the same feeder as Defiance, Missouri,
25 which I don't know what that is, 20, 30 miles of cable.

1 But then in the winter months -- well, they
2 flipflopped us back and forth on feeders too. And when we
3 were on the feeder with Defiance, we had a lot more outages
4 then --

5 Q. I think there was reference yesterday to a
6 Prairie something or other feeder. Is that --

7 A. I think that's after the fact --

8 Q. Okay.

9 A. -- or -- because they did do, you know --
10 improved a substation. I think back then the feeders to the
11 substation, one came down 94 and the other one came from
12 Wentzville or something. And then after -- I don't know
13 about the power distribution, but sometimes we were on the
14 same feeder as Defiance and --

15 Q. And --

16 A. -- sometimes we weren't.

17 Q. Okay. And what is the basis for your belief
18 that sometimes you were on the Defiance feeder and sometimes
19 you weren't?

20 A. That's what Union Electric told us.

21 Q. So that is information you received from Union
22 Electric?

23 A. Right.

24 Q. And do you have any reason to doubt the truth
25 of that information?

1 A. No. Because some of the -- well, I have no
2 reason to doubt that sometimes we were on the feeder to
3 Defiance, because troubleshooting that feeder would cause us
4 problems.

5 Q. And as the operations manager, was it your
6 responsibility to attempt to ameliorate problems with the
7 electrical supply?

8 A. To a certain level.

9 Q. In other words, if there -- I believe I
10 understand your testimony that the power supply was
11 sometimes acceptable and sometimes not?

12 A. Right.

13 Q. That it was not always unacceptable --

14 A. Right.

15 Q. -- and that we would not be here if it was
16 always acceptable?

17 So when you encountered periods when it seemed
18 that the power supply became less reliable or less
19 acceptable, did you then -- was it your job to take steps to
20 have that problem fixed or did you alert someone else in the
21 Zoltek structure that this needed to be fixed?

22 A. Probably both. I reported to Mr. Rummy, so,
23 you know, if it's Union Electric's vice president, he's
24 talking to them. If it's Union Electric's -- I don't
25 remember their titles, but the Randy Hunts, the Freddie

1 Hamptons, the service engineers or something like that,
2 then -- then it was me --
3 Q. Then it was you?
4 A. -- talking to them.
5 Q. Okay. And when you talked to them, was Union
6 Electric, in your opinion, responsive to your concerns?
7 A. They were friendly --
8 Q. Okay.
9 A. -- but --
10 Q. When you talked to them, did they fix the
11 problem? Did you see the problem then fixed?
12 A. Well, over the years they've continually made
13 changes, which I would assume were improvements to the
14 system, but I'm not aware of any change they made because I
15 complained.
16 Q. Okay. Now, you're not an electrical engineer.
17 Correct?
18 A. That is correct.
19 Q. Are you any kind of engineer?
20 A. Mechanical.
21 Q. You're a mechanical engineer. So if I were to
22 ask you about this loop that I've heard reference to, would
23 you know anything about that?
24 A. Just what I've heard in conversation and the
25 way I would correlate it to firewater loop.

1 Q. So it's not really within your area of
2 competence?

3 A. No.

4 Q. Okay. Over the period of time that you've
5 been at Zoltek, do you believe that the power supply
6 situation has improved or not improved or stayed the same?

7 A. I would say that the number of long, extended
8 outages -- long being more than five minutes, because five
9 minutes can seem like a really long time -- you know, that
10 has diminished. And I would have said the number of lights
11 flickering had diminished up until that summer of 2000.

12 Q. Now, the question's been asked of several
13 witnesses, and I apologize if it's already been asked of
14 you, whether or not you're aware that there's no such thing
15 as perfect power. Have you already been asked that
16 question?

17 A. Yes.

18 Q. And what did you say? Remind me.

19 A. Well, I don't even remember if it was phrased
20 exactly like that, but I think my response was -- well,
21 maybe it wasn't phrased exactly like that, but I referenced
22 that the process was moved from Lowell, Massachusettes so I
23 would have assumed that if they were having similar
24 problems, they would have investigated harder or --

25 Q. Okay.

1 A. -- done something.

2 Q. That's a different answer or an answer to a
3 different question. What I mainly meant was do you
4 personally understand or do you believe, or maybe you
5 don't -- it's been suggested that any power supply is
6 subject to some fluctuations in the form of sags and
7 outages. Is that your belief or understanding?

8 A. Yes. If you look in my Direct Testimony, I
9 always take exception to the words "all," "perfect." I
10 just -- not just power, I don't believe in all-encompassing
11 words, you know, that approach infinity, so --

12 Q. Very good. So you understand there will be
13 some incidents in the power supply?

14 A. Yes.

15 Q. And what I want to know is what level of
16 incidents does Zoltek believe is acceptable, or what level
17 do you believe is acceptable?

18 A. Well, I guess I -- you know, my answer would
19 be more of a qualitative answer where I do it by comparison.

20 Q. That's fine. Comparison to what?

21 A. I think that similar size -- well, we use
22 about such shy of a million dollars a year of electric,
23 maybe for the last two years we've dropped off in the
24 conversion of CCL to Ox 12, but we're getting Ox 12
25 qualified for programs so it's going to go back up. And

1 I've talked to people that use million dollars of electric a
2 year that say they have two feeders coming into their plant.

3 Q. How many feeders does your plant have?

4 A. One unless there's a loop. Now, I -- if
5 there's the -- my perception of a loop, then you could, I
6 guess, theoretically say there's two of them.

7 Q. Okay. But what I think you're saying is that
8 you talked to people who use a similar amount of power in
9 manufacturing, I assume, or in a year and they have multiple
10 feeds. Does that mean a more reliable power source?

11 A. Well, it would mean that -- I would think that
12 you wouldn't have the five-minute and on outages. And then
13 on multiple feeds --

14 Q. But you're speculating now; is that correct?

15 A. Right.

16 Q. Or have they told you that's their experience?
17 You see what I'm getting at? In other words, you said --

18 A. The whole thing here is going to be sort of
19 like speculation, you know. There's another guy at the
20 plant that moved his facility and the first time he ran
21 across one of these outages he calls me in a panic because
22 he has something like our batch furnaces and his cooling
23 water pumps went out. And I told him, Well, we have ours
24 hooked to our firewater line, which is powered by city water
25 so --

1 Q. It's a failsafe?

2 A. -- it's a failsafe. And so, you know -- so
3 anything I say is going to be sort of a qualitative
4 comparison.

5 Q. I understand that. But you understand this
6 entire case is about quality. Right?

7 A. Correct.

8 Q. And I think cross-examination has established
9 that the Zoltek witnesses, one and all so far, agree there's
10 some level of interruption, whether outages or sags, that's
11 going to occur. And I'm trying to understand what is the
12 acceptable level. Right? Because --

13 A. Uh-huh.

14 Q. -- your case is all about has Union Electric
15 exceeded the acceptable level of sags and outages, as I
16 understand the case. So my question to you is, what is the
17 acceptable level? In other words, I think a previous
18 witness said something along the line of 30 events a year.
19 There was discussion of that yesterday.

20 Is there an acceptable number or can you do a
21 dollar-wise, because these things cost money, because you
22 lose product? Is there some level of wasted product that's
23 acceptable or is there no such measure that you're aware of?

24 A. Yeah. I don't know if there's a benchmark.

25 Q. Okay.

1 A. Like I said, the oxidizers are sold out so --
2 and anything hurts.

3 Q. I understand. Meaning you can sell all the
4 product you can make?

5 A. Right.

6 Q. So anything you lose is, in a sense, a loss
7 twice. Right? Because you've lost not only the raw
8 materials and the time and what have you that you've spent
9 on it to that point, you've also lost the sale. Right?

10 A. And maybe market share --

11 Q. And maybe market share?

12 A. -- if somebody else gets in there.

13 Q. Okay. Now, you said, I believe earlier, that
14 if you took the time, you would be able to produce a
15 document similar to the one that came in with the testimony
16 of Mr. Moran linking these incidents to the effect on the
17 different areas of your manufacturing process; is that
18 correct?

19 A. Yes. I didn't see the document Mr. Moran
20 prepared, but --

21 Q. Well, let me show it to you.

22 A. -- I know what we did at the plant was -- when
23 they took our handwritten list and went back through all
24 the --

25 Q. Do you have Exhibit 19 up there anywhere?

1 A. I don't think so.

2 Q. Well, let me hand you Exhibit 19 and give you
3 a moment to look that over.

4 A. Yes. We --

5 Q. You could produce something like that?

6 A. Yeah. There's something produced, it's just
7 not summarized. I mean, we probably have a whole sheet for
8 oxidizers, a whole sheet for batches where we list it out
9 Ox's 1 through 11 and then batches 1 through 10. And then
10 on top of that, then that document got sent to somebody else
11 to start assigning dollar values --

12 Q. So --

13 A. -- to those.

14 Q. -- if I understand you then, such a thing
15 already exists perhaps in the form of several documents?

16 A. Right. It's just not as --

17 Q. Not compiled into one?

18 A. It's not a summary of a summary as this.

19 Q. Okay. Thank you, sir.

20 JUDGE THOMPSON: Now, counsel, we have
21 something in our practice here that we call a late-filed
22 exhibit. And a late-filed exhibit is something that one of
23 the Commissioners or the Law Judge asks you to prepare.

24 And what I'm going to ask you to do is bring
25 me those items that Mr. Spahn has mentioned, however many

1 they are, whatever form they exist in. You understand that
2 is similar to what Mr. Moran has in Exhibit No. 19. Is that
3 more or less clear?

4 MR. MAY: Your Honor, I would say in response,
5 there were data requests that were sent to Zoltek and we
6 complied with those requests. We have sent information, and
7 I don't have that with me, it's in my office in St. Louis,
8 via a cover letter to Mr. Evelev. I explained to him here's
9 the information responsive to whatever the request number
10 was that dealt with -- and I'll call it the effect or
11 impact.

12 There was a deposition that was taken prior to
13 my involvement and maybe Mike's, I'm not sure, but
14 nonetheless, there was a deposition that was taken of a
15 person at Zoltek, an accountant or accounting type person,
16 who went through -- as I recall sitting here today, went
17 through the effects and the costs and all. That information
18 was provided. However, it is heavy in -- as I remember
19 sitting here, into damages.

20 In light of the fact that this case, I
21 believed at this level, was not about monetary damages, you
22 know, it didn't necessarily become -- I will produce that.
23 I just would ask the court to allow me to do it when I get
24 back home.

25 JUDGE THOMPSON: Absolutely. That's why we

1 call them late-filed exhibits. You can provide that after
2 you get back to the office.

3 But if you understand what I want, I want
4 something similar to Exhibit 19 that goes for the period
5 prior to the beginning of Exhibit 19.

6 MR. MAY: Just so I understand, do you want us
7 to take the information that we've provided and, in essence,
8 boil it down to a chart like that or do you want the
9 information we provided?

10 JUDGE THOMPSON: That would be most helpful.

11 MR. MAY: Okay. I would just need a little
12 time next week to work with these folks and get that done.

13 JUDGE THOMPSON: I understand.

14 Do you have something, Mr. Vitale?

15 MR. VITALE: Just a question procedurally so I
16 can understand. First, can we ask -- because we've gotten a
17 lot of documents over the years and a lot -- it's their
18 processes that we can't understand, we haven't been able to
19 see the equipment like we'd like.

20 So if the supporting materials can be produced
21 with the log rather than just saying we produced it to you
22 three years ago, can we make that request? Because we get
23 this and without the supporting documents, it would be
24 helpful to have so we understand.

25 JUDGE THOMPSON: Well, I'm not trying to play

1 hide the pickle. I would like this information because I
2 think it would be helpful to me and the Commissioners to
3 understand out of 270 incidents which ones actually affected
4 the manufacturing process.

5 Because those that did not -- you know, what
6 I'm saying? As I told the witness, this case is all about
7 quality, what level is acceptable, what level is
8 unacceptable and how do we decide that.

9 I don't need the supporting documents for my
10 purposes, but you have data requests available to you, you
11 have cross-examination of Mr. Spahn and other witnesses.
12 And, in fact, maybe counsel will just agree to provide it to
13 you.

14 MR. MAY: Your Honor, I would say not only
15 would I agree to do that, I've done that. I've responded
16 specifically to Mr. Evelev -- let me finish if I may. I
17 responded specifically to Mr. Evelev, pointed him to the
18 deposition testimony -- I think the ladies name is Greenwell
19 Greenwall, something like that.

20 THE WITNESS: Gina Greenwell.

21 MR. MAY: And I provided that information,
22 explained the process, every document that I could get my
23 hands on -- keep in mind, Judge, that I picked this up in
24 midstream so I'm trying to locate things as well.

25 JUDGE THOMPSON: I understand.

1 MR. MAY: I will take the information I
2 provided to them and with your indulgence for some time, I
3 will do the best to put it in chart form.

4 JUDGE THOMPSON: Maybe we can meet everybody's
5 interests here, if that's not a problem. If you would just
6 add to your chart one last page referencing the items that
7 it was drawn from --

8 MR. MAY: I will.

9 JUDGE THOMPSON: -- according to whatever
10 designation you are using.

11 MR. VITALE: That's fine, your Honor. And we
12 are also interested in that same information, which we think
13 is incumbent on the Plaintiff to provide where the problems
14 are. I mean, procedurally -- obviously this is going to be
15 provided when the hearing is closed or after --

16 JUDGE THOMPSON: Here's the way this works.
17 We ask for a late-filed exhibit. It's filed with the
18 Commission and served on all parties like any pleading type
19 document. Okay?

20 You have an opportunity then to review it and
21 file an objection. Sometimes the period within which you
22 can do that has been previously set; otherwise, it's simply
23 10 days which is by rule the time you have to respond to
24 anything that's filed with the Commission.

25 And at that time you can say, you know, it

1 should not be received and here's all the reasons why it
2 should not be received. Okay? That's how we do it. They
3 get a chance then to respond.

4 MR. MAY: Your Honor, is there a date by which
5 you would like me to present this to you? A date certain
6 or --

7 JUDGE THOMPSON: Why don't we talk about that
8 when we do the briefing schedule at the end of the case?
9 Because often there will be other late-filed exhibits that
10 will be requested from you and we can just catch them all in
11 one batch. I will, however, assign Exhibit No. 24. I will
12 hold No. 24 open for this. Okay?

13 MR. MAY: And, Judge, I would also just, if I
14 may for the record, Mr. Vitale said something it was
15 incumbent upon the Plaintiff to provide that type of
16 information. And just to be clear, that information was
17 provided --

18 JUDGE THOMPSON: I understand.

19 MR. MAY: -- in accordance with the data
20 requests.

21 MR. VITALE: And, your Honor, I was talking in
22 this proceeding in evidence for the Commission to make its
23 determination.

24 JUDGE THOMPSON: Well --

25 MR. VITALE: And there is no provision for

1 examination and questions then, I gather. We just accept
2 the document as it is and just comment?

3 JUDGE THOMPSON: Oh, no. You may make any
4 motion in response to the document that you believe is
5 warranted and is required to meet the interests of your
6 client. If you want to bring a witness back and
7 cross-examine them with respect to the document, then you
8 ask for that in the motion. Okay?

9 MR. VITALE: Okay.

10 JUDGE THOMPSON: In this case, we do not have
11 what we call an operation of law date, we don't have a drop
12 dead date by which we have to issue a order. That gives us
13 a little leeway, although I understand the parties, of
14 course, want an answer as soon as humanly possible. So
15 within those different parameters, we're going to get you
16 the best answer we can.

17 MR. VITALE: Thank you.

18 MR. MAY: Thank you, your Honor.

19 JUDGE THOMPSON: Let's see. I think I'm about
20 done, Mr. Spahn. You've been very helpful, and very
21 patient.

22 THE WITNESS: Thank you.

23 JUDGE THOMPSON: In fact, I think I am done.
24 That would conclude questions from the Bench, so we would
25 then have recross based on questions from the Bench. And

1 that would be you, Ms. Shemwell.

2 MS. SHEMWELL: Thank you, your Honor. I have
3 no questions.

4 JUDGE THOMPSON: Thank you.

5 Mr. Peters?

6 MR. PETERS: Thank you, your Honor.

7 JUDGE THOMPSON: There was a previous
8 objection about scope, and I will remind you that while this
9 isn't circuit court and we don't pay quite the same
10 attention to those things as they do there, really this is
11 supposed to be follow-up to the questions I asked. Of
12 course, that leaves it pretty wide open I guess.

13 Please proceed.

14 MR. PETERS: Thank you, your Honor.

15 RE CROSS-EXAMINATION BY MR. PETERS:

16 Q. Mr. Spahn, you were telling Judge Thompson in
17 regards to his questions to you about what standard you're
18 using for reliability, you chose a comparative analysis and
19 said you've spoken to other facilities who use either a
20 quantity or dollar amount of energy similar to yours.
21 Correct? Do you recall that testimony?

22 A. Yes. Yes.

23 Q. And you've said that it was -- that those
24 facilities had two feeders --

25 A. Yes.

1 Q. -- correct?

2 Did you ask the people you were speaking to
3 for those entities who paid for the second feeder?

4 A. No, I did not.

5 Q. And you didn't, I guess, ask them about how
6 they came to obtain the second feeder, whether it was by
7 request of the customer as opposed to UE instigating the
8 installation of the second feeder?

9 A. I don't remember. I'd like to change my
10 previous answer to I don't remember. It was a long time
11 ago.

12 Q. Okay. And there seems to be a distinction
13 between the incident -- the electrical incident and the
14 effect. And it seems to me from your testimony and others
15 you're really concerned about the effect; in other words,
16 the effect on Zoltek's plant because their machine's shut
17 down and you lose product. Right?

18 A. Safety, quality, product.

19 Q. And that safety issue is a result of the
20 effect on your particular machines, not necessarily -- the
21 sag or outage doesn't in and of itself create a safety
22 problem, it's the effect that the sag or outage has on your
23 equipment. Right?

24 A. That is correct.

25 Q. Okay. These other people that you talked to,

1 do you know if they have the same safety effect problem or
2 similar as Zoltek has?

3 A. I do not.

4 MR. PETERS: Okay. Judge, I also forgot to
5 move Exhibits 22 and 23, I believe, I offered for Mr. Spahn
6 and --

7 JUDGE THOMPSON: Very well.

8 MR. PETERS: -- do so at this time.

9 JUDGE THOMPSON: Exhibit 22 is the deposition
10 of Mr. Spahn. Do I hear any objections to the receipt of
11 that exhibit?

12 MR. MAY: Your Honor, we object on the basis
13 that I believe it was offered for the purpose of impeaching
14 the testimony. I think Mr. Spahn's live testimony is more
15 appropriate and, therefore, the deposition isn't.

16 Also, I believe just going off memory, there
17 were only a few pages identified in the deposition, so it
18 would seem to me to be too broad to admit the entire
19 deposition. And I know I stated an objection like that
20 yesterday as well.

21 JUDGE THOMPSON: Yes, you did. And I promised
22 you a ruling on that today and I have that ruling for you.
23 I believe your objection is well taken and, consequently, we
24 will not receive either objection. However, at the instance
25 of the presiding officer under Section 536, I'm nonetheless

1 able to preserve those in the record under offer of proof
2 and I will do so.

3 MR. MAY: Thank you.

4 JUDGE THOMPSON: So they are received purely
5 to show what they were, obviously not as substantive
6 evidence from which the Commission can make a finding of
7 fact.

8 (EXHIBIT NO. 22 WAS RECEIVED INTO EVIDENCE FOR
9 LIMITED PURPOSE.)

10 JUDGE THOMPSON: And as to Exhibit No. 23, the
11 two letters to Mr. Spahn from Mr. Wakeman, do I hear any
12 objections to the receipt of that exhibit?

13 MR. MAY: No objection, your Honor.

14 JUDGE THOMPSON: Hearing no objection, the
15 same will be received and made a part of the record of this
16 proceeding.

17 (EXHIBIT NO. 23 WAS RECEIVED INTO EVIDENCE.)

18 MR. PETERS: Just housekeeping thing.

19 JUDGE THOMPSON: You may.

20 MR. PETERS: Did you offer direct and
21 surrebuttal and were they both 21?

22 MR. MAY: No, seven and eight.

23 JUDGE THOMPSON: Seven and eight.

24 MR. PETERS: Thank you.

25 JUDGE THOMPSON: Thank you.

1 I do have one question for you with respect to
2 those two depositions. I'm assuming that in neither case
3 was that individual the designated corporate representative
4 for the purpose of the deposition; is that true?

5 MR. MAY: It is my understanding, that's
6 correct.

7 MR. VITALE: That's correct, I believe.

8 JUDGE THOMPSON: Because, of course, the
9 designated representative's deposition comes in for any
10 purpose as though he were a party.

11 Thank you.

12 Ready for redirect, I believe.

13 MR. MAY: Yes, sir.

14 JUDGE THOMPSON: Thank you, Mr. May.

15 MR. MAY: May I proceed, Judge?

16 JUDGE THOMPSON: You may, please. I'm sorry.
17 Need not wait for me, just go ahead.

18 REDIRECT EXAMINATION BY MR. MAY:

19 Q. Mr. Spahn, when your deposition was taken, I
20 believe the date on that was August of 2001, were you
21 answering those questions to the best of your ability?

22 A. Yes, I was.

23 Q. Were you being honest in your responses?

24 A. Yes, I was.

25 Q. When you prepared Exhibit No. 7, your Direct

1 Testimony, were you being truthful in your responses?

2 A. Yes.

3 Q. Were you answering those questions to the best

4 of your ability?

5 A. Yes.

6 Q. And I would ask you the same questions with

7 respect to Exhibit No. 8. Did you answer those honestly?

8 A. Yes, I did.

9 Q. To the best of your ability?

10 A. Yes, I did.

11 Q. I think your testimony was, correct me if I'm

12 wrong, but you became plant manager in 1993; is that right?

13 A. That is correct.

14 Q. The latter part of '93, summer of '93, if I

15 recall?

16 A. Somewhere around there.

17 Q. Okay. And after that time, did you take any

18 steps to notify Union Electric that there were problems with

19 the power service?

20 A. Yes, I did.

21 Q. And you did that personally. Right?

22 A. Yes.

23 Q. Now, do you recall did Union Electric do any

24 monitoring at Zoltek's Missouri Research Park facility in

25 1993?

1 MR. PETERS: Your Honor, I'm objecting to this
2 as improper redirect. This was something if they wanted to
3 put into their direct, should have been there and it's not
4 responsive to my cross. It's beyond the scope of the cross.

5 MR. MAY: Your Honor, I would say that, first
6 of all, it is in our Direct Testimony. Secondly, Mr. Peters
7 attempted to suggest that somehow Mr. Spahn was
8 uncooperative with representatives of Union Electric with
9 respect to the monitoring, he had referenced a 1997 letter.

10 I'm simply establishing -- and, again, it is
11 in our Direct Testimony -- simply establishing that
12 Mr. Spahn on numerous occasions was cooperative with Union
13 Electric and specifically in their monitoring request.

14 MR. PETERS: Your Honor, if I could, if he's
15 concerned about 1997, I can understand him asking about
16 that. He was just asking about 1993. Furthermore, if it's
17 in his Direct Testimony, it's repetitive and not proper for
18 redirect.

19 JUDGE THOMPSON: Well, I'm going to allow this
20 line of questioning. However, I will allow you to ask for
21 additional cross if you believe it is warranted at the end
22 of the inquiry. Okay?

23 MR. PETERS: Thank you, your Honor.

24 JUDGE THOMPSON: I think that's only fair.

25 Please proceed.

1 MR. MAY: Thank you, Judge.

2 BY MR. MAY:

3 Q. I think my question was dealing with the
4 monitoring that was done by Union Electric in 1993. Are you
5 familiar with that?

6 A. Yes.

7 Q. And did you have conversations with anyone at
8 Union Electric with regard to the monitoring?

9 A. I remember conversations after and I don't
10 remember any prior to it.

11 Q. Well, there was requests made; is that
12 correct?

13 A. I assume.

14 Q. Okay. With respect to that 1993 monitoring,
15 were you cooperative with the folks from Union Electric when
16 they came in to do the monitoring?

17 A. Yes.

18 Q. Now, was there monitoring done in 1994 by
19 Union Electric at the facility?

20 A. There was monitor-- monitoring done three
21 times. I don't remember if it was '94 or '95.

22 Q. Okay. And were you cooperative at that
23 time -- at the time of that monitoring, I should say?

24 A. We complied with all their requests.

25 Q. Now, there's been a lot of questions asked of

1 you by Mr. Peters with respect to DS No. 2, which is a
2 summary of the service quality incidents attached to your
3 Direct Testimony. You recall that line of questioning?

4 A. Yes, I do.

5 Q. Is there any doubt in your mind that those
6 incidents occurred?

7 A. No, there is not.

8 Q. Okay. So, in fact, they did occur?

9 A. Yes.

10 Q. And there's also been some discussion with
11 respect to the effects of these service quality incidents
12 and it seems to be focused on some tangible effect. Is
13 there any intangible effect at the plant when these occur?

14 A. Yes. In that any time the lights blink,
15 whether anything -- well, people just assume the worst, so
16 they scramble from the office, you know, to go make sure
17 everything's under control, everybody scrambles. Even
18 instituted procedures where at the start of every shift
19 people are assigned different machines to restart in the
20 event of a disruption of our production caused by electric.

21 Q. Were these procedures that you just
22 referenced, were those instituted as a result of the service
23 quality incidents? At a certain point did you all decide
24 something needed to be done?

25 A. Yes.

1 MR. MAY: Okay. Nothing further, Judge.
2 JUDGE THOMPSON: Thank you, Mr. May.
3 Ms. Shemwell, do you have a need for
4 additional cross?
5 MS. SHEMWELL: I do not, your Honor. Thank
6 you.
7 JUDGE THOMPSON: Mr. Peters?
8 MR. PETERS: No.
9 JUDGE THOMPSON: Thank you very much. You may
10 be excused, subject to recall possibly if a Commissioner
11 should have a question for you. Thank you very much,
12 Mr. Spahn.
13 THE WITNESS: Thank you.
14 JUDGE THOMPSON: I'm glad to see we finished
15 just at ten o'clock. We're going to take a break now for
16 10 minutes, perhaps a little bit longer. I have some
17 computer maintenance that needs to be done. Thank you.
18 (A RECESS WAS TAKEN.)
19 JUDGE THOMPSON: Let's see. We just finished
20 with Mr. Spahn. We're about to begin with Mr. Eckelkamp.
21 Martin J. Eckelkamp, please step forward, sir.
22 (Witness sworn.)
23 JUDGE THOMPSON: Thank you, sir. Please state
24 your name and spell your last name for the reporter, if you
25 would.

1 THE WITNESS: Martin Eckelkamp, it's
2 E-c-k-e-l-k-a-m-p.
3 JUDGE THOMPSON: Thank you.
4 Please proceed.
5 MR. PETERS: Your Honor, at this time we'd
6 like to reiterate our objection to this witness testifying.
7 I believe you are aware of our motion --
8 JUDGE THOMPSON: I am.
9 MR. PETERS: -- to quash and motion to strike
10 his testimony as being in violation of the procedures of
11 this Commission, and we just want to restate and preserve
12 our objection.
13 JUDGE THOMPSON: I appreciate that and I will
14 overrule your objection.
15 Please proceed.
16 MR. MAY: Thank you, Judge.
17 MARTIN ECKELKAMP testified as follows:
18 DIRECT EXAMINATION BY MR. MAY:
19 Q. Mr. Eckelkamp, my name is Brian May, here on
20 behalf of Zoltek. I know we've met previously. As you
21 recall, I've taken your deposition. I believe it was in
22 June of 2001.
23 Could you tell us where you're employed, sir?
24 A. AmerenUE.
25 Q. And how long have you been employed by Union

1 Electric?

2 A. Twenty-plus years.

3 Q. Okay. And what is the position that you
4 presently occupy?

5 A. I'm a consultant engineer.

6 Q. Okay. And then in the year 2000 what was the
7 position that you held at Union Electric?

8 A. Specifically I think it was a senior engineer.

9 Q. Okay. And am I correct in my understanding
10 that you did some monitoring at Zoltek in June of 2000?

11 A. Yes. June, July, yes.

12 Q. And, as I recall, it was June 14th through
13 July 18th, 2000. Does that sound right?

14 A. Yes.

15 Q. And am I also correct that you had placed
16 monitoring equipment at the main service points and at an
17 oxidizer at the Zoltek Missouri Research Park facility?

18 A. Yes.

19 Q. And am I also correct that about every week to
20 a week and a half you went to Zoltek and downloaded data
21 onto a floppy disk from the monitor?

22 MR. PETERS: Your Honor, I'll object to the
23 leading nature. This is Direct Testimony and I'll object to
24 the leading nature of the question.

25 JUDGE THOMPSON: Your response?

1 MR. MAY: Your Honor, permission to treat the
2 witness as a hostile witness in the legal sense to the
3 extent he is an employee of Ameren. And I believe
4 AmerenUE's counsel has made a concerted effort, good effort
5 to try to prevent his testimony anyway, so --

6 MR. PETERS: Your Honor, the reason for our
7 objection to the testimony was our understanding of what the
8 procedures were to be followed in this matter. We don't
9 have any problem with Mr. Eckelkamp providing substantive
10 testimony. Furthermore, it was his witness that he
11 requested, that he subpoenaed. It's Direct Testimony. He's
12 not shown any nature of hostility from Mr. Eckelkamp up to
13 this point.

14 JUDGE THOMPSON: Thank you. The objection is
15 well taken. This is direct examination. You had not, prior
16 to this moment, asked for permission to examine
17 Mr. Eckelkamp as a hostile witness.

18 And permission to examine in such a way is not
19 based on the alignment of the witness with any party, but
20 rather with the witness's demeanor and behavior and, in
21 fact, unresponsiveness on the stand.

22 So far I've seen none of those things from
23 Mr. Eckelkamp so I will sustain the objection to the leading
24 nature of the question and I will deny at this time the
25 request to treat the witness as a hostile witness.

1 Please proceed.

2 MR. MAY: Thank you, your Honor. And I did
3 not mean to imply he was being hostile in that regard.

4 JUDGE THOMPSON: I understand.

5 BY MR. MAY:

6 Q. Okay. Mr. Eckelkamp, we'll kind of start over
7 a little bit then. We've established that you did
8 monitoring at Zoltek's Missouri Research Park facility in
9 June and July of 2000. Correct?

10 A. Yes.

11 Q. We've established that you'd placed the
12 monitoring equipment at the main service points and at an
13 oxidizer. Correct?

14 A. Yes.

15 Q. Now, what did you do then to obtain I guess
16 the results from the monitoring? What steps did you take?

17 A. Could you explain that more? What do you mean
18 by "results"?

19 Q. Did you go out to Zoltek? Were you there
20 every day between June 14th and July 18th to look at the
21 monitoring equipment and see what the results were?

22 A. The -- the monitors obtain data --

23 Q. Okay. And did --

24 A. -- and then --

25 Q. I'm sorry.

1 A. And then I went out and downloaded the
2 information on a floppy disk, as you said, and then
3 downloaded that into the software to look at the data.

4 Q. Okay. And did you do that about every week,
5 week and a half?

6 A. Yes.

7 Q. Now, there's been a lot of discussion during
8 this case, and I think you may have been here for some of
9 it, but there was talk about a court order during the year
10 2000 and the monitoring. Did you hear that discussion?

11 A. Yes.

12 Q. Okay. Did Union Electric -- you and other
13 folks from Union Electric, did you meet with people from
14 Zoltek?

15 MR. PETERS: Your Honor, I object. It's still
16 leading.

17 JUDGE THOMPSON: I don't think it's leading to
18 ask him if he met with people from Zoltek.

19 MR. PETERS: I think it's a yes or no question
20 that he's --

21 JUDGE THOMPSON: And yes or no questions are
22 not leading.

23 Please proceed.

24 MR. MAY: Thank you.

25 BY MR. MAY:

1 Q. I'll ask you again. Did you or anyone from
2 Union Electric meet with Zoltek employees, representatives
3 in regard to the 2000 monitoring?
4 A. Yes.
5 Q. Okay. And was the discussion -- I think
6 you've already answered this, but the discussion, was it
7 regarding the monitoring that was to occur?
8 A. Yes.
9 Q. And was there an agreement amongst Union
10 Electric folks and Zoltek folks as to where the monitoring
11 equipment would be placed?
12 A. Yes.
13 Q. And what was your understanding of the --
14 A. I -- I -- was that -- were you talking about
15 at the meeting or -- are you talking about at the meeting
16 itself --
17 Q. Right.
18 A. -- or not at the meeting, per se?
19 Q. Well, let's talk about the meeting. There was
20 a meeting that occurred. Correct?
21 A. Yes.
22 Q. And there was some discussion about the
23 monitoring that was to take place. Right?
24 A. Yes.
25 Q. And was there at any time an agreement as to

1 where the monitoring equipment would be placed; in other
2 words, what it is you'd be monitoring?

3 A. Not exactly where it was placed, but the
4 overall monitoring, yes.

5 Q. Okay. Well, whose choice was it then to place
6 the monitoring equipment at the main service point?

7 A. It was an agreement between myself and Zoltek.

8 Q. Okay.

9 A. I don't know exactly the particular person I
10 was dealing with at that time.

11 Q. That's fine. And was there some sort of
12 agreement with respect to the monitoring that you said
13 occurred at an oxidizer?

14 A. Yes.

15 Q. Okay. Now, what was your understanding of the
16 purpose of this monitoring work in the year 2000?

17 A. A fact-finding mission.

18 Q. Okay.

19 A. That's the best term I can use. It's to -- go
20 ahead.

21 Q. I'm sorry. Was it designed in any way to get
22 an idea what the voltage in the plant was operating at?

23 A. Yes.

24 Q. Okay. Was it in any way designed or its
25 purpose to see what was going on internally --

1 A. Yes.

2 Q. -- at the plant?

3 A. Yes.

4 Q. Now, were you given the access by the Zoltek
5 folks that you needed to set up your monitoring equipment?

6 A. Yes.

7 Q. Did they -- I'm sorry. Strike that.
8 Were they cooperative?

9 A. Yes.

10 Q. Now, did you find that some incidents occurred
11 on June 26th or an incident occurred on June 26th?

12 A. Yes.

13 Q. Okay. Did you find an incident that occurred
14 on June 30th?

15 A. Yes.

16 Q. And, finally, did you find an incident that
17 occurred on July 6th?

18 A. Yes.

19 Q. Now, was it your opinion that Zoltek was not
20 responsible for these three incidents; in other words, they
21 didn't cause them to occur?

22 MR. PETERS: I object, your Honor, to the lack
23 of foundation and the vagueness of the term "responsible."

24 JUDGE THOMPSON: Mr. May?

25 MR. MAY: Well, I would simply say, your

1 Honor, that this gentleman had done monitoring there, he had
2 reviewed the data and he expressed what his purpose in doing
3 that was. Clearly he was qualified. And I'm simply asking
4 what he had found and what his opinion was with respect to
5 the responsibility for the fault.

6 JUDGE THOMPSON: I think the foundation
7 question is well taken -- the foundation objection. I'm
8 going to sustain that.

9 BY MR. MAY:

10 Q. Okay. Mr. Eckelkamp, as part of the
11 monitoring, what did you do? You downloaded data; is that
12 correct?

13 A. Yes.

14 Q. And did that data indicate to you whether or
15 not an incident had occurred on certain dates?

16 A. There was -- there was -- yes. It -- right.
17 The incidents occurred.

18 Q. And I believe that your earlier answers were
19 that, in fact, you had seen that incidents had occurred on
20 the 26th and 30th of June and July 6th; is that correct?

21 A. That's correct, yes.

22 Q. Okay. Then looking at those incidents and
23 looking -- you know, the data and seeing those incidents
24 occur, were you able to determine the cause of those
25 incidents?

1 A. Yes.

2 Q. Did you find with respect to those incidents
3 that Zoltek, its equipment or its people, were in any way
4 the cause of those incidents?

5 A. No. I didn't -- nothing that -- the actual
6 incident was not caused by anything that I found was
7 internal to Zoltek.

8 Q. Okay. Thank you. Now, after you'd done the
9 monitoring, this time period June and July of 2000, did you
10 make any recommendations to Zoltek?

11 A. Not officially. I think verbally we talked
12 about some things --

13 Q. When you say --

14 A. -- while we were there.

15 Q. I'm sorry. I didn't mean to cut you off.
16 When you say "not officially," was that your purpose in
17 being there, to present solutions or recommendations to
18 Zoltek?

19 A. I -- it was a fact-finding mission basically.
20 As far as to give a recommendation, that was not part of
21 that -- that purpose.

22 Q. Well, you've done other investigations of this
23 sort at other places, have you not?

24 A. Yes.

25 Q. And under those circumstances do you typically

1 provide recommendations as well as determining what is going
2 on at the particular facility?

3 MR. PETERS: Your Honor, I object to
4 foundation and relevance. This witness has testified that
5 this monitoring that was done was done pursuant to an
6 agreement and court order. There's not been foundation laid
7 that it is comparable to other monitoring that he's done.

8 JUDGE THOMPSON: Response?

9 MR. MAY: Your Honor, I'll simply withdraw the
10 question and I'll ask him a more direct question.

11 BY MR. MAY:

12 Q. You said that you did not make any
13 recommendations to Zoltek. Correct?

14 A. Not in writing.

15 Q. And did you not make those recommendations in
16 writing because of the fact you were there under a court
17 order?

18 A. It was -- there was litigation pending and I
19 was -- I was not given -- given the recommendation.

20 Q. Okay. Now, you say "not in writing." Are
21 there other instances or circumstances where you do make
22 recommendations in writing?

23 A. Yes.

24 MR. MAY: Okay. Judge, I don't think I have
25 anything further at this time. And I guess I would tender

1 the witness, if that's appropriate.

2 JUDGE THOMPSON: Thank you, Mr. May.

3 MR. MAY: Thank you.

4 JUDGE THOMPSON: Cross-examination,
5 Ms. Shemwell?

6 MS. SHEMWELL: I don't have any questions.
7 Thank you, your Honor.

8 JUDGE THOMPSON: Thank you.

9 Mr. Peters?

10 MR. PETERS: Thank you, your Honor.

11 CROSS-EXAMINATION BY MR. PETERS:

12 Q. Good morning, Mr. Eckelkamp.

13 A. Good morning.

14 Q. My name is Dan Peters. We've met before.

15 Correct?

16 A. Yes.

17 Q. And I'm going to be asking you some questions
18 on behalf of AmerenUE. Okay?

19 A. Okay.

20 Q. And do you go by Marty?

21 A. Yes.

22 Q. Do you mind me referring to you as Marty this
23 morning?

24 A. That's great.

25 Q. Okay. Marty, did you have an opportunity to

1 fully describe your educational background to the
2 Commission?

3 A. No.

4 Q. Could you describe to the Commission your
5 educational background, please?

6 A. I have a bachelor in science in electrical
7 engineering with a professional engineer.

8 Q. And do you have -- are you a registered
9 professional electrician with the state of Missouri?

10 A. Yes. I'm a licensed electrician, yes --

11 Q. Okay.

12 A. -- with the St. Louis County and City.

13 Q. Okay. You testified regarding some monitoring
14 that you did in 2000 at Zoltek. Correct?

15 A. Yes.

16 MR. PETERS: Your Honor, may I approach?

17 JUDGE THOMPSON: You may approach.

18 MR. PETERS: I'd like to hand the witness a
19 document that we'll mark Exhibit --

20 JUDGE THOMPSON: We're up to 25. Do you have
21 three copies for our reporter?

22 (EXHIBIT NO. 25 WAS MARKED FOR
23 IDENTIFICATION.)

24 BY MR. PETERS:

25 Q. Marty, I've handed you what's been marked

1 Exhibit 25. Does that document relate to the 2000
2 monitoring at Zoltek that Mr. May questioned you about?

3 A. Yes.

4 Q. Could you explain for the Commission what
5 equipment you used to do the monitoring?

6 A. I used a -- we rented three Dranetz 658's and
7 a Metrosonics PA7. Those are monitoring devices. The
8 Dranetz are fairly high-end monitors, meaning they're fairly
9 sophisticated and they capture voltage sags and
10 interruptions.

11 Q. Is there any other more sophisticated
12 monitoring equipment that you are aware of other than what
13 you used in the 2000 monitoring?

14 A. There might be, but this is -- I know this is
15 pretty high end.

16 Q. Okay. And did the monitoring -- what period
17 of time exactly did the monitoring cover?

18 A. June 14th to July 18th, 2000.

19 Q. Would that be a little over four weeks?

20 A. Yes.

21 Q. You referred to -- or Mr. May referred to a
22 couple incidents. What did you understand him to be
23 referring to as far as an incident?

24 A. A voltage sag.

25 Q. So you took it as he was asking you whether

1 your monitoring discovered any voltage sags; is that
2 correct?

3 A. Yes.

4 Q. Okay. Did your monitoring detect any
5 interruptions?

6 A. No.

7 Q. Did your monitoring detect any outages?

8 A. No.

9 Q. So for the little over four-week period in
10 June and July of 2000, your sophisticated monitoring
11 equipment discovered no interruptions or outages. Correct?

12 A. Correct.

13 Q. And by interruption or outage, that includes
14 an incident or event where electricity coming into the plant
15 would go down to zero?

16 A. Yes. Interruption -- yes, the voltage would
17 go below 10 percent remaining voltage. That would be
18 interruption defined.

19 Q. I'm --

20 A. Interruption is defined as -- I think it's in
21 IEEE's 10 percent remaining voltage, so would have to go
22 below that for interruption. Outage is a complete loss of
23 voltage.

24 Q. Okay. Could you tell the Commission what I --
25 was it IEEE you referred to?

1 A. IEEE standard. I don't know exactly.
2 Q. Is that some type of national measuring
3 standard?
4 A. Right.
5 Q. And their definition of interruption is any
6 time electricity goes down below 10 percent?
7 A. Right.
8 Q. So that's almost to 0 percent?
9 A. Right.
10 Q. Okay. But your monitoring did detect some
11 sags; is that correct?
12 A. Yes.
13 Q. Okay. And you said that there were three
14 incidents during your monitoring. Did those three incidents
15 have an effect on the equipment at Zoltek?
16 A. Yes.
17 Q. And let's take those one at a time. The
18 June 26th was the first sag; is that correct?
19 A. Yes.
20 Q. And let me first back up and just --
21 Exhibit 25 reflects the findings or the results of the
22 monitoring, the 2000 monitoring?
23 A. What was that again?
24 Q. Does this Exhibit 25 contain the results of
25 the 2000 monitoring?

1 A. Yes.

2 Q. Could you describe for the Commission the
3 appendixes, those charts that are attached? What are those
4 reflecting?

5 A. That -- those charts are reflecting the
6 voltage variations at different points that we monitor.
7 Appendix B is a primary metering point. Voltage variations
8 there. Let's see.

9 Q. Let's look at the third page of Exhibit 25.
10 And these pages aren't numbered, so you just have to leaf
11 through. But in the bottom left-hand corner of the page I'm
12 looking at says 6/14, 11:59, Metrosonics. Do you see that
13 page?

14 A. Yes.

15 Q. And within the chart there's a reference to
16 6/15 at 10:54 a.m. And I see that an arrow is drawn to a
17 line on the chart. What is that meant to reflect or what is
18 that communicating to us?

19 A. That's a voltage sag. That's a -- this is a
20 chart of the voltage -- the min and max values. And that is
21 the minimum values that the voltage sagged down to at that
22 period.

23 Q. And are you familiar with some --

24 MR. VITALE: Your Honor, if I may,

25 Ms. Shemwell's looking -- do you have another copy? I

1 thought we had enough for everybody.

2 MS. SHEMWELL: Of 25. If not, I can wait.

3 MR. VITALE: My secretary miscounted when she
4 made the copies.

5 MR. PETERS: May I take one back?

6 JUDGE THOMPSON: You may. And you'll have to
7 come back with it after our next break.

8 MS. SHEMWELL: Thank you.

9 BY MR. PETERS:

10 Q. Okay. Marty, again on the third page, the
11 6/15 notation on that page reflecting a sag, do you know
12 what percentage that sag went down to, what percentage of
13 electricity coming into the plant?

14 A. No. I'd have to figure it out here. If
15 somebody has a calculator, I can figure it out.

16 Q. Is that sag above 50 percent?

17 A. Yes.

18 Q. Is it above 75 percent, can you tell?

19 A. Let's see. Yes.

20 Q. Okay. So, in other words, the level of
21 electricity coming into the plant on this -- at this 6/15
22 point went down somewhere above 75 percent of the required
23 voltage level; is that correct?

24 A. Yes. From the norm-- the voltage prior to the
25 sag, yes.

1 Q. Okay. And are you aware that there are some
2 state regulations that set parameters for variations in
3 electricity coming into a plant such as Zoltek?

4 A. Yes.

5 Q. And roughly what do those parameters ask the
6 utilities --

7 A. It's normally over a one-minute period. It's
8 under favorable -- I think it's -- let's see. I think
9 it's -- tolerable is like plus 6, minus 8 percent. You
10 got -- you can have excedents up to plus 9 to 11 percent.

11 Q. And that's for over a one-minute period?

12 A. Yeah.

13 Q. So you can have a sustained drop in voltage up
14 to 11 percent over a one-minute period?

15 A. Yeah. One-minute period, yeah.

16 Q. Okay.

17 A. If it exceeds, I think -- you can get all the
18 excedents and you got to bring it back in -- make some
19 effort to bring it back in.

20 Q. This sag that's reflected on 6/15, how long
21 did that sag last?

22 A. I don't know. I don't know if -- I can't tell
23 that by this data here.

24 Q. Would it be less than a second?

25 A. I hate to comment on that. I don't know.

1 Q. Okay. That's fine. There's a couple that you
2 have -- we'll get to it. But your notation there was that
3 there was no equipment malfunction at Zoltek as a result of
4 the sag on 6/15?

5 A. Yes.

6 Q. Okay. Now, you've said there was a sag on
7 6/26 which did have an effect. Correct?

8 A. Yes.

9 Q. Let's go and look at that one. And I think
10 that's on page 5. Do you see on page 5 the 6/26 sag that
11 I'm referring to?

12 A. Yes.

13 Q. And is that your notation that at the moment
14 of that sag reflected on 6/26 at 1:13 that Zoltek's oxidizer
15 No. 6 tripped off?

16 A. Yes.

17 Q. And can you tell what percentage approximately
18 the electricity voltage dropped to as a result of that sag
19 on 6/26 at 1:13?

20 A. Yes. My -- the cover -- Appendix A shows the
21 percentages.

22 Q. And what does the first page tell you?

23 A. At the primary metering point the voltage sag
24 we're measuring phased the neutral there. And it's 79.2
25 percent 79.4 and 99.1 percent.

1 Q. Okay.

2 A. On those three phases.

3 Q. And how long did it drop to 79 percent?

4 A. Three cycles.

5 Q. And how long is a cycle?

6 A. One-sixtieth of a second.

7 Q. So the 6/26, 1:13 sag that tripped off the --

8 or at which time the No. 6 oxidizer tripped off, that sag

9 was a sag in which the voltage coming into Zoltek dropped to

10 79 percent of normal for one-and-a-half-sixtieths of a

11 second or --

12 A. Well, it's three -- three-sixtieths of --

13 Q. Three-sixtieths of a second?

14 A. One twenty.

15 Q. Okay. Is that type of a sag the normal type

16 of sag that any customer would expect to encounter in their

17 electricity service?

18 A. Yes.

19 MR. MAY: Your Honor, let me object to the

20 form of the question. I think it calls for speculation on

21 the part of the witness as to what other customers might or

22 might not expect.

23 JUDGE THOMPSON: Mr. Peters?

24 MR. PETERS: I'll lay some more foundation, if

25 you'd like.

1 JUDGE THOMPSON: I think that that did call
2 for speculation. Perhaps you could rephrase the question.
3 BY MR. PETERS:
4 Q. Okay. Marty, do you believe that any
5 electrical service system will have sags?
6 A. Yes.
7 Q. And do you know of any technology existing
8 today anywhere in the country or the world that can provide
9 electrical service with absolutely no sags?
10 A. Not a utility, to my knowledge.
11 Q. Okay. And how long have you been an
12 electrical engineer?
13 A. Twenty years, plus.
14 Q. And how long have you been working for Union
15 Electric?
16 A. The same 20-plus years.
17 Q. And have your job duties at Union Electric
18 included working with customers, responding to their
19 complaints about service, monitoring their electrical
20 service?
21 A. Yes.
22 Q. And are you familiar with generally customers
23 of Zoltek -- I mean, customers of Union Electric's
24 experiences with sags?
25 A. Yes.

1 Q. And was the 6/26 sag at 1:13 that lasted
2 one -- or three cycles, was that a customary sag that
3 customers would normally encounter and which type of sag
4 you've said cannot all the time be prevented?

5 MR. MAY: Your Honor, I object to the
6 question. I think it's a compound question, also calls for
7 speculation and it's not specific as to which customers,
8 what type of customers nor is it limited to Zoltek's
9 expectations.

10 JUDGE THOMPSON: You say you believe it is a
11 compound question. What are the multiple questions that you
12 believe are contained in it?

13 MR. MAY: Your Honor, I was sitting here
14 trying to listen to it, but I think there were several
15 components and I'm not clear what each were. I just heard
16 two or three different things in that question.

17 JUDGE THOMPSON: And what did you hear him ask
18 that was speculative?

19 MR. MAY: Your Honor, I think he's trying
20 to -- with all due respect, we had talked about the
21 speculative nature of the question and he's trying to get to
22 what other customers -- who they are and what business
23 they're in, we have no idea -- trying to get into this idea
24 that their expectations should be this and, therefore,
25 Zoltek's expectations are wrong. I think it's calling for

1 speculation on his part.

2 MR. PETERS: Your Honor, that is not my --
3 Mr. May is speculating as to where I'm going. He's had
4 numerous witnesses who have taken the stand who have clearly
5 testified that they're aware there's no perfect electrical
6 service and that sags are part of the service.

7 JUDGE THOMPSON: I believe I heard him ask
8 whether this sag was basically within the normal experience
9 of a customer, but why don't you read back the question?

10 THE COURT REPORTER: "Question: And was the
11 6/26 sag at 1:13 that lasted one -- or three cycles, was
12 that a customary sag that customers would normally encounter
13 and which type of sag you've said cannot all the time be
14 prevented?"

15 JUDGE THOMPSON: I believe that is not a
16 compound question nor does it call for speculation. I will
17 overrule the objections and please answer if you can.

18 THE WITNESS: Yes.

19 BY MR. PETERS:

20 Q. Marty, let's move to the very next page, which
21 is a chart which the left-hand corner reflects a date of
22 6/27, 10:57 and I see a notation of 6/30 at 10:55 a.m. and a
23 notation that Batch 1, 3 and 9 tripped off line. And
24 Mr. May asked you about the 6/30 incident. Does this
25 reflect the sag that you testified to in response to

1 Mr. May's question about incidents at Zoltek?

2 A. Yes.

3 Q. And does that 6/30 notation and the line

4 that's drooping down and the arrow, does that reflect a sag

5 that your monitoring picked up?

6 A. Yes.

7 Q. And do you know approximately what percentage

8 the electricity dipped down to at that 6/30 sag?

9 A. Yes. It's indicated on Appendix A.

10 Q. That's on the front page of --

11 A. Right.

12 Q. -- Exhibit 25?

13 A. Yes.

14 Q. And what did the electric drop down to

15 percentage-wise?

16 A. 83.5 percent, 83.2 percent 83.4 percent.

17 Q. And how long did the electricity dip to those

18 percentages?

19 A. 1.9 seconds.

20 Q. Okay. And to be clear, the other sag that you

21 talked about at 6/26, that was three cycles. Correct?

22 A. Yes.

23 Q. And a cycle is one-sixtieth of a second.

24 Correct?

25 A. Yes.

1 Q. Whereas, this one was actually seconds,
2 1.9 seconds. Correct?
3 A. Correct.
4 Q. So this sag was longer than the 6/26 sag.
5 Correct?
6 A. Yes.
7 Q. And is your notation there on the 6/30 sag,
8 are you reflecting that Batch 1, 3 and 9 tripped off at the
9 time of that sag?
10 A. Yes.
11 Q. And batches are those pieces of equipment that
12 are different than the oxidizers?
13 A. Yes.
14 Q. Okay. On that same page there is another sag
15 on 7/6. That's again this sixth page dated 6/27. The 7/6
16 sag, I see you have a notation there that Batch 1 and 3
17 tripped off line. Correct?
18 A. Yes.
19 Q. And what percentage did the electricity drop
20 down to on the 7/6 sag?
21 A. Again, I'll reference Appendix A.
22 Q. Page 1 of Exhibit 25. Correct?
23 A. Yes.
24 Q. And what were the percentages?
25 A. It's 101.2, 102.4 and 64.9 percent.

1 Q. And how long did that sag last?

2 A. 1.5 cycles.

3 Q. So this is one-and-a-half-sixtieths of a
4 second. Correct?

5 A. Yes.

6 Q. Okay. Now, for all three of those, as Mr. May
7 called it, incidents, these sags in which equipment was
8 affected at Zoltek, did all of Zoltek's equipment shut down
9 at the time of those sags?

10 A. No. Not to my knowledge. Just the ones they
11 have indicated.

12 Q. Were you able to determine why the particular
13 machines which did turn off at the time of those three sags,
14 why they turned off as opposed to other machines not turning
15 off?

16 A. No.

17 Q. Is there some monitoring or testing that you
18 could do to try and determine why those machines tripped off
19 at those points in time?

20 A. You could apply a sag generator and see -- see
21 what trips off at different voltage levels.

22 Q. But have you been able to do that at Zoltek,
23 that type of testing?

24 A. No.

25 Q. And would all three of those sags that you've

1 said that occurred during the 2000 monitoring which Zoltek
2 equipment tripped off, are those all the typical type of
3 sags that you've testified to that based on experience,
4 customers will experience and there's no utility that can
5 prevent those sags from happening at all times?

6 A. Yes.

7 Q. There's nothing unusual about those sags that
8 you know of based on experience?

9 A. No. There's nothing unusual.

10 Q. And, again, you've testified there was no
11 interruptions and no outages during that period and there
12 were three sags that caused -- or at which time of the sags
13 Zoltek's equipment tripped off. Do you consider the level
14 of electrical power and service that UE was found to be
15 providing to Zoltek during that -- do you find it unusual in
16 any respect?

17 A. No.

18 Q. Do you find the level -- did you find the
19 level of sags to be unusual based on your experience?

20 A. No.

21 Q. Have you seen Zoltek's list of 277 service
22 quality incidents?

23 A. No.

24 Q. Okay. Is it possible --

25 A. Well, I should -- I did -- I did read in a

1 deposition, but I just glanced over it. I didn't study it.

2 Q. Okay. Is it possible for a facility such as
3 Zoltek to notice lights flicker at a time of a sag such as
4 the three that occurred in the 2000 monitoring?

5 A. Yes.

6 Q. Is it possible for lights to flicker within a
7 facility such as Zoltek even without a sag, interruption or
8 outage?

9 A. Yes.

10 Q. Could you describe for the Commission what
11 might cause lights to flicker other than a sag, interruption
12 or outage?

13 MR. MAY: Your Honor, I would object at this
14 time. I think this is beyond the scope of the Direct
15 Testimony. As I understood, the witness's Direct Testimony
16 focused on the monitoring he performed in the year 2000. I
17 think now he's going into other areas and asking his
18 opinions about other things.

19 JUDGE THOMPSON: Well, Mr. May, by statute in
20 this proceeding cross-examination is not limited to the
21 scope of the direct. I think he has every opportunity to
22 explore the lights flickering because that's been alluded to
23 by many, many witnesses as a measure of the quality of the
24 service at any given time. So I will overrule the
25 objection.

1 MR. MAY: Thank you.

2 JUDGE THOMPSON: Please proceed.

3 BY MR. PETERS:

4 Q. Do you remember my question?

5 A. The -- I guess I'm a little bit -- the
6 previous question was -- I think you said was interruptions
7 or outages, then you threw in voltage sags, interruptions,
8 outages.

9 Q. I was meaning to include all of them. Let me
10 just take you back real quick.

11 In your experience is it possible for a
12 facility such as Zoltek to experience lights flickering even
13 when there is no sag, outage or interruption?

14 A. There's no sag, voltage sag --

15 Q. Correct.

16 A. -- and there's a flickering. Vibration might.
17 That's the only thing I can think of.

18 Q. What do you mean? Could you explain what you
19 mean by "vibration"?

20 A. Well, like a ballis might be going out,
21 vibration, loose contacts in the bulb. I'm just throwing
22 out ideas here.

23 MR. PETERS: Okay. Just a moment.

24 JUDGE THOMPSON: Certainly.

25 BY MR. PETERS:

1 Q. Marty, if I wasn't clear, is it possible to
2 have an interruption -- I mean, a flicker in a light at the
3 time of a sag?

4 A. Yes.

5 Q. Okay. So it's possible to have a flicker in
6 lights when there's no outage or interruption?

7 A. Yes.

8 Q. Because there could be a flicker in lights at
9 the time of a sag when there's no outage or interruption.
10 Correct?

11 A. Yes.

12 Q. And there's a possibility of having a flicker
13 in lights possibly even when there's not even a sag because
14 of vibration and effects on ballis and connections in bulbs;
15 is that correct?

16 A. Yes.

17 MR. PETERS: I have nothing further at this
18 time, your Honor.

19 JUDGE THOMPSON: Thank you, Mr. Peters.

20 Questions from the Bench?

21 MR. PETERS: Except to offer Exhibit 25 into
22 evidence.

23 JUDGE THOMPSON: Let's take up that. Do I
24 hear any objections to the receipt of Exhibit 25?

25 MR. MAY: No, your Honor.

1 JUDGE THOMPSON: Hearing no objections, the
2 same is received and made a part of the record of this
3 proceeding.

4 (EXHIBIT NO. 25 WAS RECEIVED INTO EVIDENCE.)

5 MS. SHEMWELL: Your Honor, if I may --

6 JUDGE THOMPSON: You may.

7 MS. SHEMWELL: I misspoke earlier and Staff
8 does have a couple of questions. Would you permit those?

9 JUDGE THOMPSON: Why don't you go ahead and
10 then we'll go to questions from the Bench?

11 MS. SHEMWELL: Thank you.

12 CROSS-EXAMINATION BY MS. SHEMWELL:

13 Q. Mr. Eckelkamp, my name is Lera Shemwell. I
14 represent the Staff of the Commission.

15 Are you aware of the earlier monitoring that
16 was done at Zoltek, I believe in the early '90s?

17 A. No.

18 Q. Were you involved in that at all?

19 A. No.

20 Q. Did you look at that information after you
21 did -- before or after you did the monitoring in 2000?

22 A. No.

23 Q. So you made no comparison?

24 A. No.

25 Q. Are you familiar with which feeder goes into

1 Zoltek?

2 A. At the time that we were doing the monitoring,
3 it was Feeder 55.

4 Q. Can you be more specific? Would that be the
5 O'Fallon feeder?

6 A. The -- this is a 12-KV feeder coming out of
7 Weldon Spring.

8 Q. So it's a --

9 A. It's --

10 Q. I'm sorry.

11 A. It's a Weldon Spring feeder, it's a
12 substation, and it's Feeder 55 coming out of there. It's a
13 12-KV feeder.

14 Q. Has that always been their feeder?

15 A. I can't answer that. I don't know.

16 Q. Would you define feeder for me, please?

17 A. It's basically a three-phase line coming out
18 of a substation and it run down -- runs down the road and
19 that's -- can be a certain distance and -- off that trunk
20 line there's lines that come off that trunk line and feed
21 customers. It's basically like a tree branch.

22 Q. Does having a feeder closer to the customer,
23 does that distance affect reliability?

24 A. I think it's more in the length of the feeder.

25 Q. Say a little more about that, please.

1 A. The length of the feeder, it's -- you got more
2 exposure --

3 Q. Let's just use numbers. Let's say the feeder
4 is -- one's 5 miles away and one's 10 miles away. Would the
5 expectation be that the one that's 5 miles away would
6 provide more reliable service?

7 A. I would think so, yeah, because it's -- you
8 got less exposure to the elements.

9 Q. You cut your exposure in half?

10 A. Right.

11 Q. And by the "elements," are we talking
12 squirrels, storms?

13 A. Yes.

14 MS. SHEMWELL: Give me just a moment.

15 JUDGE THOMPSON: Certainly.

16 MS. SHEMWELL: That's all I have. Thank you
17 very much, your Honor.

18 JUDGE THOMPSON: Thank you, Ms. Shemwell.

19 Questions from the Bench, Commissioner Lumpe?

20 QUESTIONS BY COMMISSIONER LUMPE:

21 Q. I apologize, Mr. Eckelkamp. You may have
22 already answered these and some is sort of a follow-up from
23 Ms. Shemwell.

24 You are an UE employee and you're an engineer;
25 is that correct?

1 A. Yes.

2 Q. All right. And what period of time are you
3 testifying for? Are you testifying specifically to the year
4 2000, any particular time within that, or what range of time
5 are you testifying to?

6 A. Mainly the acquisition of the data from --
7 around June to July of 2000.

8 Q. June, July 2000?

9 A. Yeah.

10 Q. So that's a subset of the period between May
11 and September when another witness testified that there were
12 bigger prob-- or worse problems than before; is that
13 correct? You're just testifying to June and July?

14 A. Yes.

15 Q. And is that the period of time when the feeder
16 was being changed? You're aware of that?

17 A. Not to my knowledge. Not during that time,
18 no.

19 Q. When was the feeder line changed?

20 A. I don't know that.

21 Q. You don't know that. Okay. Are you aware of
22 a level of reliability that was promised to Zoltek?

23 A. No, I was not aware of that.

24 Q. You're not aware of that. So you're simply
25 testifying to the incidents that occurred between June and

1 July; is that correct?

2 A. Yes.

3 COMMISSIONER LUMPE: Okay. Thank you.

4 JUDGE THOMPSON: Thank you, Commissioner.

5 Commissioner Gaw?

6 COMMISSIONER GAW: Thank you.

7 QUESTIONS BY COMMISSIONER GAW:

8 Q. Nice to see you, Mr. Eckelkamp. Thank you for
9 coming.

10 Your observations, as I understand it, were
11 limited to the time frame beginning on 6/26 of 2000. Is
12 that the first day? When was the first day?

13 A. June 14th.

14 Q. So June 14th until what day?

15 A. July 18th.

16 Q. The 18th. All right. And during that time
17 frame you noted four incidents?

18 A. Three sags that affected their equipment.

19 Q. A total of four -- how many incidents did you
20 note during that time frame?

21 A. Oh, I didn't count them. I don't know.

22 Q. Do you have them recorded somewhere?

23 A. Let's see. I think I noted them on the -- on
24 the -- on the data.

25 Q. Is that referencing the exhibit that we've

1 discussed earlier?

2 A. Yes.

3 COMMISSIONER GAW: What was that exhibit
4 number, Judge?

5 JUDGE THOMPSON: That's Exhibit 25.

6 BY COMMISSIONER GAW:

7 Q. Mr. Eckelkamp, is that Exhibit 25 that you're
8 referring to?

9 A. Yes.

10 Q. So on the front of Exhibit 25 when this shows
11 incidents on 6/26, 6/30, 7/6 and 7/ 11, those were not the
12 only incidents that you noted; is that correct?

13 A. Yes. That's correct.

14 Q. And have you seen the exhibit that's attached
15 to the Direct Testimony of Mr. Moran?

16 A. I -- I'm sure I looked at it, but I don't know
17 if I can -- I didn't do any comparison.

18 COMMISSIONER GAW: Is it possible to get us a
19 copy?

20 JUDGE THOMPSON: Yes, sir.

21 THE WITNESS: I didn't do any comparison of
22 that.

23 COMMISSIONER GAW: You may have an
24 opportunity.

25 MS. SHEMWELL: Your Honor, I can hand him my

1 copy if that would be helpful.

2 COMMISSIONER GAW: Whoever's got the easiest
3 access to a copy.

4 JUDGE THOMPSON: For the record, the exhibit
5 in question is Exhibit No. 2, Direct Testimony of Mike Moran
6 and attached to that is Schedule MM-2.

7 COMMISSIONER GAW: Thank you, Judge.

8 BY COMMISSIONER GAW:

9 Q. Mr. Moran -- excuse me, Mr. Eckelkamp, would
10 you look at that exhibit as it relates to the time frame
11 that you did your study in 2000, June and July of 2000?

12 A. Okay.

13 Q. I'm interested in the comparison of the
14 entries on the two -- on the schedule on Mr. Moran's
15 testimony as it relates to the same time frame on your
16 investigation. And you can take some time there to look.

17 A. Okay.

18 Q. Can you tell me if those two exhibits -- your
19 exhibit -- well, I guess Exhibit 25, which are your entries,
20 and the schedule that's attached to Mr. Moran's testimony,
21 can you tell me whether the entries in any way correspond or
22 not?

23 A. Yes. Yes. What is that -- No. 237 and 238
24 correspond to the data I have.

25 Q. All right. 237 and 238. Are there any other

1 entries on Mr. Moran -- and, again, those are entries on
2 Mr. Moran's schedule; is that correct?

3 A. Yes. Exhibit 2.

4 Q. Are there any other entries in that time frame
5 that correspond to anything that you noted?

6 A. No.

7 Q. Did you say there were other incidents that
8 you did note besides the four that are on the front page?
9 And I'm not just talking about those that impacted the
10 equipment at Zoltek. I'm talking about any notes of
11 incidents that you would have,

12 A. There were other voltage sags, yes.

13 Q. All right. And do those voltage sags that you
14 have -- that you recorded in that time frame, do they
15 correspond -- other than those two that you previously
16 noted, do they correspond in any way with the entries?

17 A. No.

18 Q. Okay. But you did find other incidences?

19 A. Of voltage sags, yes.

20 Q. But they don't correspond with the schedule on
21 Mr. Moran's testimony?

22 A. They're -- they're not listed here, no.
23 They're --

24 Q. Can you tell me how many of those --
25 approximately how many --

1 A. Let's see.

2 Q. -- incidences did you see during your study?

3 A. One two, three -- seven, eight, nine.

4 MR. PETERS: If I could, Commissioner Gaw, I
5 think they are shown on Exhibit 25 in the charts. I think
6 he was just saying -- just to clarify, I think he said he
7 made notations on the attached charts.

8 THE WITNESS: There's one, two, three --

9 COMMISSIONER GAW: I'd like for him to
10 continue, but thank you.

11 THE WITNESS: -- five, six, seven, eight,
12 nine -- there was 10.

13 BY COMMISSIONER GAW:

14 Q. Ten?

15 A. Yeah.

16 Q. And --

17 A. I think that's right.

18 Q. And you're counting through, I take it,
19 something on the Exhibit 25; is that correct?

20 A. Yes. And I -- there -- and I -- I don't --
21 check to see percent sags on these. They might not be a
22 voltage sag. Voltage sag is between 10 to 90 percent, the
23 remaining voltage. So that's what I call a voltage sag.

24 Q. All right. And anything not in that category
25 would be what?

1 A. Normal.

2 Q. Normal?

3 A. Yeah.

4 Q. Okay. So if it falls in this certain window,
5 then it's considered a sag?

6 A. Yes.

7 Q. And, again, what is that window?

8 A. 10 percent to 90 percent remaining voltage.

9 Q. All right. Mr. Eckelkamp, are you familiar
10 with any standards in the industry regarding reliability?

11 A. Not standards, no.

12 Q. All right. Are there any standards that
13 you're aware of in regard to reliability --

14 A. Not --

15 Q. -- for a utility company?

16 A. Not to my knowledge.

17 Q. No one from Ameren has ever told you that they
18 have a certain standard that they believe they should comply
19 with or try to attain when they're providing electricity to
20 customers?

21 A. I -- I -- could you rephrase? I guess I
22 didn't follow that question.

23 Q. I'm asking whether Ameren has ever informed
24 you of any standards or policies for certain reliability
25 standards that they believe they should provide to their

1 customers?

2 A. You know, one of our goals is to limit our
3 extended outage. That's -- that's a corporate goal.

4 Q. Is that quantifiable?

5 A. I don't know what this year is. I think it's
6 like four, something. That's -- I need to verify that, but
7 four extended out--

8 Q. If I get into information that is HC, please
9 don't hesitate to interrupt me.

10 What do you mean by "four"? I didn't
11 understand what that meant.

12 A. Four extended outages. That's -- it means
13 like a -- I'm not exactly for sure how we define that. I
14 don't know if it's a minute or three minutes.

15 Q. In what time frame?

16 A. What do you mean by that, "what time frame"?

17 Q. Well, I'm trying -- I'm sure that I'm just not
18 understanding this completely, but I'm interested in
19 understanding -- you said four extended --

20 A. Extended --

21 Q. -- outages?

22 A. Right.

23 Q. That has been -- at some point in time that
24 was a goal for Ameren?

25 A. Right.

1 Q. Over what period of time?

2 A. I think it's a year, but I'm -- I'm not for
3 sure of that definition.

4 Q. And is that for any one particular customer or
5 is it over an entire set of -- over the entire system? What
6 is it that that goal applies to?

7 A. I can't answer that.

8 Q. Okay. You don't know whether it applies to --

9 A. A specific --

10 Q. -- a goal of no more than four outages to a
11 particular customer in one year?

12 A. Right. I don't know if it's one particular
13 customer or feeder or -- I'm not for sure exactly.

14 Q. All right. That's never been made clear to
15 you?

16 A. Yes. That's right.

17 Q. The voltage sags that you noted during the
18 time frame of 2000 that you had the monitoring equipment on,
19 were you in any way surprised about the results?

20 A. No.

21 Q. And can you explain why you were not
22 surprised?

23 A. From my experience, there's sags on our system
24 all the time. And to see a sag it's -- it's -- I mean, when
25 we monitor, if you see a sag, if it doesn't affect the

1 equipment, there's no reason to research what caused it,
2 why, because they're out there all the time.

3 Q. All right. And why is that?

4 A. Well, there's events on our system, load
5 changes -- events meaning like faults, things of that
6 nature.

7 Q. All right. Have you ever worked for anyone
8 other than Ameren?

9 A. No.

10 Q. So you're not familiar with other systems --
11 other companies' systems other than Ameren's. Would that be
12 true?

13 A. Well, no. That's not true.

14 Q. Okay. What other systems would you be
15 familiar with?

16 A. Well, we get into our customers' facilities a
17 great deal, because customers ask us -- you know, there's a
18 problem and we try to determine what is the problem by
19 monitoring and obtaining facts. And in that process you get
20 to know other systems and the nature of their problems.

21 Q. And what other systems -- for instance, when I
22 say a system, are you referring to other utility company
23 systems?

24 A. No. Other manufacturers --

25 Q. All right.

1 A. -- commercial, residential, industrial.

2 Q. So when you said no earlier that you are
3 familiar with other systems --

4 A. Right.

5 Q. -- you were referring to other manufacturing
6 facilities within the Ameren service area?

7 A. I guess I didn't understand your question. I
8 thought I was saying --

9 Q. It's okay.

10 A. -- no to a negative.

11 Q. I'm just trying to -- trying to make sure that
12 we're communicating.

13 In other words, you're not familiar with other
14 utility companies' service areas and their episodes of
15 reliability?

16 A. Correct. I'm not aware of that, yeah.

17 Q. That's helpful. But you have done significant
18 work in trying to identify particular problems to particular
19 customers of Ameren?

20 A. Yes.

21 Q. Over a period of how much time?

22 A. Four -- four years, four to five years.

23 Q. Beginning when and ending when?

24 A. I'm still doing it, so it would be like '97
25 range.

1 Q. All right. And have you ever been told by
2 Ameren what you should try to achieve in regard to
3 reliability of service for manufacturing customers?

4 A. No. Not -- it's more of a customer --
5 customer response. And then we basically look at their
6 outage history and see what's been done in the past, what
7 their -- what their outage history has been and kind of go
8 from there.

9 Q. Based on what you found during the time frame
10 of your monitoring at Zoltek, is it your experience that the
11 impact on Zoltek's equipment that you observed is acceptable
12 reliability as far as Ameren is concerned?

13 A. Yes.

14 Q. And so if a manufacturing customer of Ameren
15 experiences within the time frame that you monitor I believe
16 it -- is it three problems with this manufacturing
17 equipment, Ameren considers that sufficient reliability?

18 A. I have -- I -- I think it's sufficient
19 reliability.

20 Q. Were you able to diagnose the problem that was
21 occurring during the time frame that you studied -- problem
22 or problems?

23 A. No.

24 Q. Okay. And were you asked to do that?

25 A. No.

1 Q. So basically you just monitored it and
2 reported it?

3 A. Yes.

4 Q. Would there normally be a next step to this
5 process in your experience in trying to resolve this kind of
6 a problem that you observed or is it just basically
7 considered acceptable and that's the end of it because your
8 findings were within an acceptable range?

9 A. No. We -- we -- I've never -- this is the
10 first time I've ever stopped at this point for me. We
11 always go in and do a quality investigation and that leads
12 all the way through to an investigation.

13 Q. All right. And do you know why -- if you
14 know, why the process was stopped in this case?

15 A. I assume it's -- was in litigation. That's
16 the only thing I can assume.

17 Q. All right. If you were to continue to pursue
18 this matter in the same way you had in previous experiences
19 pursued other findings of problems, explain to me what the
20 next steps of the process would be in more detail.

21 A. The next step would be to get with the
22 customer and probably the manufacturer, the design people to
23 try to determine exactly what was causing the -- these
24 particular pieces of equipment to trip off line. And try to
25 hone in on the device or devices that are causing it,

1 because all -- each piece of equipment will trip off at a
2 different sensitivity.

3 First you want to go after the things that are
4 least expensive. And then after you get -- after you look
5 at those, it may bubble up where you have to back up other
6 pieces of equipment. It may get fairly -- fairly expensive,
7 but normally you want to go in with a customer and try to do
8 the least expensive part first, see if that helps out on
9 voltage settings.

10 On interruptions, it's pretty hard to do
11 anything except put in a full back-up system to -- to run
12 them through whatever -- whatever interruption or outage
13 there was.

14 Q. Okay. If a customer had -- first of all, have
15 you had similar incidences or findings of incidences in the
16 past with other customers of Ameren in monitoring that you
17 have done to what you found in the Zoltek matter?

18 A. Yes. Where voltage sags occurred, equipment
19 trips off line.

20 Q. And have you had customers -- and I believe
21 you previously testified that you considered this to be a
22 normal finding?

23 A. Yes.

24 Q. And acceptable reliability from Ameren's
25 standpoint?

1 A. Well, that's my -- my standpoint.

2 Q. From your standpoint?

3 A. Yeah. I don't know if voltage sags -- I don't
4 know if Ameren's defined that. Reliability to me means
5 interruptions.

6 Q. All right. And not sags?

7 A. Right.

8 Q. You found no interruptions during that time
9 period?

10 A. Yes.

11 Q. So as long as you're just dealing with sags,
12 even if we had seen an increase in the number of sags during
13 that time frame, that would not have affected your opinion
14 on the reliability of the service Ameren was providing to
15 Zoltek. Is that what you're saying?

16 A. Well, there -- there is a point where you, you
17 know, start wondering. I mean, if you got, you know, a
18 quantified number of them in a real short period of time,
19 then there's, you know, a need to investigate it. But this
20 is pretty normal to me from my experience.

21 Q. And if a customer upon -- in your experience,
22 excluding Zoltek, if a customer would have said it may be
23 reliable for Ameren, but it's not for us because it's
24 impacting the way we do business here in a significant way,
25 how much effort would you normally have, in your experience,

1 given to trying to solve the problem as far as the
2 manufacturer were concerned?

3 A. We -- we've done in the past where we go in
4 and bring outside help and try to figure out exactly what's
5 going on and lead them -- basically be the facilitator on
6 helping them out, trying to figure out the best approach on
7 hardening their facility.

8 Q. What do you mean by "hardening their
9 facility"?

10 A. Put in mitigating devices on their equipment
11 to keep it from tripping off on a sag.

12 Q. Are you very familiar with the type of
13 equipment that is being utilized by Zoltek?

14 A. I've looked in the control cabinet on the
15 oxidizer, but I -- I -- I couldn't tell you exactly what the
16 equipment does, no.

17 Q. And you've never had any experience with that
18 kind of equipment before, have you?

19 A. Well, the -- I -- I'm not for sure what's in
20 their equipment so I can't say if I have experience with
21 that or not. If I studied it, I'm sure -- if there's
22 control relays or PLCs or something like that, I've seen
23 that before.

24 Q. But as far as this particular kind of
25 equipment, is this the only customer that you have ever been

1 involved with that utilized this kind of equipment?

2 A. Well, on the -- on the heating process on --
3 on the -- where they make their carbon fibers, but the
4 controls -- I think that's -- I can't say for sure, but I
5 think it's -- you know, you see it in the other industries.

6 Q. So you may have seen some similar control --

7 A. Right.

8 Q. -- units in other customers' --

9 A. Right.

10 Q. -- manufacturing facilities; is that correct?

11 A. Yes.

12 Q. And have you ever seen any of those have
13 sensitivity problems in your experience?

14 A. The pieces, devices, yes. Certain devices,
15 yes.

16 Q. And have you worked on resolving those in the
17 past?

18 A. It's -- it's publicized. There's publications
19 on some of that stuff that can resolve that -- those issues,
20 yes.

21 Q. But have you, yourself, worked on resolving
22 some issues with similar control units in the past?

23 A. Yes. Yes, I have.

24 Q. And did you resolve the issues when you had
25 that experience?

1 A. On that experience the customer didn't apply
2 it.
3 Q. They did not apply it?
4 A. No.
5 Q. All right. So you had one incident, if I'm
6 following you, one previous experience?
7 A. The -- I'd -- I'd have to look through my
8 files to -- to come up with some. I can't think off the top
9 of my head right now.
10 Q. You don't remember. Is that what you're
11 saying?
12 A. Right.
13 Q. And, as I understand it, during the time frame
14 that you were monitoring this, the feeder was, what, again?
15 A. Feeder 55 --
16 Q. All right.
17 A. -- at Weldon Spring.
18 Q. And do you know whether or not another feeder
19 was utilized at any point in 2000 to service Zoltek's
20 manufacturing facility?
21 A. No. I don't know -- I don't know that.
22 COMMISSIONER GAW: Thank you, Mr. Eckelkamp.
23 JUDGE THOMPSON: Thank you.
24 Further questions from the Bench, Commissioner
25 Lumpe?

1 FURTHER QUESTIONS BY COMMISSIONER LUMPE:

2 Q. Just a couple, Mr. Eckelkamp, and it's just
3 follow-up. I thought I heard you say you were not surprised
4 because there are sags in the system all the time and if it
5 doesn't affect the system, you're referring to Ameren's
6 system, not the other company's system or some other
7 companies' system, it's --

8 A. Well --

9 Q. -- the sags in --

10 A. -- when --

11 Q. -- your system?

12 A. -- we go into customer's, we monitor and we
13 ask them to fill -- to tell us if you have an event or not.
14 And on those events that occur that they do have problems,
15 that's where we want to hone in on and try to figure out
16 what their equipment is doing.

17 Q. So it's not just -- you're not concerned if it
18 doesn't affect Ameren's system -- you wouldn't be concerned
19 if it didn't affect the customer's as well as Ameren's
20 system; is that correct?

21 A. It's -- when I'm dealing with a customer, I'm
22 basically focused on the customer, trying to figure out
23 their problems. If there's an event on our system that
24 affects, you know -- you know, if it's an interruption, then
25 I'll be able to capture that. But as far as, you know,

1 going to the next door and say, We had -- you know, there's
2 a sag, did you have a problem, I don't -- I wouldn't do
3 that.

4 Q. Okay. I was just curious which system you
5 might -- whether you were talking about the system as a
6 whole or the system as it affects a particular customer.

7 A. We're -- when we're doing an investigation,
8 it's -- we can do -- if it's -- if you get a -- if you're
9 monitoring a customer, you can kind of tell -- if the
10 current increases quite a bit, you know it's downstream,
11 meaning internal to the plant. If it's not really an
12 increase in current when we have problems, you can pretty
13 much bet it's outside of that facility. That's -- that's
14 how I can determine that.

15 Q. Okay. And one other one. I thought I heard
16 you talk about there's some point in the process at which
17 you would -- if you thought there was sufficient incidents,
18 you would go in and try to mitigate or find out what the
19 problem is, but it was your assessment that these particular
20 incidents did not rise to that level; is that right?

21 A. No. That's not right. We pretty much deal
22 with the customers. If they're having problems, we try to
23 help them out. And we -- we would go in and -- after
24 monitoring shows that this piece of equipment might be
25 susceptible to a voltage sag of this duration, then we try

1 to find out which piece of equipment that is. And if we
2 can't, we've brought in people that -- that could possibly
3 do that --

4 Q. Okay.

5 A. -- and then continue to try to help them.

6 Q. So you did find these incidents to be
7 sufficient where you might have gone in and attempted
8 mitigation, but you didn't continue that process because of
9 litigation. Is that what I heard you say?

10 A. Yes. Yes. In this case, yes.

11 Q. So that sort of stopped the process right
12 there --

13 A. Right.

14 Q. -- if that's what you're saying?

15 A. Yes.

16 COMMISSIONER LUMPE: Okay. Thank you. I
17 think that clears it up.

18 JUDGE THOMPSON: Commissioner Gaw?

19 FURTHER QUESTIONS BY COMMISSIONER GAW:

20 Q. I had just a follow-up on Commissioner Lumpe's
21 question and your comment. You said that the determination
22 could be made based upon fluctuations in current whether or
23 not the problem was inside or outside?

24 A. Right.

25 Q. Can you explain that more, please?

1 A. If -- if a -- if a current -- if a current
2 rises a certain -- certain percent, you will have a voltage
3 sag. It depends on the impedance of the system.

4 Q. The resistance?

5 A. Right. And if there's enough current flow,
6 the voltage will sag down. And the current flow would be
7 from some load or fault internally, feeder capture on your
8 monitor. But if there is no current flow, that's a pretty
9 good indication that it could possibly be external.

10 Q. And did you make any determination about that
11 in your monitoring and study at Zoltek?

12 A. Yes.

13 Q. And what did you find?

14 A. I found that these instances were external.

15 Q. Coming from outside of the plant?

16 A. Yes.

17 COMMISSIONER GAW: That's all I have. Thank
18 you.

19 JUDGE THOMPSON: Thank you. Further questions
20 from the Bench?

21 QUESTIONS BY JUDGE THOMPSON:

22 Q. Mr. Eckelkamp, having determined that the
23 incidents were external to Zoltek's plant, it seems to me at
24 least there are then two courses that could be followed.
25 One would be to harden Zoltek's equipment so that it would

1 not be so susceptible; is that correct?

2 A. Yes.

3 Q. And the other course might be to try to remove
4 incidents on the UE side; is that correct?

5 A. Yes.

6 Q. And I think you've testified that the number
7 and duration and magnitude of incidents that you recorded
8 were within what you consider to be normal limits; is that
9 correct?

10 A. Yes.

11 Q. So there was no attempt, consequently, to
12 ameliorate on the UE side; is that right?

13 A. I did investigate the in-- the voltage sags
14 that affected their equipment to see if there was any trend
15 on possible problems. And the ones that I investigated
16 here, there was no trend to say, oh, yeah, you know, the --
17 you know, there could be a problem here, there or wherever.
18 So I did do that in this case.

19 Q. Okay. So it was your opinion that there was
20 no action that needed to be taken on the UE side?

21 A. Yes.

22 Q. Okay. And so in a case other than this one,
23 if you had a similar case where there was not litigation
24 involved, your next step then would be to make suggestions
25 as to hardening the equipment used by the customer; is that

1 correct?

2 A. Yes.

3 Q. And did you make any such recommendations in
4 this case for Zoltek?

5 A. I think I did when I was -- when we were
6 doing -- looking at the plant facility.

7 Q. Okay. And those would be suggestions as to
8 additional equipment they could install, that sort of thing?

9 A. I don't know if I got that specific, because I
10 wasn't -- I wasn't for sure, you know, what needed to be
11 hardened.

12 Q. I see. Do you remember exactly what your oral
13 recommendations were?

14 A. No, I don't.

15 Q. Maybe just something that they should think
16 about investigating hardening in general way?

17 A. Yeah.

18 Q. Okay.

19 A. I don't recall what I said.

20 Q. I understand. In other cases, not Zoltek, in
21 other instances where you've made this kind of investigation
22 and you've made recommendations, what kind of steps can be
23 taken to achieve this sort of hardening you're talking
24 about?

25 A. Well, you could -- you could put in holding

1 devices across the contactors and relays. They're
2 susceptible -- anything that's basically a solenoid type
3 device. You can put in constant voltage transformers that
4 can hold the voltage up, you can put in un-- uninterruptible
5 power supplies. Those are some things you can add.

6 Q. Okay. And if pursued, those would be done at
7 the customer's expense --

8 A. Yes.

9 Q. -- as far as you know?

10 A. Yes.

11 Q. And do you have any idea what magnitude of
12 expense is involved?

13 A. For those devices it's fairly inexpensive.
14 You want a number I suppose.

15 Q. I'm just wondering. I think you said "fairly
16 inexpensive"?

17 A. Yes.

18 Q. That's fine.

19 A. Yes.

20 Q. Now, there was earlier questioning about
21 Ameren's service quality goal. You talked about four
22 incidents but you were not sure over what time period,
23 whether that was per customer or per feeder. Who would know
24 the answer to that question?

25 A. I should, but I would think --

1 Q. Can you think of --
2 A. -- another employee --
3 Q. -- anyone else who would know?
4 A. I could find that information out.
5 Q. Okay. There was testimony, I believe, from a
6 prior witness about the possibility of having two feeders.
7 Are you aware of any such arrangement?
8 A. I'm not for sure how that -- all that -- the
9 details on the distribution end of it.
10 Q. Okay.
11 A. I don't know that.
12 Q. Very good. Are you familiar with this ring
13 feed design that has been referred to?
14 A. Again, I -- I'm -- I'm going to defer that. I
15 don't know.
16 Q. That's not something you know about?
17 A. I defer that to maybe my -- I don't want to
18 really comment on it, because I don't know all the details
19 of when -- you know, everything that was going on there so I
20 don't really want to comment on it.
21 Q. Well, in a general way, are you familiar with
22 that sort of feed or feed design?
23 A. Normally we have a -- on all our systems we
24 have radio feeds so we start from a substation and our
25 feed's radial. That means they don't tie to anything.

1 Q. I understand.

2 A. It has to be a mechanical tie. That means
3 somebody has to go out there and open one feeder and close
4 the other one to the customer. That's -- but there's --
5 that's not -- you know, that's not an -- from one feeder to
6 another and you feed them and they both supply feed to the
7 customer, that would be a -- I don't know. That would be a
8 parallel feed and we really don't allow that on our system.

9 Q. Okay.

10 A. Unless it's -- needs to go through a
11 authorization and so forth.

12 Q. Okay. But are you familiar with the type of
13 feed design or architecture that might be referred to as a
14 ring?

15 A. In transmission, yes, transmission.

16 Q. And by that you mean something other than just
17 distribution because --

18 A. Yes. Yes.

19 Q. Okay. But rather used to send power over a
20 distance?

21 A. Yes.

22 Q. Okay. Thank you. And, finally, I thought you
23 responded to a question that you were familiar with some
24 sort of state regulations having to do with power being
25 delivered to a plant. Did I understand --

1 A. Yes.

2 Q. -- correctly?

3 A. Yes.

4 Q. And what exactly do those regulations require,
5 if you know?

6 A. They're the Public Service Commission
7 requirements. Verbatim -- I know the exceedence is 9 percent
8 above and 11 percent below. And I think the tolerable is
9 plus 6, minus 8 percent.

10 Q. And as far as you know, was the power
11 delivered to Zoltek within the requirement of that
12 regulation?

13 A. Yes.

14 JUDGE THOMPSON: I have no further questions
15 for you.

16 Any other questions from the Bench?

17 So we will go on to recross based on questions
18 from the Bench. Ms. Shemwell?

19 MS. SHEMWELL: Thank you, your Honor.

20 RECROSS-EXAMINATION BY MS. SHEMWELL:

21 Q. Mr. Eckelkamp, when you just responded to
22 Judge Thompson's last question, do you know that the power
23 you delivered was in that parameter for periods other than
24 when you did the monitoring?

25 A. No, I don't.

1 Q. In response to another question, you described
2 the type of equipment that could be installed to maintain
3 power supplies and I think an example that you gave was UPS
4 or uninterruptible power supply. How effective is that type
5 of equipment?

6 A. Fairly effective. It's -- it's quick.
7 There's different type of UPS's and the size of them. It
8 depends upon the process and how big you want to get with
9 it, but they're -- all the -- the computer industry's been
10 using them for years, so they're very reliable.

11 Q. Does this fall in the power conditioning
12 equipment, as I might understand that?

13 A. Not -- power conditioning to me means like you
14 want a filter or a transform. It's not really a back-up
15 system.

16 Q. So power conditioning might be what I would
17 have on my computer as opposed -- that would be power
18 conditioning?

19 A. That's -- could be.

20 Q. Okay.

21 A. I would say it would probably be a surge
22 suppressor or a UPS.

23 MS. SHEMWELL: That's all I have. Thank you.

24 JUDGE THOMPSON: Thank you, Ms. Shemwell.

25 Mr. Peters?

1 MR. PETERS: Thank you, your Honor.

2 RECROSS-EXAMINATION BY MR. PETERS:

3 Q. Marty, I don't think we covered this.

4 Commissioner Gaw was asking you about the three incidents
5 and your investigation of those incidents and then Judge
6 Thompson followed up, I think on whether you would see if
7 there was anything that needed to be done on the external
8 side and you said that you checked that out on those three
9 incidents in which you found sags and Zoltek's equipment
10 tripped.

11 Can you just tell the Commission what your
12 findings found as far as what caused the sags --

13 A. Yes.

14 Q. -- three noted sags in which their equipment
15 tripped?

16 A. One of them the -- we had a dig into one of
17 our feeders -- underground feeders. Someone dug into it.

18 Q. Where was that feeder? I mean, it's not --
19 wasn't necessarily the feeder go from the substation to the
20 park? It was a different feeder?

21 A. I can't answer that.

22 Q. Okay.

23 A. At the time we did the investigation I knew,
24 but I'm not for sure now. The other one was right there at
25 the weather bureau. There was a fuse that had failed.

1 Q. Is the weather bureau another facility at the
2 Research Park?

3 A. Yes. And the other one was on a totally
4 different substation. It was -- it was 12-KV event that
5 caused a sag and that causes 34 to sag, which in turn,
6 caused the 12-KV to sag at Weldon Spring.

7 Q. Okay. And you're familiar with other
8 employees of UE, Jeff Hackman --

9 A. Yes.

10 Q. -- and Dave Wakeman?

11 A. Yes.

12 Q. And are you aware that they're going to be
13 testifying in this proceeding today or tomorrow?

14 A. Yes.

15 Q. And would they be some of the individuals you
16 were referring to that know more about the loop system that
17 the Judge was asking about?

18 A. Yes.

19 MR. PETERS: Okay. Judge, I don't have copies
20 of this as an exhibit. It's a copy of the Public Service
21 Commission regs, so if I could just refer to it and make
22 note, you know -- have the Commission take note.

23 JUDGE THOMPSON: Be sure to refer to the
24 number --

25 MR. PETERS: I will.

1 JUDGE THOMPSON: -- of the regulation.
2 BY MR. PETERS:
3 Q. Marty, I'm going to hand you a copy of a
4 regulation from the Missouri Public Service Commission regs.
5 This is 4 CSR 240-10, Subsection 23. I'm going to ask you
6 to take a look at that, please.
7 JUDGE THOMPSON: You may approach.
8 MR. PETERS: Thank you, your Honor.
9 JUDGE THOMPSON: What was the reference again?
10 I'm sorry.
11 MR. PETERS: 4 CSR 240-10, Subsection 23.
12 JUDGE THOMPSON: Thank you.
13 BY MR. PETERS:
14 Q. Go ahead and take a look at that, Marty, and
15 I'll ask you a question.
16 A. Okay.
17 Q. Okay. You've had an opportunity to look at
18 that section. Are those the standards that you were
19 referring to that the Public Service Commission sets out for
20 power to a facility such as Zoltek?
21 A. Yes.
22 Q. And there's certain variances that are allowed
23 over a one-minute interval?
24 A. Yes.
25 Q. And in your monitoring you didn't find any

1 variances even close to a minute, did you?

2 A. No.

3 Q. In fact, the variances found were for -- one
4 was for a couple seconds and others were for sixtieths of
5 seconds?

6 A. Yes.

7 Q. Okay. And also I'd like to hand you
8 4 CSR 240-10.030 Subsection 7. And that section is titled
9 Standards of Quality. Correct?

10 A. Yes.

11 Q. And could you read that Section 7, please?

12 A. Reasonable efforts shall be made to eliminate
13 interruptions of service and when these interruptions occur,
14 service should be re-established with the shortest possible
15 delay.

16 When service is interrupted for the purpose of
17 working on any portion of the system, the interruption
18 should occur at a time which will cause the least
19 inconvenience to the consumer and those seriously affected
20 by the interruptions, if possible, should be notified in
21 advance.

22 A record should be kept of all interruptions
23 of service on the entire system of major divisions including
24 the times, duration and cause of each interruption. These
25 records shall be filed, made available for inspection by the

1 Commission and preserved for a period of at least one year.

2 Q. Thank you, Marty. And, again, in your
3 monitoring, what you're testifying about in 2000, you found
4 no interruptions. Correct?

5 A. Yes.

6 Q. Okay.

7 MR. PETERS: Anybody want to see those?

8 Nothing further, your Honor. Thank you.

9 JUDGE THOMPSON: Thank you, Mr. Peters.

10 Redirect, Mr. May?

11 MR. MAY: Yes, your Honor. One moment,
12 please.

13 Thank you, Judge. May I proceed?

14 JUDGE THOMPSON: You may.

15 REDIRECT EXAMINATION BY MR. MAY:

16 Q. Mr. Eckelkamp, correct me if I'm wrong, during
17 your testimony today you had mentioned that you were unclear
18 or unsure as to what Union Electric's parameters were for
19 reliable service; is that correct? Did I misunderstand you?

20 A. Could you -- could you explain that a little
21 bit?

22 Q. Well, I'd heard some testimony -- I don't know
23 if it was in response to a question from the Commissioners
24 or from your counsel for UE, but there was some testimony
25 regarding the reliability, I guess, standards or parameters

1 of Union Electric. Do you recall those questions?

2 A. Yes.

3 Q. And correct me if I'm wrong, but I believe
4 your response was that you were unsure what those were; is
5 that right?

6 A. Yeah. I don't know if we got a defined
7 reliability definition --

8 Q. Okay.

9 A. -- except our goal, as I suggested earlier.

10 Q. Was it also your testimony though that based
11 on your monitoring, you believe that Union Electric's
12 service was reliable to Zoltek?

13 A. I believe that, yes.

14 Q. But at the same time you're unclear or unsure
15 as to what Union Electric's parameters are for reliability?

16 A. Well, I -- yes, that's true.

17 Q. Okay. Now, on Exhibit 25, which we'll call it
18 I guess the monitoring results -- written results, there
19 were three incidents that tripped off Zoltek's equipment,
20 correct, and we've gone over that in your Direct Testimony?

21 A. Yes.

22 Q. And there were other incidents where the
23 equipment wasn't tripped off; is that correct?

24 A. Right.

25 Q. Now, the regulations, and specifically

1 240-10.030, 23, you had testified to that and you had
2 reviewed those, correct, when counsel handed those to you?

3 A. Yes.

4 Q. Do you deal with this regulation in your job?

5 A. Yes.

6 Q. You deal with this specifically?

7 A. Yes.

8 Q. Do you do some sort of compliance checking or
9 do you report to the Public Service Commission with respect
10 to this or what is your working knowledge of this?

11 A. I don't report to the Commission.

12 Q. Okay. Does your position have you in some
13 kind of -- you know, a compliance role for the company for
14 Union Electric?

15 A. No.

16 Q. Okay. Well, then how is it that you work with
17 this section?

18 A. We've -- we -- we -- when we go out and
19 investigate problems, we determine if we're within our
20 limits.

21 Q. Okay. Now, look at this. And what part of --
22 I guess it's Section or Subsection 23 -- what were you
23 testifying to? That's quite lengthy so I'm trying to figure
24 out what it was in that regulation, that particular part of
25 it, that you say you were in compliance with?

1 A. What do you mean "compliance"?

2 Q. Do you have a copy of that before you?

3 A. No.

4 JUDGE THOMPSON: You may approach.

5 MR. MAY: Oh, I'm sorry.

6 BY MR. MAY:

7 Q. Okay. I've just handed to you --

8 A. What was the question?

9 Q. -- Section 23.

10 JUDGE THOMPSON: For the purposes of the
11 record, let's clarify exactly what it is you handed to him.

12 MR. MAY: I will. Your Honor, it's a copy of
13 240-10.030 and it's page 6 from the Code of State
14 Regulations, a copy, which includes -- we're going to call
15 it Section 23.

16 MR. VITALE: Your Honor, if you'd like, during
17 the lunch break we can mark this as a numbered exhibit just
18 so it's identifiable and we'll provide copies after the
19 break.

20 JUDGE THOMPSON: Would that be acceptable?

21 MR. MAY: That will be fine. This was the
22 document that was originally shown on recross-examination.

23 JUDGE THOMPSON: And there are, in fact, two
24 sections from that regulation that were referred to. If you
25 would provide copies of both of those.

1 MR. VITALE: We will, Judge.

2 JUDGE THOMPSON: We'll go ahead and mark them
3 and throw them in.

4 Very well. Proceed.

5 BY MR. MAY:

6 Q. Now, with respect to Section 23, if I
7 understood, you had testified that Union Electric was in
8 compliance with Section 23. Obviously it's quite lengthy
9 and I'm asking you specifically what portion of Section 23
10 was UE in compliance with?

11 A. D.

12 Q. D?

13 A. Yes.

14 Q. And could you read just the beginning part of
15 that for us so I know we're at the --

16 A. For the power service the voltage at any time
17 shall be greater than 10 percent.

18 Q. Shall not be?

19 A. Shall not be. I'm sorry. Shall not be
20 greater than 10 percent above or below standard service
21 voltage.

22 Q. Okay. And so it goes on, just to paraphrase,
23 it talks about three different zones. Correct? Favorable
24 zone, tolerable zone and the extreme zone. Correct?

25 A. Correct.

1 Q. You also had testified, I believe on
2 cross-examination, about this one-minute requirement. You
3 said that they had to -- or I'm sorry, the incidents had to
4 be for at least one minute?

5 A. Yes.

6 Q. Where is that in Section D that it requires a
7 minute?

8 A. I don't see it in there, not Section D. I see
9 it in the front section, Section 23.

10 Q. I appreciate that. If I understand your
11 testimony though, you were saying that when you say Union
12 Electric was in compliance, you were referencing 23-D.
13 Correct?

14 A. Yes.

15 Q. Okay. Now, I want to look at Exhibit 25,
16 which is the requir--

17 JUDGE THOMPSON: Mr. May, if I could interrupt
18 for a moment, do you expect to be very much longer? The
19 reason I ask, I'm trying to determine whether we should
20 finish with the witness before the lunch break or simply
21 come back and resume after the lunch break.

22 MR. MAY: It's hard to tell, Judge. It might
23 be 10 or 15 minutes. I'm just guessing.

24 JUDGE THOMPSON: In that case, why don't we go
25 ahead and take the lunch break now to retain some degree of

1 regularity and we'll return at 1:30 and you'll still be on
2 the stand and you can complete your redirect at that time.

3 I don't want you to rush through because of
4 the fact you want to accommodate the lunch break, so we'll
5 go ahead and break now.

6 MR. MAY: Thank you.

7 (A RECESS WAS TAKEN.)

8 JUDGE THOMPSON: Mr. May, I believe you're
9 inquiring for redirect.

10 MR. MAY: Yes, your Honor.

11 JUDGE THOMPSON: Let me take a moment before
12 you start, to inquire of counsel whether you believe we're
13 going to finish this case tomorrow by five o'clock or not?

14 MR. MAY: You know, your Honor, this is just
15 an estimate or guess on my part, but we have a -- we have to
16 finish with Mr. Eckelkamp's testimony --

17 JUDGE THOMPSON: Then two more witnesses.

18 MR. MAY: We have another witness that I'm
19 bringing in and then Mr. Park, our expert. I assume that
20 would probably take up the day.

21 MR. VITALE: Possibly. Depending obviously on
22 the Commission and the Court asking questions.

23 MR. MAY: And so basically assuming that were
24 to occur, we would have one day to do seven witnesses. It
25 seems like it might be difficult, but --

1 JUDGE THOMPSON: A pace we've not yet attained
2 in this matter.

3 MR. MAY: No, sir.

4 JUDGE THOMPSON: I told you the days that we
5 have to come back and those are, as I recall --

6 MR. MAY: The 27th.

7 JUDGE THOMPSON: -- 27th and 28th of February.
8 Let me see if those are still available here. Yes, those
9 two days are still available so I guess that's when we would
10 have to come back unless that doesn't work.

11 MR. VITALE: I don't know. I think that
12 works. We'll have to see about the witnesses and which ones
13 are left. It may be premature until we see how things go
14 tomorrow, but our two experts Mr. Burke and Mr. Moran, are
15 both out of town from Alabama and North Carolina and what
16 I'd like to do, depending on how things go tomorrow, is
17 possibly change the order so they don't have to fly back
18 into Jefferson City.

19 MR. MAY: That would be fine with us.

20 MR. VITALE: Then we'll finish with the UE
21 finance witnesses from St. Louis.

22 JUDGE THOMPSON: Great. That's what we'll
23 think about.

24 You may inquire, Mr. May.

25 BY MR. MAY:

1 Q. Mr. Eckelkamp, we took a break for a little
2 while. We're back asking you some questions. You had
3 before you I believe, Exhibit 25, which --

4 MR. MAY: Judge, can I have a moment to go
5 grab mine?

6 JUDGE THOMPSON: You may.

7 BY MR. MAY:

8 Q. Okay. You have 25 before you?

9 A. Yes.

10 Q. Okay. Now, you had said -- and I'm looking at
11 Appendix A which is page 1 of Exhibit 25. I see some
12 percentages there and I'm recalling your responses to the
13 cross-examination questions by Mr. Peters. If I understand
14 correctly, on page 5 of this document, let me direct your
15 attention to that, you discussed some of these incidents
16 that occurred at Zoltek, specifically I think the one on
17 6/26; is that correct?

18 A. Yes.

19 Q. And that graft or monitoring results are
20 contained on that page. Right?

21 A. Yes.

22 Q. What was the percentage drop? Did I
23 understand you to say it was approximately 21 percent from
24 the standard service?

25 A. No. I didn't say that.

1 Q. Okay. Let's go back to A, and I'm just trying
2 to understand this. Okay?

3 A. I said from the prior voltage read.

4 Q. Okay. On A, Appendix A, the first page, let's
5 skip back to that. You have some percentages listed there.
6 Correct?

7 A. Yes.

8 Q. What does that mean?

9 A. That's the percent difference between the
10 voltage prior to the sag and the minimum voltage recorded.

11 Q. Okay. I guess I'm just not understanding
12 this, but assuming that the standard service we'll call
13 100 percent -- you follow me so far?

14 A. Yes.

15 Q. With this drop, for instance, that's detailed
16 on page 5 --

17 A. Yes.

18 Q. -- where the voltage had dropped; is that
19 correct?

20 A. Yes.

21 Q. That's an indication. The level to which it
22 dropped is what?

23 A. From the prior voltage to the voltage measured
24 is -- let's see. I got like -- whatever that says there,
25 79, 79 99 -- 99.1.

1 Q. And, again, I guess let me -- I'm just
2 confused so bear with me.

3 A. Okay.

4 Q. Again, if the normal service to the plant
5 would be 100 percent, does this mean at that moment it was
6 79 approximate percent of the 100 percent normal service at
7 that moment?

8 A. Yes.

9 Q. Okay. So just doing -- and we'll just say
10 79 percent for the purposes of our discussion. I know
11 there's a .2 or .4 there, but 79 percent, that would be --
12 again, the normal service is 100, at that moment it was
13 approximately 79 percent. That would equal 20 to 21 percent
14 drop. Is that correct? Am I reading that right?

15 A. Yes.

16 Q. Okay. Following your other numbers, for
17 instance, on 6/30, and this is on Appendix A, we'll just say
18 there are three 83 percents across the board there
19 approximately; is that right?

20 A. Yes.

21 Q. Okay. And, again, if the standard service is
22 100 percent, this 83 is what it was at that moment that's
23 detailed in your findings, that was the percent of 100 to
24 which the voltage had dropped; is that right?

25 A. Yes.

1 Q. So that would be approximately, if my math's
2 right, about 17 percent drop in voltage difference,
3 17 percent drop?

4 A. Yes.

5 Q. On July 6th, the number appears 64.9. So for
6 the purpose of our discussion we'll call it 65 percent.
7 And, again, following the same example I'd given to you with
8 100 percent being normal service, the service at that moment
9 on that phase was approximately 65 percent of the 100; is
10 that correct?

11 A. Yes.

12 Q. So that would represent approximately a
13 35 percent drop?

14 A. Yes.

15 Q. And, finally, I'll ask you about on July 11th
16 and numbers 82.9, 85.4, 84 percent. Let's just for the
17 purposes of our discussion we'll take the 85 percent. We'll
18 say approximately. Do you see that on there on Appendix A?

19 A. Yes.

20 Q. Does that, again, mean that the service had
21 dropped from the normal 100 percent to 85 --

22 A. Right.

23 Q. -- percent at that moment, therefore, that is
24 approximately a 15 percent drop?

25 A. Yes.

1 Q. If you will turn to page 7 of Exhibit No. 25.
2 Do you have page 7?
3 A. Yes.
4 Q. Okay. And you will see -- I assume those are
5 your notes typewritten there. Correct --
6 A. Yes.
7 Q. -- in regard to 7/11, July 11?
8 And you indicate there was no equipment
9 malfunction; is that right?
10 A. Yes.
11 Q. What percentage drop -- again, using 100 as
12 the standard service at that moment in time that you have
13 marked, what percentage had the voltage dropped by?
14 A. On 7/11?
15 Q. Yes. At that moment you've marked on page 7
16 of Exhibit 25.
17 A. 83 -- 83 percent, 85 percent, 84 percent.
18 It's --
19 Q. So would it be -- if I understand your answer,
20 would it be fair to say approximately the service had
21 dropped 15 percent?
22 A. Yes.
23 Q. Now, there were some questions -- or I guess
24 it was a response that you had given to Mr. Peters' question
25 and then Commissioner Lumpe had followed up, and I don't

1 know, at least in my mind, if I was clear on what your
2 response was.

3 You had talked about -- and you were talking
4 about sags, as you call them. You said something about if
5 it's not enough to affect equipment, and that's what I had
6 written here as your quote. I hope I got that right. Are
7 you saying if it didn't affect in this case Zoltek's
8 equipment or didn't affect Union Electric's equipment?

9 A. The sag you're talking about?

10 Q. Yeah. I'm just talking about your
11 conversation you had.

12 A. I was talking about affecting Zoltek's
13 equipment.

14 Q. Okay. So what you were saying, if I
15 understand this and correct me if I'm wrong, but if the sag
16 or the incidents was not enough to affect Zoltek's
17 equipment, then it is as though to Union Electric that no
18 event occurred? Was that your statement or am I misreading
19 that?

20 A. No.

21 Q. That is not your statement?

22 A. Yeah. I don't know if there was an event that
23 occurred on our system. I don't know. I guess I don't
24 understand.

25 Q. That's probably confusing, so I'll try again.

1 I understand your testimony is that if the customer, we'll
2 say Zoltek in this case, if their equipment was not affected
3 by an incident -- you follow me so far?

4 A. Okay.

5 Q. We'll just talk about you. Is it your belief
6 then that it's as though an incident didn't occur?

7 A. An -- an event occurred, but I don't -- I
8 guess it didn't affect their equipment.

9 Q. Okay. Now, also, you had mentioned something
10 at some point before the break about customers recording
11 events. Do you recall that comment you had made?

12 A. No.

13 Q. Well, let me just ask you this. You do a lot
14 of power quality investigations. Is that the way I
15 understood your testimony?

16 A. Yes, yes.

17 Q. And in that position do you or your
18 department, you know, folks, do you all recommend that
19 customers record events in some fashion?

20 A. Yes. When we're doing a power quality
21 investigation.

22 Q. Does that assist you if they have their own
23 recording --

24 A. We --

25 Q. -- of events?

1 A. -- ask them to record events when we're doing
2 power quality monitoring.

3 Q. And I assume since you request that, that
4 that's helpful?

5 A. Yes.

6 Q. Okay. Now, also, you had mentioned some, as
7 you call them, hardening steps. It may have been in
8 response to a Commissioner's question, but I just want to be
9 clear. I think your testimony on direct was that you never
10 officially communicated those hardening steps or those
11 solutions to Zoltek; is that correct?

12 A. Not by writing.

13 Q. Okay.

14 A. No.

15 Q. And then also you've been at the plant.
16 Correct?

17 A. Yes.

18 Q. How familiar are you with Zoltek's
19 manufacturing process?

20 A. What do you mean by "familiar"? I mean --

21 Q. Well, have you sat down with anyone from
22 Zoltek and gone over in detail their manufacturing process?

23 A. No.

24 MR. PETERS: Your Honor, I'm going to object.
25 This is repetitive, this has been asked and answered. The

1 questions were asked specifically about his knowledge of the
2 process versus his knowledge about the controls and this is
3 beyond the scope of redirect.

4 JUDGE THOMPSON: I believe it is asked and
5 answered. I'll sustain that objection.

6 BY MR. MAY:

7 Q. Let me ask you this then just to summarize.

8 MR. MAY: And I did not hear this answer so
9 forgive me, your Honor, but I don't remember this question.

10 BY MR. MAY:

11 Q. Are you familiar with their exothermic
12 process?

13 A. Again, you mean "familiar" like --

14 Q. Well, do you know anything about their
15 exothermic process?

16 A. I -- I know from what was said in here.

17 Q. Okay. But prior to that time, you've had
18 no --

19 A. Not --

20 Q. -- knowledge of it?

21 A. Nobody sat down and talked to me about it, no.

22 Q. Okay. Well, you had made a comment, and I
23 believe it might have been in response to the Judge's
24 question, you had talked about some things that could be
25 done and maybe it was in context of the hardening you had

1 talked about.

2 A. Right.

3 Q. And one of the things you had mentioned was a
4 UPS?

5 A. Yes.

6 Q. And you said that -- and you had said a couple
7 things, and forgive me, I've forgotten what the other things
8 were. But the UPS stuck out because you said that those
9 were inexpensive steps. Was that your testimony?

10 A. They could be, yeah.

11 Q. They could be inexpensive?

12 A. Yes.

13 Q. Would you know what type of UPS that Zoltek
14 would need in light of their manufacturing process?

15 A. No.

16 Q. Okay. So you have no idea what it would cost
17 then to have a UPS for them?

18 A. No.

19 MR. MAY: I don't think I have anything else,
20 Judge.

21 JUDGE THOMPSON: Thank you, Mr. May.

22 MR. MAY: Thank you.

23 Thank you, Mr. Eckelkamp.

24 THE WITNESS: You're welcome.

25 JUDGE THOMPSON: I believe Mr. Eckelkamp may

1 be excused subject to possible recall if there's a
2 Commissioner question. You may step down, sir. Thank you.

3 MR. PETERS: Your Honor, if we could, we've
4 got the copies of the regs that you requested.

5 JUDGE THOMPSON: Oh, great. Yeah. Bring
6 those up. Thank you. Let's go ahead and mark those as 26
7 and 27.

8 (EXHIBIT NOS. 26 AND 27 WERE MARKED FOR
9 IDENTIFICATION.)

10 MR. PETERS: Your Honor, if we could, just to
11 make sure we're being clear, Exhibit 26 is 4 CSR 240-10 I
12 believe dot 30, Subpart 23.

13 JUDGE THOMPSON: Okay. That would be 10.030,
14 Sub 23.

15 MR. PETERS: Yeah.

16 JUDGE THOMPSON: Very well.

17 MR. PETERS: And 27 will be 4 CSR 240-10.030,
18 Subpart 7.

19 JUDGE THOMPSON: Very well. Thank you, sir.

20 MR. PETERS: Thank you.

21 Judge, could we move Exhibits 26 and 27 into
22 evidence?

23 JUDGE THOMPSON: Yeah. Just a moment, please.
24 I have to get the Bench copies marked so we know what we
25 have here.

1 Do I hear any objections to the receipt of
2 Exhibits 26 or 27?

3 MR. MAY: No, your Honor.

4 JUDGE THOMPSON: Hearing no objections, the
5 same will be received and made a part of the recording of
6 this proceeding.

7 (EXHIBIT NOS. 26 AND 27 WERE RECEIVED INTO
8 EVIDENCE.)

9 MR. PETERS: Could I have a double check that
10 25 has been moved in as well?

11 JUDGE THOMPSON: My records show that 25 has
12 been offered and received.

13 MR. PETERS: Thank you, your Honor.

14 JUDGE THOMPSON: And we're ready for Edward J.
15 Bradley, Jr.

16 (Witness sworn.)

17 JUDGE THOMPSON: Thank you. Please take your
18 seat, state your name for the reporter and spell your last
19 name, if you would.

20 THE WITNESS: Edward Bradley, B-r-a-d-l-e-y.

21 JUDGE THOMPSON: Thank you. You may inquire.

22 MR. VITALE: Your Honor, if I may, just before
23 Mr. May starts his questions, renew our objections for the
24 record with respect to Mr. Bradley's presence by subpoena as
25 a witness.

1 JUDGE THOMPSON: I understand and I will
2 overrule that objection. I appreciate you reminding me.
3 Is Mr. Eckelkamp still here?
4 Go ahead. You may inquire.
5 MR. MAY: Thank you.
6 DIRECT EXAMINATION BY MR. MAY:
7 Q. Good afternoon, Mr. Bradley.
8 A. Good afternoon.
9 Q. As you know, my name's Brian May. I'm here on
10 behalf of Zoltek Corporation in regard to this matter.
11 A. Yes.
12 Q. Some background questions, who's your
13 employer?
14 A. Ameren.
15 Q. And how long have you been employed by Ameren
16 or Union Electric?
17 A. Seventeen years with Ameren, slash, Union
18 Electric.
19 Q. Okay. And for sure you were employed there in
20 1993. Correct?
21 A. Yes.
22 Q. And what is your present title?
23 A. I'm a distribution standards engineer.
24 Q. Okay. And what was your title in 1993?
25 A. Engineer distribution service test.

1 Q. Okay. Sounds like the same maybe department,
2 just a different title within or --

3 A. Actually, no. They're very different jobs.

4 Q. Okay. Sorry.

5 A. That's okay.

6 Q. What is your educational background?

7 A. I have a bachelor of science in electrical
8 engineering from the University of Missouri-Rolla and a
9 master's in business administration from St. Louis
10 University.

11 Q. Okay. Now, did you do some monitoring in 1993
12 at the Zoltek facility at the Missouri Research Park?

13 A. Yes, I did.

14 Q. Okay. And when did you do that?

15 A. It was a period of November -- November -- I
16 believe November --

17 Q. Would it be November 9th?

18 A. -- 9th through 22nd, if I recall.

19 Q. So November 9th through November 22nd you'd
20 done monitoring?

21 A. Yes.

22 Q. And where was the monitoring done, like within
23 the plant or --

24 A. It was done in the exterior actually. There
25 was a pad-mounted transformer in the rear of the plant and

1 the monitoring was conducted in the secondary compartment of
2 that transformer.

3 Q. And how did you come about doing the
4 monitoring there? Were you directed by your employer or --

5 A. I -- I received a -- what we would call a
6 voltage complaint in those days from a regional district,
7 Wentzville, to go out and do the monitoring for them.

8 Q. Mr. Carr, are you familiar with Mr. Carr?

9 A. Yes, sir.

10 Q. Did Mr. Carr direct you or was that from where
11 the request had come?

12 A. Not in 1993. In 1993 I would say it either
13 came from Jim Hulls or from Freddie Hampton, who's district
14 personnel.

15 Q. That was my mistake. I believe you previously
16 said Mr. Hulls had done that?

17 A. That's correct.

18 Q. I'm sorry about that. Describe, if you would,
19 exactly what you did with the monitoring.

20 A. We -- we did a couple of different things when
21 we were there initially. Set up a BMI 30/30 power profiler
22 there and we let that run continuously for about 45 minutes.
23 This device monitored active power measurements on the
24 Zoltek -- on the transformer on Zoltek's system there on the
25 load of Zoltek. And after we got done with that, we set up

1 a Dranetz 658 disturbance analyzer which we then left in
2 the -- in the transformer for approximately two weeks.

3 Q. Okay. Now, during this time period in 1993
4 when you did the monitoring, did you find any unusual
5 operations within Zoltek's plant?

6 A. The -- the power parameters on the 30/30
7 were -- there was nothing unusual. On the disturbance
8 analyzer we recorded, as I recall, two incidents, events.

9 Q. And would those incidents have been on
10 November 14th and November 17th, 1993?

11 A. That's correct.

12 Q. Now, did you also do monitoring in 1994?

13 A. Yes, I did.

14 Q. And would that have been for the time period
15 June 8th through September 30th?

16 A. That's correct.

17 Q. Okay. And I think you'd indicated that
18 Mr. Carr had directed or requested that you do that
19 monitoring?

20 A. Mr. Carr had sent a request to my supervisor
21 to have monitoring done at the plant.

22 Q. And did you record an interruption on
23 July 8th, 1994?

24 A. Yes, I did.

25 Q. And could you describe that for us, please?

1 A. As -- as I can -- best as I can recall, there
2 was about a half-second zero volt interruption on all three
3 phases.

4 Q. And did you also record three interruptions on
5 July 20th?

6 A. There were three interruptions that followed
7 one right after the other. There was -- actually, the first
8 one was a voltage sag on three phases. The second incident
9 occurred about 10 minutes later. It was a voltage sag on
10 the A phase. Both of those were fractional-second outa--
11 voltage sags, as I recall. The last inc-- last recording
12 was about 10 minutes later. It was a three phase
13 16.1-second zero voltage event.

14 Q. Okay. And those are all on the 20th. Is that
15 what you're saying?

16 A. All on the 20th of July, sir.

17 Q. Did you also record an interruption on
18 August 7th, 1994?

19 A. Yes -- yes, I did.

20 MR. MAY: Okay. Thank you, sir.

21 I don't think I have anything further at this
22 time, your Honor. Tender the witness.

23 JUDGE THOMPSON: Thank you, Mr. May.

24 Ms. Shemwell --

25 MS. SHEMWELL: Thank you, your Honor.

1 JUDGE THOMPSON: -- cross-examination?

2 MS. SHEMWELL: Thank you.

3 CROSS-EXAMINATION BY MS. SHEMWELL:

4 Q. Good afternoon, Mr. Bradley. I'm Lera
5 Shemwell, I represent the Staff of the Missouri Public
6 Service Commission.

7 A. Good afternoon.

8 Q. Let me compliment you on your memory. It's
9 pretty astounding.

10 You mentioned something about a voltage
11 complaint. Would you say specifically what that is, please?

12 A. That's a -- that's a formal complaint that
13 comes in from a customer, at least what we would call a
14 complaint where a customer is unhappy about something to do
15 with their service. It may be voltage, it may be something
16 else, but it's primarily a situation where their service is
17 not -- they're unhappy about their service and what they're
18 getting for their service.

19 Q. How would this complaint have come from
20 Wentzville?

21 A. At the time the way things were done with the
22 service group that I was involved with, it's a little
23 different than what Mr. Eckelkamp and his folks do today.

24 The company had metropolitan districts and the
25 company had regional districts. And I was a part of the

1 metropolitan operation and my work was primarily within the
2 City and County of St. Louis. When a regional district had
3 a situation where they wanted some more sophisticated
4 monitoring done than just chart recording, they would
5 request through a voltage complaint that we could come out
6 and assist them with a -- to do a monitor session for them.

7 Q. Yesterday Mr. Romy said something about them
8 being on a rural system. Were you here for that?

9 A. I was not.

10 Q. I was wondering if Wentzville would be defined
11 as a rural system as opposed to a city or urban --

12 A. As a person doing a test, I wouldn't want to
13 qualify that, because honestly I didn't know the way the
14 system was developed. I simply went out there to set up a
15 test, so I didn't study the system.

16 Q. Did you compare the monitoring that you did in
17 '93 in terms of the number of events to what you did in '94?

18 A. I looked at them, sure, yes. One -- one thing
19 to comment is that the events in '93 were during a fall time
20 frame, whereas the events in '94 were during a summer time
21 frame. So it's a little like apples and oranges there, but
22 I did look to see if the number and type were very different
23 one from the other.

24 Q. Is it like apples and oranges because the
25 demands on the system are different during those times?

1 A. Well, I think there's a lot of factors to it.
2 You got the weather and demands could be an issue as well.
3 I can't say specifically, but I would say that if I was
4 going to compare two things, I'd want to use the same time
5 frame to compare.

6 Q. Did you make any comparison of those to the
7 2000 test that was done -- or monitoring, pardon me?

8 A. I have not been involved in service testing
9 work since 1995, so I had no basis to --

10 Q. Thank you, sir.

11 A. -- compare it.

12 Q. I'm sorry. I didn't mean to cut you off.

13 A. Thank you.

14 MS. SHEMWELL: Thank you, your Honor.

15 JUDGE THOMPSON: Thank you, Ms. Shemwell.

16 Mr. Vitale?

17 MR. VITALE: Thank you, your Honor. If I may,
18 your Honor.

19 JUDGE THOMPSON: You may.

20 (EXHIBIT NO. 28 WAS MARKED FOR
21 IDENTIFICATION.)

22 CROSS-EXAMINATION BY MR. VITALE:

23 Q. Mr. Bradley, if you'll take a look at what's
24 been marked as Exhibit 28, can you identify that? Do you
25 have a copy?

1 A. Can I get a copy, please?

2 Q. I gave everybody a copy but you. Sorry.

3 A. Yes. Thank you. This is a summary of testing

4 that I did at Zoltek in 19-- in 1993 and 1994. Since it had

5 been such a long time since I had done any of this work, I

6 wanted to put something on paper to help me remember what

7 was going on.

8 Q. And this summarizes the incidents or events

9 that you testified to in response to Mr. May's questions?

10 A. That's correct.

11 Q. Okay. And just to go through this just to

12 confirm, the two events you indicated occurred during the

13 1993 time frame are on the first page and those occurred on

14 November 14 and November 17?

15 A. That's correct.

16 Q. And those were voltage sags?

17 A. That's correct.

18 Q. And you gave, I think, an estimate or a short

19 less than a second cycle, but there's a specific time frame

20 in your memo. Correct?

21 A. Yes. There are specific times in the memo and

22 specific voltages in the memo.

23 Q. Okay. And how long was the first event?

24 A. Okay. The first event lasted between .05 and

25 .08 seconds.

1 Q. Okay. and the second event?

2 A. The second event lasted between .02 and .06
3 seconds.

4 Q. Okay. And, as I understand it, there was
5 never during either of those events a complete loss of power
6 or power outage or interruption. Correct?

7 A. That's correct.

8 Q. Okay. And what, if anything, did you do once
9 you got the information after the monitoring period was over
10 in '93 to determine what possible causes for these events
11 there might have been?

12 A. I -- I looked through Ameren operating records
13 and correlated these -- these events to weather
14 conditions -- bad weather conditions that existed at the
15 time and were causing those problems --

16 Q. Okay.

17 A. -- on both cases.

18 Q. Now, in 1994 we had a three-month monitoring
19 period. Correct?

20 A. That -- that's correct.

21 Q. And, as I understand your testimony in
22 response to Mr. May, we had events on three different days
23 during that three-month period?

24 A. That's correct.

25 Q. One day had a multiple event or all around the

1 same time?

2 A. On July 20th there was a multiple event within
3 a -- about a half-hour time period.

4 Q. Okay. And first let's look at July 8, 1994.
5 That outage -- strike that.

6 That voltage -- that was a voltage sag; is
7 that correct?

8 A. That was a zero volt-- an event that occurred
9 for half a second.

10 Q. Okay. Meaning that in that half a second
11 power was restored?

12 A. Correct.

13 Q. Okay. And there's an indication in your memo
14 here as a possible cause. Did you investigate after you got
15 the results of the '94 monitoring?

16 A. I -- I noted on this event that our records
17 showed there was a thunderstorm in the area.

18 Q. Now, it makes mention about a recloser trip.
19 What is that?

20 A. That's a protective device that may open or
21 close in the event that lightning or tree contact occurs.
22 And that is -- that is definitely assumption on my part.
23 That's not -- I have no evidence to say it did. I'm saying
24 that that is one incident that can occur in a thunderstorm
25 situation.

1 Q. Is there any way to correlate that, if a
2 recloser works and you have a half-second outage in the
3 system?

4 A. If you have accurate records on the number of
5 trips of each recloser, you could correlate that, but I did
6 not do that in this case. This record was compiled a little
7 bit later in time after the event so I didn't -- didn't get
8 involved with that.

9 Q. Okay. Then on July 20, we have a voltage sag
10 and that was for .3 seconds --

11 A. Correct.

12 Q. -- initially?

13 A. Correct. Initially it was a .3-second outage.
14 There was another outage that was a little bit longer, .4
15 seconds that occurred about 10 minutes later. I don't have
16 that specifically written, but it is true. It did occur.
17 And then following that about 10 minutes later, a
18 16.1-second zero volt condition occurred.

19 Q. Okay. And the last one occurred on August 7,
20 '94 in that three-month monitoring period?

21 A. That's correct.

22 Q. And that was a zero --

23 A. Zero volts for 7.7 seconds, that's correct.

24 Q. And, again, that's -- after that 7.7 seconds,
25 power was restored --

1 A. That's correct.

2 Q. -- by operation of the system?

3 A. That's correct.

4 Q. Now, at some point after either of these

5 monitoring periods, did you have any meetings or discussions

6 with anybody from Zoltek Corporation to discuss the results

7 of the monitoring?

8 A. Initially I provided the information in

9 November of '93 to a Jim Hulls and I was invited to come out

10 in December and present this information at a meeting with

11 members in the Wentzville district and members of Zoltek at

12 Zoltek. And I believe it was December 15 was that meeting

13 that occurred.

14 Q. And who was present from Zoltek?

15 A. Mr. Rummy, Mr. Spahn, a couple other folks I

16 can't remember offhand.

17 Q. And what was discussed at the meeting? Did

18 you present your monitoring results?

19 A. Right. I presented my results and basically

20 told them what I correlated the events to. They were also

21 discussing their problems and then Mr. Hulls was trying to

22 discuss some options with them of what they could possibly

23 do to improve their situation.

24 Q. Okay. And when you said you discussed what

25 you had -- I think you said correlated the results of the

1 monitoring? So you mean the two weather incidents that you
2 have reflected in Exhibit 28?

3 A. Right.

4 Q. Okay.

5 A. Right. That's correct.

6 Q. And what were the types of things that
7 Mr. Hulls was talking to Mr. Rummy and the other people from
8 Zoltek about?

9 A. Well, Mr. Hulls had -- had suggested to those
10 folks at Zoltek that they look into alternate -- possible
11 alternate systems to keep the power up in cases.
12 Particularly with storms where we know that we're going to
13 have a protective device that will probably interrupt
14 somewhere along the line, that some kind of back-up or
15 protection was necessary for them.

16 Q. And did anybody from Zoltek respond to the
17 comments made by you and Mr. Hulls?

18 A. Well, yes. It was kind of unfortunate.
19 Mr. Rummy became extremely upset and irate and he -- he
20 cursed and swore at us and said that we were basically lying
21 to him, in particular Mr. Hulls was lying to him all the
22 time about what we were trying to do.

23 And basically he associated that the problems
24 that Zoltek was having were purely Union Electric's problem,
25 they were not Zoltek's problem and that Union Electric had

1 better get these problems resolved.

2 Q. Now, since '93 and '94 when you did your
3 monitoring -- and I realize you left that area I think you
4 said in '95?

5 A. Correct.

6 Q. Are you aware whether Union Electric's power
7 quality monitoring procedures and abilities are different
8 than what they were in '93, '94?

9 A. When I left the group in '95, I had a partner
10 whose name is David Wakeman, I think you'll hear from him
11 later. David took the power quality to a different level as
12 far as using -- going to coursework and meeting with other
13 power quality individuals.

14 He developed a program of power quality based
15 on a step-by-step approach of power quality investigation, I
16 believe they call it where there's work between both the
17 utility and the manufacturer or customer involved and both
18 parties look at problems and both parties look at solutions
19 and it's kind of a partnership arrangement.

20 And that was the kind of arrangement that I
21 have seen developed in power quality. It was much different
22 when I was there. We monitored, we looked to see if we were
23 causing a problem and provided data. And that was mainly
24 the -- the extent of my work when I was there, but it's a
25 different issue these days, power quality.

1 MR. VITALE: Thank you. I have no further
2 questions, your Honor. I'd more for the admission of
3 Exhibit 28.

4 JUDGE THOMPSON: Do I hear any objections to
5 the receipt of Exhibit 28?

6 MR. MAY: No objection, your Honor.

7 JUDGE THOMPSON: Hearing no objections,
8 Exhibit No. 28 will be received and made a part of the
9 record of this proceeding.

10 (EXHIBIT NO. 28 WAS RECEIVED INTO EVIDENCE.)

11 JUDGE THOMPSON: We're ready for questions
12 from the Bench, Chairman Simmons?

13 CHAIR SIMMONS: I have no questions, your
14 Honor.

15 JUDGE THOMPSON: Commissioner Gaw?

16 QUESTIONS BY COMMISSIONER GAW:

17 Q. Mr. Bradley --

18 A. Yes, sir.

19 Q. Mr. Bradley, this document listed as
20 Exhibit 28, you prepared that yourself?

21 A. Yes, I did.

22 Q. When?

23 A. I originally prepared it back in May of 2001.
24 There was a civil activity going on and I was to be deposed
25 and I was trying to gather information and remember as much

1 as I could for this, because as you can imagine, it's a lot
2 of years to produce a lot of information.

3 Q. So how much of this document is prepared from
4 memory and how much of it from notes and other
5 documentation?

6 A. The actual figures and times came from the
7 actual results of the testing. And the more sub--
8 descriptive material is based on my own memory. But as far
9 as the time and voltages and the event data, that came from
10 my original information that was provided to the district.

11 Q. All right. And it was prepared in the context
12 of preparation for litigation?

13 A. Yes. For a deposition.

14 Q. Okay. Mr. Bradley, during the time frame when
15 you were doing the testing, the monitoring that's referred
16 to in this Exhibit 28 --

17 A. Yes, sir.

18 Q. -- were you aware of particular standards of
19 reliability that Ameren -- or at that time UE, I guess, was
20 held up to or followed?

21 A. Sir, basically when we did the testing, we set
22 parameter values that were values that my -- my senior
23 engineer had passed on to me and his supervisor passed on to
24 him. And basically the minus 6 -- minus 8, plus 6 values, I
25 believe, which come from the Commission were -- were the

1 parameters set in.

2 As far as any other standards or things
3 written specific to reliability, I have no knowledge of any
4 of that at -- at that time that was ever put down.

5 Q. So was it your understanding that that was the
6 standard of reliability that you were to look for in your
7 monitoring process?

8 A. That was the -- those limits were the -- the
9 so-called, I guess, trip limits or limits that would cause
10 me to want to take a look at what was going on with the
11 system.

12 Q. All right. And, again, I know -- I realize
13 you've already testified to this, but you spent -- you had
14 two different time frames of monitoring. Did I understand
15 that correctly?

16 A. That's correct, sir.

17 Q. And how long a period of time each time?

18 A. The first one in '93 was only about two weeks,
19 which was pretty standard for a normal service test
20 investigation for that time. The second one that was in '94
21 was over -- was from early June through the end of
22 September, approximately three months, which I can tell you
23 was the longest test that I ever did in that department. It
24 was the longest test we had ever done.

25 Q. Were you specifically told to have that

1 test -- that monitoring period go that long by someone in
2 Ameren?

3 A. I was -- yeah, I was directed by -- by my boss
4 to basically continue through the whole summer period of
5 1994.

6 Q. And who was your boss at that time?

7 A. Dave Sheppers.

8 Q. Okay. And during that time frame how many
9 incidences did you have that varied from this plus 6 percent
10 to minus 8 percent?

11 A. I -- I did not see -- I did not see any of
12 those incidences because the only events that would come on
13 this recorder were those events which dropped below those
14 margins. So as far as I was concerned, there were no
15 incidents other than the ones I have noted.

16 Q. So the ones that you have noted were the only
17 ones?

18 A. Yes, sir.

19 Q. Okay. And did you find the number of
20 occurrences in either of those time frames that you did
21 monitoring to be unusual in your experience?

22 A. No. I did not find the -- the occurrences to
23 be unusual because they correlated with a weather situation
24 and typically in a weather situation, those kind of
25 incidences are common.

1 Q. Okay. And as I understand it -- would it be
2 your belief that because they were weather related, that
3 there was not a solution to resolve those kinds of
4 occurrences in the future?

5 A. I wouldn't say that. What I will say is that
6 in -- in this particular case, I monitored and passed data
7 on to the Wentzville district and they were alerted that
8 weather had caused the incidences so any action would have
9 come through them since that was the nature of this
10 particular test. I will qualify and say that just because
11 it's a weather incident, that there's absolutely nothing we
12 could have done.

13 Q. Did you ever have an opportunity to look
14 further into it to see whether or not there were any things
15 that could have been done for the sake of future prevention?

16 A. No. I was not further involved in this
17 particular test.

18 Q. Did I understand you to say that one of the --
19 that you attended a meeting where Mr. Romy was also present?

20 A. That's correct.

21 Q. And when was that again?

22 A. It was December the 15th of 1993.

23 Q. So it was prior to the three-month more or
24 less monitoring that you did in '94?

25 A. That's correct.

1 Q. After the '94 monitoring, did you have any
2 further contact with Zoltek --

3 A. I did --

4 Q. -- or its employees?

5 A. I did not. I presented the data to the
6 Wentzville district and that fulfilled the obligations that
7 I was asked to do so I did not.

8 Q. Was that an usual occurrence for you, not to
9 have further contact?

10 A. In a regional district situation, that was
11 usual.

12 Q. All right. Who would have made the
13 recommendations to Ameren about the findings that you have
14 in the monitoring that you did the two times in '93 and '94?

15 A. I -- at that time I believe -- and like I say
16 today, things are a little different, but at that time it
17 would have come from the district engineering personnel.
18 They would have evaluated the situation and came back to the
19 customer.

20 Q. And do you know whether that ever occurred?

21 A. I do not.

22 Q. Mr. Bradley, again, what is your current
23 position?

24 A. I'm an engineer in the distribution standards
25 group.

1 Q. What are your responsibilities now, in
2 general?

3 A. I write standards and specifications for
4 underground equipment for Union Electric system.

5 Q. All right. How much different is that than
6 what your responsibilities were during the period of this
7 testing?

8 A. That -- the testing job is a customer-related
9 job where I'm looking at customer problems and such. The
10 standards group has very little to do with customers. I'm
11 working with our field personnel to use our equipment
12 properly and to get equipment that they need to do their
13 job.

14 Q. Okay. So is it basically fair to say that
15 during the time frame that you were performing this
16 monitoring, that your responsibilities were related to
17 strictly to the monitoring of -- or the monitoring or
18 testing of electric because of customer complaints?

19 A. That was -- that was one responsibility.
20 Actually, I also worked with radial TV interference and I
21 maintained system batteries at power plants and substations.
22 So I had, like, a three-fold job, but that was one of my
23 responsibilities.

24 Q. Okay. But would your responsibilities have
25 ever -- would they have included at that time following up

1 on the results of the monitoring?

2 A. In the metropolitan district I would
3 occasionally follow-up on the results after delivering them
4 to make -- to see if something was done.

5 Q. And what would have been your normal procedure
6 in that type of follow-up?

7 A. Basically not a whole lot different. Contact
8 the district people, relate -- relate what I found. We did
9 have union testers that worked for me in the metropolitan
10 area that could actually go out and look at lines and wires
11 and stuff. And if they saw something wrong, then they would
12 report to me and then I would report to the district that we
13 found this wrong or that wrong. Those testers operated
14 strictly in the metropolitan area, did not operate in the
15 regional districts.

16 COMMISSIONER GAW: All right. I believe
17 that's all I have, Judge.

18 JUDGE THOMPSON: Thank you, Commissioner Gaw.

19 Commissioner Forbis?

20 COMMISSIONER FORBIS: No, Judge.

21 QUESTIONS BY JUDGE THOMPSON:

22 Q. Mr. Bradley, do you have Exhibit 26 there with
23 you? That's a Commission regulation.

24 A. Let's see.

25 JUDGE THOMPSON: Do we have a copy of that

1 that we could loan to him for purposes of this examination?

2 Thank you, Mr. May.

3 THE WITNESS: Thank you.

4 BY JUDGE THOMPSON:

5 Q. I just want to clarify some things with
6 respect to this regulation, if I may. And you'll advise me,
7 of course, if you don't know the answer?

8 A. Yes.

9 Q. I assume -- or is it the case that Ameren is,
10 in fact, supplying energy from a constant potential system?

11 A. Yes.

12 Q. Okay. And looking at Subsection D then at the
13 bottom of the central column, do you see that?

14 A. Yes.

15 Q. Okay. Is the service that was rendered to
16 Zoltek that we're discussing at the times that you were
17 familiar with Zoltek, would that be power service as it's
18 used in Subsection D?

19 A. You know, Judge, I got to tell you and I'm
20 going to be very honest with you here. I'm not familiar
21 with this regulation. This is probably the first time I've
22 ever seen it.

23 Q. Okay.

24 A. And I hate to render a judgment on the
25 terminologies you're asking me here.

1 Q. What you're saying is you just don't know?
2 A. I do not know, sir.
3 Q. That's fine. And you've testified that you
4 set your monitoring equipment --
5 A. Yes.
6 Q. -- at a tolerance, if that's the right word --
7 A. Uh-huh.
8 Q. -- of 6 percent above and 8 percent below
9 nominal voltage --
10 A. That's correct.
11 Q. -- is that correct?
12 A. That's correct, sir, yes.
13 Q. And as I look at the top of the third column
14 here --
15 A. Uh-huh.
16 Q. -- still part of that Subdivision D --
17 A. Uh-huh.
18 Q. -- it speaks of a tolerable zone --
19 A. Uh-huh.
20 Q. -- the zone between 6 percent above and
21 8 percent below nominal voltage?
22 A. Right.
23 Q. But are you aware, do you know whether this
24 regulation and this portion of this regulation is the source
25 of the numbers you set your equipment to or could it be some

1 other source?

2 A. I have been told that this is where the
3 numbers came from, but I have to tell you that I set my
4 instruments as a course of practice, which would have been
5 over -- over time, not because I knew of the regulation.

6 Q. I understand.

7 A. Okay.

8 Q. In other words, someone told you how to set
9 your instruments?

10 A. Correct.

11 Q. And where they got that, you don't know, you
12 believe it might have been the regulation, but you don't
13 know?

14 A. I was told it came from the Commission.
15 That's --

16 Q. Okay. Very well. Are you able to tell me
17 what was the nominal voltage of the service at Zoltek?

18 A. 277 phase to ground was the nominal voltage at
19 Zoltek.

20 Q. And for an absolutely naive layperson such as
21 myself, what is a 277, as you described it?

22 A. That's -- okay. First of all, Zoltek is a
23 three-phase four-wire service. And so you've got three what
24 we call hot or energized phases and then you have the
25 fourth, which is a neutral.

1 Now, depending on where you measure the
2 voltage, you get a different number. For instance, if you
3 measure between two of the hot phases, you get 480 volts.
4 Any of the two hot phases, you get 480. But if you measure
5 between any phase and that neutral leg, you get 277. So
6 that's the phase -- what we call the phase voltage.

7 Q. I see.

8 A. So typically when we did a power measurement,
9 we measured the phase voltage, phase to ground. That gave
10 us the most sensitivity to incidences coming in on the
11 system.

12 Q. Okay. And, again, understanding I'm a
13 layperson --

14 A. Sure.

15 Q. -- would you characterize the service that
16 Zoltek received as a lot of power?

17 A. They -- when you look at -- when you look at
18 power there, you're looking at kilowatts or kilowatt
19 amperes, not voltage or current.

20 And I really don't remember, for instance, how
21 much they were getting at the time other than to say to you
22 they had, I believe, a 2,500-KVA transformer there which
23 means they probably weren't using more than that because
24 that was the transformer that was there at the time. I'm
25 pretty sure it's substantially larger service now.

1 Q. Okay. Is that a large transformer, the one
2 you referred to?

3 A. It's a good-sized pad-mounted transformer. I
4 think it's the largest -- no, it's the second largest.
5 There's actually I believe the 3,000-KVA transformer we have
6 in pad mount, but it's pretty a good-sized pad mount
7 transformer.

8 Q. Okay. Now, during the course of the
9 monitoring, you monitored a small number of events, if
10 that's the right word, where the service, in fact, did not
11 fall within the parameters that you had set your equipment
12 to; isn't that correct?

13 A. That's correct.

14 Q. And you may have already gone over this and
15 apologize if I missed it.

16 A. That's okay.

17 Q. What was the duration of those events, each of
18 those events?

19 A. No event that I recorded was over a minute.
20 Only one event was of seconds in nature. One event was
21 16.1 seconds. The other these events were all
22 fractional-second events, less than one-second events.

23 Q. So not any of them exceeded one minute?

24 A. That's correct.

25 JUDGE THOMPSON: Thank you very much. Those

1 are the questions that I have.

2 THE WITNESS: Thank you.

3 JUDGE THOMPSON: Any further questions from
4 the Bench?

5 Very well. We'll proceed to recross based on
6 questions from the Bench. Ms. Shemwell?

7 MS. SHEMWELL: Thank you, your Honor. No
8 questions.

9 JUDGE THOMPSON: Thank you.

10 Mr. Vitale?

11 MR. VITALE: Thank you, your Honor. May I
12 have a moment with the witness?

13 JUDGE THOMPSON: You may.

14 MR. VITALE: Thank you.

15 RECROSS-EXAMINATION BY MR. VITALE:

16 Q. Mr. Bradley, Commissioner Gaw asked you some
17 questions about the preparation of Exhibit 28, that summary
18 document. And you indicated that it was put together at
19 some point when in 2001?

20 A. May roughly of 2001.

21 Q. Okay. And when you went to your meeting with
22 Zoltek in December '93, had you already conducted your
23 investigation or looking into the possible causes of the
24 1993 events?

25 A. Of the two events in '93, yes, I'd already

1 looked at it and found the causes and had the data
2 available.

3 Q. Okay. And then shortly after the '94 events,
4 did you also attempt to do an investigation before you
5 passed the information on up to the district?

6 A. Of -- yes, of the events. I investigated them
7 and when I passed them off, I had probable causes for each
8 of the events that I gave the district.

9 MR. VITALE: Okay. May I approach, your
10 Honor?

11 JUDGE THOMPSON: You may.

12 We'll mark this Exhibit 29. How would you
13 describe this, Mr. Vitale?

14 MR. VITALE: That's a good question, Judge.
15 That was my first question.

16 JUDGE THOMPSON: Give me a moment to write 29
17 on each of those.

18 MR. VITALE: Judge, if I may, to kind of short
19 circuit things, I don't intend to take a break, but I've got
20 a lot of documents, but one or two questions each. They're
21 all the underlying documents supporting the summary. If I
22 could have a moment to sort these out so we could go through
23 them one, two, three and not take up the Commission's time
24 while I'm sorting paper.

25 JUDGE THOMPSON: Fine with me. Why don't we

1 go off the record in order to mark these exhibits.

2 (Off the record.)

3 (EXHIBIT NO. 29 WAS MARKED FOR
4 IDENTIFICATION.)

5 JUDGE THOMPSON: Go back on the record.

6 BY MR. VITALE:

7 Q. Mr. Bradley, before we took a brief break, I
8 handed you a document that was marked Exhibit 29 and since
9 that time I've added a series of other exhibits which
10 collectively we're going to mark as Exhibit 29. And I just
11 want to take you through each document and explain what they
12 are. And first I'll just kind of set the stage for that.

13 As I understand, these are the documents that
14 support the summary document you prepared in 2001 with
15 respect to the monitoring results in '93 and '94 and your
16 follow-up investigation?

17 A. That's correct.

18 Q. Okay. And these documents were -- these
19 underlying documents were prepared -- the first set in '93
20 shortly after you did the monitoring and before your meeting
21 and the second set shortly after the '94 monitoring?

22 A. That's correct.

23 Q. Okay. Why don't you take us through and just
24 in case the documents are out of order, which is possible,
25 if not likely, take us through the series of documents and

1 just tell us what each is and how that fit into your
2 summary.

3 A. Okay. I'll start with this document that has
4 handwritten in the right-hand side November, N-o-v '93.
5 Okay. That document there. The front page is basically the
6 graphical outputs of the Dranetz 658 disturbance analyzer
7 that was left in there for a period of approximately two
8 weeks.

9 What you're going to see here is you're going
10 to see voltages for all three of the phases. And then the
11 one on the far right, which is D, is basically the line at
12 ground voltage, which for our purposes doesn't tell us
13 anything here.

14 If you look at the ones on the left, you got
15 C phase at the top, E phase and A phase. And what you're
16 interested in is watching the line there and you'll see
17 there are two dotted lines above and below the scraggly dark
18 line and those lines that drop below the dotted line, that
19 dotted line is the minus 8 percent limit.

20 So where the -- where the bold line drops
21 below that dotted line, those are the incidences that were
22 recorded. And you'll see on all three of the C, B and A
23 you'll see that there was -- there was a drop -- well,
24 actually, I'll say that on A phase it looks like the second
25 incident didn't even get below, but there were C, B and A on

1 the first incident and it looks like B and C on the second,
2 so --

3 Q. And this is kind of a summary, it shows all
4 three events on that monitoring period?

5 A. Right. It's just a summary. Now, obviously
6 if you were going to try to read that, you would have a hard
7 time discerning values, so the next page is basically --
8 shows -- let's see. First of all, it shows setting
9 information. The next page is -- shows setting information
10 for -- for that one.

11 Actually, there's another set of stapled pages
12 that has a bunch of bars and little arrows on it. That's
13 the one that shows the actual data from the incidences that
14 occurred as far as how low did it go and such.

15 Q. Is that the one with handwritten weather, rain
16 and second --

17 A. Yes.

18 Q. -- information?

19 A. On the bottom, that's correct.

20 Q. And what is that document?

21 A. That actually shows you the literal
22 information from the graphical data. It shows you how low
23 did the voltage go on these incidences. You get the date
24 and the time and you got how low the voltages went. And
25 what you find is that typically all three phrases don't go

1 exactly down the same distance, so try to pick the lowest
2 phase for a minimum value there for the incident.

3 Q. And just to conform for the record, that's
4 your handwriting?

5 A. Yes.

6 Q. And that's your recording of putting in just
7 numerical form what the time of the event was?

8 A. Yes.

9 Q. And then the information on bottom, the
10 weather, rain -- weather, wind, rain is what?

11 A. That came from the dispatch data, which was --
12 you got one of these review of prior orders 11/13 to 11/14.
13 That's dispatch data. And what I did is I looked for -- to
14 the Wentzville district at the -- at the recorded incidences
15 there and looked at the weather situation and was able to
16 determine weather conditions at the time --

17 Q. Okay.

18 A. -- for that data.

19 Q. To make sure everybody's on the same page, if
20 you will, the next set of documents you're referring to, is
21 that the three-page stapled review of prior orders --

22 A. Correct.

23 Q. -- from November 13 to November 14?

24 A. That's that page. So all three of those pages
25 act together in -- in that. Actually, there's another one

1 too, 11/15 to 11/17.

2 Q. Okay.

3 A. I have a separate one here too.

4 Q. And that's what you looked at to determine
5 weather situation --

6 A. Yeah.

7 Q. -- during the period these events were noted
8 in '93?

9 A. Correct.

10 Q. Okay. Continue on to the next document in
11 your order that would be significant.

12 A. Yeah. The next sets of documents are all from
13 the '94 period and you got two very long pages here. That's
14 the July 8th incident that occurred -- event that occurred.

15 This is a BMI 4,800 device so you can see it's
16 a little different output than that other one which was the
17 Dranetz. This one actually gives a nice little picture of
18 the event when it occurs. And also on the left side of
19 the -- of the picture you can see what the minimum was and
20 actually durations recorded for the minimum. And you can
21 see the picture. The dash lines on the graft are the limits
22 and the lower limit and when it fell below the lower limit,
23 you can see that.

24 Q. Okay.

25 A. So it gives you that information.

1 Q. Now, that collects the data. Now, what then
2 did you do with the data from '94?

3 A. Okay. Now, in the '94 situation basically
4 I -- I took the data in its raw form, this is actually a
5 strip. Okay? It's a big long strip of paper, it rolls up.
6 Okay?

7 And I went through that roll, the specific
8 cases of problems with the district people, though I
9 actually had a roll that contained every day of -- of
10 information. And I -- that thing was huge as you can
11 imagine.

12 Q. It was three months?

13 A. Yeah. It was actually, I want to say, two
14 rolls. And I gave them to the district and said, Here you
15 go, but I had taken out or cut out the ones where the
16 incidences occurred, so they didn't have to agonize through
17 those daily pages.

18 Q. And then what's next? We have the review of
19 prior orders again?

20 A. Yeah. Same -- same kind of -- same kind of a
21 thing with the dispatching -- the dispatching form.

22 Q. And that's what led you to conclude the causes
23 or potential causes --

24 A. Yes.

25 Q. -- of the incidences as you reported in your

1 summary?

2 A. Yes.

3 JUDGE THOMPSON: Which documents are we
4 looking at now?

5 BY MR. VITALE:

6 Q. As I believe I understand it, there's four
7 review of prior orders, one from June 7 to June 8, '94;
8 July 7 and July 8; July 19 to July 20 and August 6 to
9 August 7; is that correct?

10 A. Right. Starts at 6/7 to 6/8 is the one that's
11 the '94.

12 JUDGE THOMPSON: The one that says, Windy tree
13 contact?

14 THE WITNESS: Yeah. That's the one that
15 starts. Yes, yes.

16 BY MR. VITALE:

17 Q. And that's your handwriting?

18 A. Yes.

19 Q. And then I think there's only one other
20 document in the group. That's another type of printout that
21 has handwriting on the bottom?

22 A. Uh-huh. Yes. This was August the 7th. This
23 is also the BMI. And in this case I shrunk it down a little
24 bit. But in this case there was zero volts, and
25 unfortunately for some odd reason, I got this off of the

1 disc from the original event and it wouldn't print the
2 picture. It prints you the numbers, but it won't give you
3 the nice picture anymore, so sorry -- sorry about that, but
4 you can see the -- the value and you can see the durations.
5 It's -- it's shown in numeric form.

6 Q. And the handwriting on the bottom of that
7 document?

8 A. Yes. I made that handwriting myself and it's
9 based on the order -- review order sheet once again.

10 MR. VITALE: I have no further questions, your
11 Honor.

12 JUDGE THOMPSON: I have one more document.

13 MR. VITALE: You do? We may have too many
14 pieces of paper.

15 JUDGE THOMPSON: It's not identical to any of
16 the ones we've already talked about.

17 THE WITNESS: Maybe it's one I should have.

18 MR. VITALE: I think it is --

19 JUDGE THOMPSON: Is it --

20 MR. VITALE: I think that's the first. Let's
21 go back to the '93 time frame. There are the first --
22 that's from the '93.

23 JUDGE THOMPSON: Yes, it is from '93.

24 MR. VITALE: November 13 and 14 and there's
25 one page from November 15 to November 17 and those are the

1 two taken together that go with the readings from 1993 that
2 he looked at.

3 JUDGE THOMPSON: Okay.

4 MR. VITALE: I have no further questions, your
5 Honor. Move for the admission of group Exhibit 29.

6 JUDGE THOMPSON: Do I hear any objections to
7 the receipt of Exhibit No. 29 --

8 MR. MAY: No objection, your Honor.

9 JUDGE THOMPSON: -- and all its parts?

10 And did we ever decide how we were going to
11 describe this?

12 MR. VITALE: Well, I guess based on his
13 testimony -- and Mr. Bradley can tell me if he disagrees.
14 As I understand it, it's the results of the '93 monitoring
15 and the results of his investigation done after both sets of
16 monitoring that he had in his file that when he then
17 prepared his summary of Exhibit 28, was his source for that.

18 THE WITNESS: It's source data for '93 and
19 '94.

20 JUDGE THOMPSON: Is it fair to call this the
21 raw data from your monitoring?

22 THE WITNESS: I think that would be fine.

23 MR. VITALE: I think that's fair.

24 JUDGE THOMPSON: There were no objections, so
25 Exhibit 29 will be received and made a part of the record of

1 this proceeding.

2 (EXHIBIT NO. 29 WAS RECEIVED INTO EVIDENCE.)

3 JUDGE THOMPSON: And we've just finished --

4 MR. VITALE: Thank you, your Honor.

5 JUDGE THOMPSON: -- recross based on questions
6 from the Bench. So redirect, Mr. May?

7 MR. MAY: Thank you.

8 REDIRECT EXAMINATION BY MR. MAY:

9 Q. Mr. Bradley, I've just got a few quick
10 questions.

11 A. Sure.

12 Q. Ms. Shemwell had asked you a question about
13 the monitoring in '94 and your response you'd mentioned the
14 summer time frame --

15 A. Yes.

16 Q. -- is when you'd done that monitoring; is that
17 correct?

18 A. Yes. That's correct.

19 Q. Are you familiar with the term "express
20 feeder"?

21 A. No, I am not.

22 Q. Okay.

23 A. Not in its -- not in a true definition, sir,
24 no.

25 Q. Okay. Now, as far as Exhibit 28, which is, I

1 believe, your summary?

2 A. Yes, sir.

3 Q. Okay. And if I understood your responses to
4 Commissioner Gaw's questions, you had prepared this in
5 advance of the deposition in 2001. Correct?

6 A. That's correct.

7 Q. Around the time --

8 A. That's correct.

9 Q. -- of the deposition?

10 I want to go down to the last two paragraphs
11 on page 2.

12 A. Page 2?

13 Q. Yes. Under June of '94.

14 A. Okay.

15 Q. Specifically let's go to the second to last --

16 A. Uh-huh.

17 Q. -- paragraph starting off, Three
18 interruptions. You see that?

19 A. Yes, sir.

20 Q. And in the last sentence you say, The
21 operations records indicate that this outage occurred during
22 a thunderstorm and was most likely a recloser trip due to
23 either lightning or wind contact.

24 Do you see that sentence?

25 A. That's correct. I see that.

1 Q. Okay. Now, I thank you may have mentioned
2 this, but you were just speculating as to what had occurred;
3 is that correct?

4 A. I knew that the weather had occurred, but my
5 speculation as to what had occurred, yes, sir. I was
6 speculating as to what had occurred.

7 Q. So that moves me to my next point. Exhibit 29
8 then --

9 A. Okay.

10 Q. -- contains -- and correct me if I'm wrong --
11 but, in essence, objective findings; is that correct?
12 Things that a machine had printed off; is that right?

13 A. Yeah. These are -- these -- this information
14 of exhibit -- all this data is machine data recorded data,
15 yes, sir.

16 Q. It's like a snapshot --

17 A. Yes, sir.

18 Q. -- as to what the machine was recording at
19 that moment in time?

20 A. That's correct, sir.

21 Q. Okay. There's nothing in here though stating
22 the cause of what it had recorded?

23 A. No. The machine does not record a cause.

24 Q. Okay. So with respect to that then, going
25 back to -- I don't mean to keep jumping around on you, but

1 Exhibit 28, that same paragraph, so you knew there was a
2 thunderstorm, you could verify that obviously. Correct?

3 A. Sure. Yes. Yes.

4 Q. And then you're speculating that there was
5 recloser trip, first of all. Right?

6 A. Yes.

7 Q. And then you're also guessing that the
8 recloser trip was caused by lightning or it could have been
9 caused by wind. Is that what you're saying?

10 A. Yes. Strictly as an example of what could
11 occur in that situation.

12 Q. And not to belabor the point, but the next
13 paragraph, again, the last sentence, you had summarized what
14 you believed could have caused the problem; is that correct?

15 A. Yes, sir. Could have.

16 Q. And, again, that was just speculation on your
17 part?

18 A. Yes, sir. Could have.

19 Q. Okay. And the only thing you knew that there
20 was a thunderstorm and then you go into your analysis what
21 it might have been?

22 A. Right.

23 Q. Okay. Also, you -- well, let me ask you this.
24 When you did the monitoring in '93, '94, how were the Zoltek
25 folks, the workers, to you? Were they cooperative?

1 A. I don't -- okay. In '93 I really didn't have
2 to do anything other than call them and let them know we
3 were coming out, because we were outside the plant. So as a
4 courtesy, call them and let them know that we were on the
5 back side of their plant.

6 Q. Right.

7 A. In '94 I was actually in the plant. And
8 besides that, we had a communications link set up to my
9 office to look at data. So David Spahn would call me or I
10 would talk to him and -- and I talked to him several times
11 in '94.

12 Q. Would you characterize then your relationship,
13 your working relationship, to be a good one at that time?

14 A. I had no problems with David Spahn.

15 Q. Okay. Now, you also talked about -- I believe
16 it was in response to the cross-examination questions --
17 that investigations have become more sophisticated. Is that
18 accurate for me to say it that way?

19 A. I'd say the process has become more detailed.

20 Q. Okay.

21 A. I guess it's the same thing.

22 Q. Okay. But, nonetheless, your findings from
23 '93, '94, you're not saying those were in any way
24 inaccurate?

25 A. Oh, no. That part of the procedure is still

1 there. It's just that they've gone to do more in the
2 procedure then what I had done in '93 and '94.

3 MR. MAY: Right. Okay. I don't think I have
4 anything else. Thank you for your time.

5 THE WITNESS: All right.

6 MR. MAY: Thank you, your Honor.

7 JUDGE THOMPSON: Thank you, Mr. May.

8 I think we're done with this witness now and
9 let me ask you -- I meant to ask Mr. Eckelkamp, was that the
10 correct --

11 MR. VITALE: Yes, your Honor.

12 JUDGE THOMPSON: You're here under subpoena.
13 Correct?

14 THE WITNESS: Yes, I am.

15 JUDGE THOMPSON: And have you received payment
16 of your appearance fee and mileage fees?

17 THE WITNESS: No, I have not.

18 JUDGE THOMPSON: Was there a check attached to
19 the subpoena as it was served on you?

20 THE WITNESS: No.

21 MR. VITALE: We had another ground we should
22 have objected to.

23 JUDGE THOMPSON: I don't mean to educate you
24 guys on what you could or could not do, but I will remind
25 Mr. May that under the statute you owe appearance and

1 mileage fees to this witness and also the other witness that
2 appeared under subpoena. And I trust you will take care of
3 those.

4 MR. MAY: Yes. Absolutely.

5 JUDGE THOMPSON: Thank you. You're excused
6 and I thank you very much. If another Commissioner should
7 have any question for you, we might have to ask you to come
8 back up, but I don't think that's very likely.

9 MR. VITALE: When you say "excused," can he go
10 back to St. Louis --

11 JUDGE THOMPSON: Absolutely. Absolutely.

12 MR. VITALE: -- and then come back to Jeff
13 City if there's questions.

14 JUDGE THOMPSON: We appreciate your having
15 come down here very much.

16 THE WITNESS: No problem. Thank you, sir.

17 JUDGE THOMPSON: I believe we're now to
18 Mr. Park.

19 MR. MAY: Yes, sir. Your Honor, would it be
20 possible to have a short recess before Mr. Park for a few
21 minutes?

22 JUDGE THOMPSON: I always liked recess best at
23 school. How long of a recess would you like?

24 MR. MAY: Just 10 minutes or so.

25 JUDGE THOMPSON: Ten minutes. Very well.

1 (A RECESS WAS TAKEN.)
2 JUDGE THOMPSON: Mr. Park, Dean A. Park.
3 (Witness sworn.)
4 JUDGE THOMPSON: Thank you, sir. Please take
5 your seat, state your name for the reporter and spell your
6 last name, if you would.
7 THE WITNESS: My name is Dean Park, P-a-r-k.
8 JUDGE THOMPSON: You may inquire.
9 MR. MAY: Thank you.
10 DEAN PARK testified as follows:
11 DIRECT EXAMINATION BY MR. MAY:
12 Q. Mr. Park, what is your occupation or
13 profession?
14 A. I'm an engineering consultant.
15 Q. And for whom do you work?
16 A. I work for Barnes, Henry, Meisenheimer and
17 Gende Consulting Engineers in St. Louis, Missouri.
18 Q. And are you a principal of that firm?
19 A. Yes, sir.
20 Q. I'm going to hand to you what's been marked
21 Exhibit No. 9 -- or I've handed to you what's been marked
22 Exhibit No. 9. Could you identify that, please?
23 A. That's my Direct Testimony in this proceeding.
24 Q. Okay. And is that your signature that appears
25 in the back on the affidavit?

1 A. Yes.

2 Q. And was this prepared by you?

3 A. Yes, it was.

4 Q. And if these questions were asked of you
5 today, would you answer them in substantially the same
6 manner?

7 A. Yes.

8 Q. Are there any corrections, typographical
9 errors that you would like to make at this time?

10 A. Yes. In the Direct Testimony there are three
11 typographical errors I'd like to call the Commission's
12 attention to. Beginning on page 5 at line 17 the phrase
13 reads, Faces additional cost, inconvenience and production
14 time.

15 The phrase should include the word "lost" so
16 the phrase would be, And lost production time.

17 JUDGE THOMPSON: Okay.

18 MS. SHEMWELL: I apologize. What was the line
19 on that?

20 JUDGE THOMPSON: Line 17.

21 MS. SHEMWELL: Thank you.

22 BY MR. MAY:

23 Q. Any others?

24 A. Yes. On page 13 at lines 3 and 4 the sentence
25 reads, In fact, this time frame was a very good selection as

1 there was only power disturbance.

2 The word "two should appear between "only" and
3 "power."

4 JUDGE THOMPSON: Two the number or --

5 THE WITNESS: Two the number, yes.

6 BY MR. MAY:

7 Q. T-w-o.

8 Any others?

9 A. On page 25 at line 14 there is a sentence
10 ending, Or if each outage.

11 That should be stricken and the word "covered"
12 is the last word of that sentence.

13 MR. VITALE: What was the line again? I'm
14 sorry.

15 THE WITNESS: Line 14.

16 BY MR. MAY:

17 Q. So it would be period, covered, period?

18 A. Yes.

19 Q. Okay.

20 A. That's all from my Direct Testimony.

21 MR. MAY: Your Honor, I'd move for the
22 admission of Exhibit No. 9.

23 JUDGE THOMPSON: Any objections to the receipt
24 of Exhibit No. 9?

25 MS. SHEMWELL: No, your Honor.

1 MR. VITALE: No, your Honor.

2 JUDGE THOMPSON: Exhibit No. 9 will be
3 received and made a part of the record of this proceeding.

4 (EXHIBIT NO. 9 WAS RECEIVED INTO EVIDENCE.)

5 MR. MAY: Thank you, Judge.

6 BY MR. MAY:

7 Q. Mr. Park, you've also been handed what has
8 been previously marked as Exhibit No. 10. Could you look at
9 that for a second and identify it, please?

10 A. That is my Surrebuttal Testimony in this
11 proceeding.

12 Q. And was your written pre-filed?

13 A. Yes.

14 Q. And did you prepare this?

15 A. I did.

16 Q. If these questions were asked of you today,
17 would you answer them in a similar fashion?

18 A. I would.

19 Q. Are there any corrections, typographical
20 errors that need to be changed?

21 A. There is one correction to be made. On page
22 11, line 10 the sentence reads, No, Ameren's monitored
23 Zoltek's electric service on at least four occasions
24 spanning a total time of several months.

25 At the time I believed that to be true. In

1 actual fact, it was monitored by Ameren on three occasions.
2 The fourth occasion was by an outside party, Hewlett Packard
3 company.

4 Q. So on line 10, the four should be changed to
5 the word "three"?

6 A. Yes. There were four total occasions. Only
7 three of them were Ameren. That's -- that's the only
8 correction.

9 Q. And is that your signature that appears on the
10 back page of the affidavit attached?

11 A. Yes.

12 MR. MAY: Your Honor, move for the admission
13 of Exhibit No. 10 into evidence.

14 JUDGE THOMPSON: Do I hear any objections to
15 the receipt of Exhibit 10?

16 MS. SHEMWELL: No, your Honor.

17 MR. VITALE: No objection, your Honor.

18 JUDGE THOMPSON: Hearing no objections,
19 Exhibit 10 is received and made a part of the record of this
20 proceeding.

21 (EXHIBIT NO. 10 WAS RECEIVED INTO EVIDENCE.)

22 MR. MAY: At this time I tender the witness.

23 JUDGE THOMPSON: Thank you very much, Mr. May.

24 Cross-examination, Ms. Shemwell?

25 MS. SHEMWELL: No questions. Thank you, your

1 Honor.

2 JUDGE THOMPSON: Mr. Vitale?

3 MR. VITALE: Thank you, your Honor.

4 CROSS-EXAMINATION BY MR. VITALE:

5 Q. Good afternoon, Mr. Park.

6 A. Good afternoon.

7 Q. Mr. Park, when were you first retained by
8 Zoltek in this matter?

9 A. I believe it was in February of 2001.

10 Q. And how did you come to be retained by Zoltek
11 in this matter?

12 A. I was contacted by one of Zoltek's attorneys
13 at the time and asked if I had enough knowledge about this
14 sort of case to provide them with some information and that
15 resulted in my retention for this case.

16 Q. And what sort of case was that?

17 A. What sort of --

18 Q. How was it described to you?

19 A. It was described to me as a proceeding before
20 the Public Service Commission regarding an industrial
21 customer of Ameren and Ameren itself.

22 Q. Okay. And what were you asked to do in the
23 case, generally?

24 A. I was asked to, first of all, accompany the
25 attorney to Zoltek for a -- for a meeting that would be

1 attended by members of the Commission Staff, by members of
2 Zoltek Corporation and by several attorneys that were either
3 directly or indirectly involved in the case.

4 Q. And beyond that, what else have you done just
5 generally to kind of summarize?

6 A. Beyond that, then I was asked to assist in
7 examining the results of data requests and to prepare Direct
8 and Surrebuttal Testimony in the case, to review the
9 testimony and depositions of others.

10 Q. Okay. Have you done any -- prior to this
11 occasion, have you done any work for Zoltek before?

12 A. No, sir.

13 Q. Have you worked with -- who was the attorney
14 that called you?

15 A. The attorney was Gerald Dunn.

16 Q. Okay. Prior to this occasion, had you ever
17 had any occasion to work with Mr. Dunn as an expert on any
18 matter he was handling?

19 A. One previous case I had, yes.

20 Q. And what was that case about?

21 A. That was an electrocution case.

22 Q. And who were the parties in that case?

23 A. That was Rocket versus AmerenUE or I think it
24 was just UE at the time.

25 Q. And I assume that you were representing

1 Mr. Rocket or Mr. Dunn was representing Mr. Rocket?

2 A. That's correct.

3 Q. Now, as I understand the exhibit to your
4 testimony, you've testified as an expert approximately --
5 about 38 times. Is that the total from your list, at least
6 at the time it was prepared?

7 A. Yes. There's several entries. I don't know
8 how many.

9 Q. Okay. And how many of those were you engaged
10 in matters where you offered expert testimony on a side or
11 for a party upset from AmerenUE?

12 A. I'd have to count them up. Maybe a quarter of
13 them.

14 Q. I don't want to belabor the issue. We kind of
15 went through this I think in your deposition. I don't want
16 to spend all the time --

17 A. I think quite a bit was spent on that in my
18 deposition.

19 Q. I don't want to spend that much time, but as I
20 read it, I think it was 14 of 38. Does that sound --

21 A. That may very well be.

22 Q. Now, as I also understand it from your
23 testimony in the deposition, just to short circuit a little
24 bit, you have never before this matter served as an expert
25 to give expert opinion on the reliability of electric power;

1 is that correct?

2 A. That's correct. I've done work in that area,
3 but never in terms of litigation support.

4 Q. Okay. Is it fair to say that in the course of
5 your work as an expert in this case you have never -- not
6 done any independent monitoring of any of the electric
7 events as Zoltek?

8 A. That's correct. I have not. And I also have
9 no quarrel with those that have or the data they got from
10 there.

11 Q. And, in fact, you've done no investigation of
12 your own other than the review of documents prepared by
13 others, Zoltek and AmerenUE, to determine the cause of any
14 of the incidents at Zoltek. Correct?

15 A. That is correct.

16 Q. As I understand it, your firm is capable of
17 doing that; is that correct?

18 A. It is.

19 Q. Okay. And you've done power quality
20 monitoring in the past or your firm has done that in the
21 past?

22 A. Yes.

23 Q. You weren't asked to do that here?

24 A. No.

25 Q. Was that discussed at all with any of the

1 individuals at Zoltek or the attorney for Zoltek about your
2 capability or the firm's capability to do such monitoring?

3 A. Never.

4 Q. How many times have you been in the plant at
5 Zoltek in Missouri Research Park?

6 A. Once.

7 Q. For this meeting with the PSC?

8 A. Yes. It involved other items at the time, but
9 yes, on that date.

10 Q. And can you tell me about when that was?

11 A. I believe that was in February of 2000.

12 Q. Okay. And how long were you at the plant?

13 A. A few hours.

14 Q. Okay. And how long was the meeting?

15 A. An hour maybe.

16 Q. Okay. And so that meeting, I assume, was in
17 the office area or did it take place in several parts of the
18 plant? What happened during the meeting?

19 A. The meeting itself took place in an office or
20 conference room and then there was a -- what I would call
21 plant tour that showed the processes, described the
22 processes. We were close to the machinery and saw how the
23 plant was running on that date.

24 Q. Okay. And that was all part of the hour that
25 you allocate to the meeting?

1 A. No.

2 Q. The plant tour was separate from the hour?
3 The hour was in the office? Let me go back. I don't mean
4 to confuse you. Two hours all told you were at the plant?

5 A. A few hours.

6 Q. Okay. How much of it was the meeting in the
7 office?

8 A. Half of it.

9 Q. Okay. And then the remainder of it was the
10 tour?

11 A. Yes. And I don't -- there was a few other
12 conversations that I think might have taken place with plant
13 personnel, not in private meetings, but just in -- in being
14 introduced and acquainting ourselves with the plant and
15 their situation.

16 Q. And that was your only time at the plant since
17 that time?

18 A. That's correct.

19 Q. And is it fair to say your review of the
20 records and the testimony and things you did from your
21 office, I assume --

22 A. Yes.

23 Q. -- or Mr. Dunn's office or one of the
24 attorney's offices?

25 A. Yes.

1 Q. Did you ever witness any of the events or
2 incidents -- service quality incidents on the logs? And
3 you've seen the logs before and we can refer you to
4 Schedule 1 I believe to Mr. Rummy's testimony, which is
5 Exhibit 1, the full 277 log. Did you ever witness any of
6 those incidents?

7 A. No, sir.

8 Q. Did you ever spend any time at the plant to
9 try and witness to see what the effect was of any of these
10 incidents?

11 A. I was not asked to do that.

12 Q. Okay. Well, the answer's no, you didn't do
13 that?

14 A. That's correct.

15 Q. Okay. You didn't feel that necessary to
16 render your opinions here?

17 A. That's correct.

18 Q. And I think I asked you this in a little
19 different way, but let me make sure. Have you ever done any
20 investigation of your own to determine the cause of any of
21 the incidents that are recorded on that log by Mr. Rummy as
22 resulted by -- strike that -- or reported by Zoltek as
23 service quality incidents?

24 A. I did my own investigation of the documents
25 that were there in the case, but I did not do a physical

1 investigation.

2 Q. Okay. Tell me what documents you reviewed as
3 part of your investigation.

4 A. That included all of the items that were
5 requested in the form of data requests to the company. It
6 includes the responses that Zoltek gave to Ameren to its
7 data requests. It includes all of the depositions taking --
8 taken in the proceeding and all of the pre-filed testimony.

9 Q. Okay. Did you have any discussion at any
10 time, since you've been retained, with either any individual
11 at Zoltek or Zoltek's attorneys about things that Zoltek
12 might do in its plant to minimize or mitigate the impact of
13 any of these service quality incidents that Zoltek is
14 reporting?

15 A. I was party to conversations where that took
16 place. Let me state that more clearly. I was party to a
17 conversation that took place regarding that. And I believe
18 that was on the date at the plant in the presence of
19 Commission Staff.

20 Q. Okay. Tell me about that discussion. What
21 was the discussion?

22 A. That's been quite a while back, but the -- the
23 general discussion was merely descriptive in nature.
24 Members of the Zoltek staff explained how their processes
25 performed very generally. It is a technical process. They

1 also explained the kinds of incidents they had experienced
2 and the impact that had on the processes.

3 And whether the question was raised by me or
4 someone else, the topic, I believe, came up about have you
5 tried on-site generation, have you considered
6 uninterruptible power systems? Have you considered this or
7 have you considered that.

8 Q. And what was the answer to have you considered
9 this and have you considered that to the various things that
10 were discussed? I got it you don't have a specific
11 recollection of each -- UPS's were discussed?

12 A. Yes. I believe so.

13 Q. Okay. And what was the response to that?

14 A. My recollection that in all of the instances
15 I've just mentioned, that they were, in fact, discussed or
16 considered internally or in concert with Ameren and rejected
17 because of extraordinary cost. Not just cost, but
18 extraordinary cost.

19 Q. Do you know what investigation or analysis
20 Zoltek has done to come to the conclusion as to what the
21 cost of any kind of device or things that they might do to
22 protect the plant would cost?

23 A. I do not know.

24 Q. Okay. You've not done anything of that sort?

25 A. No.

1 Q. And I believe in your testimony, and we'll get
2 to the specific testimony, but I think you talk about the
3 cost of those things. That is based on what you were told
4 by Zoltek?

5 A. It's based on what I was told by Zoltek in
6 terms of their investigation. And I have no detail on their
7 investigations or the costs that they might have considered
8 to be very high, but I also have an independent knowledge of
9 some of those things where I could in very gross terms
10 anticipate the range of cost that might be experienced for
11 that.

12 Q. But besides the very gross terms, you've never
13 gone in looked at the equipment, looked at what's out there
14 on the market, what the capabilities might be, what might be
15 done at any kind of a cost to try to mitigate these service
16 quality incidents?

17 A. That is correct.

18 Q. Now, let me direct your attention to your
19 Direct Testimony and specifically -- get the right schedule
20 here. I guess it's marked -- it's the list - or your
21 version of the list of incidents which is marked DAP-6.

22 MR. VITALE: I don't know, your Honor, what
23 particular schedule, but it's got -- similar to the format
24 of Mr. Rummy's schedule.

25 JUDGE THOMPSON: And this is a schedule

1 attached to --

2 MR. VITALE: To Exhibit 9.

3 JUDGE THOMPSON: Very well.

4 BY MR. VITALE:

5 Q. Now, first of all, this is titled Summary of
6 Power Interruptions/Outages. Do you see that?

7 A. Yes.

8 Q. Is that your title for the document?

9 A. It is not. It was provided to me.

10 Q. Okay. And every other document I've seen has
11 service quality incident on it. Have you seen other lists
12 with that title?

13 A. I -- I've not noticed the differences. As far
14 as I know, there is no -- no difference in intent in the
15 documents.

16 Q. Okay. Well, let's talk about intent. What do
17 you understand a power interruption or outage to be as used
18 in this document? That's not your term in this document, I
19 gather. Correct? That's what you said?

20 A. That's correct.

21 Q. So this is someone at Zoltek's use of that
22 term?

23 A. Yes.

24 Q. Okay. Do you know if Zoltek's use of that
25 term as used in this document -- let's use just two terms,

1 let's use power interruptions -- if that is intended to mean
2 only a complete loss of power to the plant?

3 A. I don't know what they intended for it to
4 mean. I only know what I used it for and what my
5 understanding of the incidents were.

6 Q. Did you ever discuss with them what they meant
7 by power interruption in generating this document? You
8 relied on the documents and your discussions with them to
9 form your opinions. Correct?

10 A. That's correct.

11 Q. Did you discuss this with them and say, What
12 does power interruption -- what do you mean by that?

13 A. I looked at the data itself. I was pretty
14 much uninterested in their definition of it at the time,
15 because they were, I thought, quite clear in their
16 description of the items in their log.

17 Q. Okay. When you say "the data itself," you're
18 talking about the log?

19 A. Yes.

20 Q. Can you tell me as you look at that, whether
21 all of these -- well, how do you define power interruption
22 in your business?

23 A. There are so many definitions of power
24 interruption and outage and blip and so many other terms
25 that we've talked about this week and that has been

1 discussed at long length in many of the depositions and
2 pre-filed testimonies, that I don't know that any purpose is
3 served by adding an additional definition to it.

4 My -- my Direct Testimony stated quite simply
5 that I did not intend to invent any new terms, but simply
6 describe what was described to me by Zoltek staff as what
7 happened, the events that took place from a customer's
8 standpoint as opposed to a utility's standpoint.

9 Q. Did you sit down with someone at Zoltek and go
10 through each of these entries on the log and ask them what
11 happened and they tell you, or did you just read the log and
12 gather your information from that?

13 A. I read the log and gathered information. I
14 did have discussions very, very occasionally I believe with
15 Mr. Moran and, of course, discussions fairly frequently with
16 Mr. May.

17 Q. But the basis for your testimony and your
18 opinions are primarily this log?

19 A. Yes.

20 Q. Okay. Would your answer be the same if I
21 asked you about your definition of outages as used in this
22 document? And, again, the document was given to you, as I
23 understand it, with the term "power interruptions/outages"
24 on it. Do you have the same statement? There are multiple
25 definitions out there and you were only interested in, I

1 think you said, what the effect on the operations at Zoltek?

2 A. I think your statement is -- is correct.

3 Q. Okay. Of the -- well, let me back up. This
4 document that you've got attached to your testimony, at
5 least the printed version of it, stops at 1:50 on March 28,
6 '98. And then you've got two pages of logs. Is that
7 supposed to be the rest of the time period about which
8 you're opining?

9 A. At the time that I was preparing my testimony
10 and exhibits, this was the closest thing to a fully typed
11 exhibit that was provided to me. I don't know that there
12 are any differences whatsoever between it and others that
13 have been discussed in this proceeding. If there are
14 differences, I'm sure it's unintended. I relied upon this
15 one and if there is a difference where mine says 275 or 278
16 as posed to 277, it has no material impact on my testimony.

17 Q. Okay. Because your testimony is based
18 primarily on the number of incidents that have occurred over
19 this, what, eight-year period we're talking about. Right?

20 A. Yes.

21 Q. Okay. But your number that you're opining on
22 is roughly the same 277 number, not the 100, and what did I
23 say, 25 of the printed list here? Your opinion's covering
24 the full time frame up to mid-June 2001 when you gave your
25 testimony. Correct?

1 A. That's correct.

2 Q. Okay. And your testimony was prepared at the
3 same time as Mr. Rummy's -- all the Direct Testimony do you
4 understand was filed at the same time?

5 A. It was all filed at the same time. I don't
6 know when others prepared theirs.

7 Q. Okay. Now, looking at that -- back at that
8 document again, this log, you note that there are several
9 asterisks items -- I think there are seven in all that are
10 asterisks and the notation power outage caused by Zoltek
11 Corporation. Do you see that?

12 A. Yes.

13 Q. Do you know what happened on any of those
14 occasions to have caused the power outage, what Zoltek did
15 to cause that?

16 A. I believe I have read some of that in
17 depositions and answers to data requests. As I sit here
18 today, I can't describe back to you any individual item,
19 although if you want me to research it, I do have all the
20 notes and we could take the time to do that.

21 Q. Well, your information about that comes from
22 depositions of other Zoltek employees and you say the data
23 requests or data responses from Zoltek?

24 A. Yes.

25 Q. You've never talked to anybody at Zoltek and

1 said, Hey, what happened here that you went out for 50 hours
2 and 15 minutes, what happened to the plant?

3 A. That's correct. We have not had those
4 conversations.

5 Q. And you didn't think it important to find out
6 there are seven occasions, and as I read this log of 277
7 incidences and I think Mr. Rummy agreed, the two longest
8 events -- multiple-day events were caused by Zoltek and no
9 one I've heard, and I've asked the question, seems to fully
10 be able to answer what caused it.

11 I think there was one that a door opened up
12 and there might have been some arcing and I got that from
13 Mr. Rummy and I do recall that. But you didn't think it was
14 necessary to make some further investigation to get a better
15 understanding of what happened?

16 A. Actually, I don't care at all, because Zoltek
17 has acknowledged that they caused that and so it comes off
18 of -- off of the list that one might take as a black mark
19 against Ameren, so I really don't care what it is.

20 Q. So you consider all the others to be black
21 marks against Ameren?

22 A. Well, perhaps I shouldn't have said that so
23 flippantly, but the other instances have at least our
24 understanding that they did not emanate from within the
25 plant, therefore, they happened on Ameren's system either

1 under their control or not under their control.

2 Q. So some of the remaining incidences -- let's
3 say 270, we'll use that 277 number we've all been using from
4 Mr. Rummy -- may have been caused or were caused by things
5 within Ameren's control by your opinion or may not have been
6 caused by things within Ameren's control. Was that your
7 testimony?

8 A. That is my testimony, but I also said in the
9 same statement that they were certainly on Ameren's system.

10 Q. Okay. But not within Ameren's control?

11 A. Some of them might not have been.

12 Q. Okay. Do you know of the 277 incidents that
13 are listed on this log how many were complete -- let's use a
14 definition -- one of the many definitions out there, power
15 interruptions or outages, zero power. We've heard a lot
16 about voltage sags and interruptions. Let's use the
17 definition of zero power to the plant. Do you know in how
18 many of these 277 incidents that occurred?

19 A. I think we went through that in my deposition
20 and perhaps arrived at a number. I don't recall what that
21 number is, but I'm sure we can determine it again if you'd
22 like.

23 Q. Well, as you sit here today -- I don't see
24 that in your Direct Testimony or your Surrebuttal. And as
25 you sit here today, you don't recall?

1 A. No. I don't know that number.

2 Q. And did you ever -- how did you know that in
3 your deposition?

4 A. I think Mr. Evelev walked through just about
5 each and every one of those with me.

6 Q. And walked through what?

7 MR. VITALE: Mr. Evelev, I think for the
8 record, your Honor -- I don't know if that's been fully
9 explained. Mr. Evelev was an attorney from my office at the
10 time who took the deposition so there's no question on the
11 record.

12 BY MR. VITALE:

13 Q. Correct?

14 A. Yes.

15 Q. He was the person deposing you for AmerenUE?

16 A. Yes.

17 Q. What did he walk you through? Each incident
18 on the log?

19 A. We went through many of the incidents on the
20 log. I'll point you to the deposition for the full
21 information if you'd like to read it.

22 Q. I'm trying to understand -- I'm sorry. I
23 didn't mean to interrupt. I'm trying to understand how he
24 walked you through -- if I took you through these incidents,
25 could you tell me which ones were complete outages?

1 A. In many, but not all cases.

2 Q. Okay. How would you tell that?

3 A. In -- it often says fairly clearly.

4 Q. Okay. In what regard does this log say fairly
5 clearly it was a complete outage and loss of power?

6 A. Well, I will take one that I happen to be --
7 turn to at this moment, which is No. 49 on the list. It
8 happened to be for 16.1 seconds, the one following that is
9 for -- No. 50 is for 45 seconds. It was -- it was from my
10 experience in reading the data and I believe it was the
11 experience of the -- of the Ameren witnesses who preceded
12 me, that in each and every case where there was an event
13 that lasted more than a fraction of a second and certainly
14 more than a couple of seconds, did cross the zero point and
15 become a zero voltage condition.

16 Q. Okay. Let's break that down a little bit.
17 The 16.1 second, Incident No. 49, is one of those that was
18 found during the monitoring that was done by AmerenUE in
19 1994 by Mr. Bradley; is that correct?

20 A. I don't know. I'm just turning to my
21 testimony. I really don't know where his was.

22 Q. Okay. Okay. So you don't know, as you sit
23 here, where that 16.1 seconds came from?

24 A. I know it came from Zoltek's records.

25 Q. Okay. Do you know who timed 16.1 seconds for

1 that incident?

2 A. I do not.

3 Q. Okay. Other than the incidents where you have
4 monitoring results from either 1993, '94 time period from
5 AmerenUE to 2000 time period from AmerenUE or the Hewlett
6 Packard monitoring that you made your correction in your
7 testimony -- when did that occur, do you know, the Hewlett
8 Packard?

9 A. I'd have to look that up, but it was --

10 Q. I think it was '97. Does that sound right?

11 A. That sounds reasonable.

12 Q. Other than the results from those three or
13 four monitorings that were done, do you have any actual
14 knowledge of the voltage that was reached at the plant
15 during any of these incidents?

16 A. No, I don't.

17 Q. Okay. And on what basis then do you believe
18 going through each incident, if we were to do that, would
19 you be able to say what was a complete zero power outage?

20 A. Some of them, if necessary, I believe could be
21 tracked back by Zoltek staff at your request or at my
22 request. They had a chart running, I believe, during most
23 of that time and, in fact, all of these may have been marked
24 on a circular voltage chart and we could verify those from
25 that.

1 Q. Are you saying that Zoltek did some voltage
2 monitoring of all these incidents over the eight years?

3 A. I know at one time they had some charts out
4 there, because I saw some copies of charts that were from
5 their offices and that may have been a chart recorder
6 provided by Ameren. It may have been their chart. I don't
7 know.

8 Q. Okay. So you'd have to go back to Zoltek's
9 people to ask them which ones were actual power losses -- or
10 their documents -- and which ones weren't?

11 A. That's right. Because as we discussed, I did
12 not make independent monitoring.

13 Q. Okay. So, again, if I took you through this
14 log and we just went down the log, could you say without
15 going back to Zoltek's documents or AmerenUE's monitoring
16 results which ones were zero power incidents and which ones
17 were just voltage sags?

18 A. I can do that with reasonable certainty on
19 many, but certainly not all.

20 Q. And that would be, what, based on duration
21 timing?

22 A. Yes.

23 Q. After how much time would you say it's a power
24 outage as defined by zero power?

25 A. Well, I would look to some of the charts that

1 we looked at earlier today that were prepared by Ameren
2 staff. And it can be seen in general terms from the charts
3 that they prepared whenever the incident lasted more than a
4 second or two, it tended to be a zero point crossing, though
5 it was not always so.

6 Q. Okay. So based on the monitoring results
7 from -- you're talking about the Ameren or Zoltek documents
8 or both?

9 A. I'm talking Ameren documents.

10 Q. Okay. So that leads you to believe from that
11 monitoring that was done in that '93, '94 and 2000, that
12 anything roughly over a second that's listed as measured by
13 Zoltek and put down in this incident log was probably a zero
14 power incident?

15 A. Yes.

16 Q. Okay. But the only ones you can speak to
17 certainty and have any measurements are from the four
18 monitoring times that we talked about. Correct?

19 A. Yes. And I think that's all that's necessary.

20 Q. Okay.

21 MR. VITALE: Excuse me.

22 JUDGE THOMPSON: Certainly.

23 BY MR. VITALE:

24 Q. So as we sit here today, then it's a fair
25 statement that if I gave you 277 and said which ones were

1 sags, which ones were outages, it would have to be a
2 combination of your recollection of looking at what voltage
3 records Zoltek may have had that aren't before us today,
4 your understanding of the timing incident and you'd give
5 your judgment as to how many were actual outages?

6 A. Yes. I think that's the best information we
7 have.

8 Q. Now, is it fair to say that you never
9 discussed the incidents on this list -- the outage incidents
10 with Zoltek, with any of the people from Zoltek?

11 A. No. I don't think that's quite fair. I did
12 have at least one and perhaps two or three brief
13 conversations with -- with staff over the telephone
14 regarding specific events, although I don't -- I don't
15 recall as I sit here today, which specific events on this
16 list.

17 Q. Do you recall that question being asked of
18 you -- well, strike that.

19 Do you recall the questions about discussions
20 with Zoltek concerning what they consider to be an outage
21 and how they measure that being asked of you in your
22 deposition?

23 A. I'm sure there was some --

24 Q. Okay.

25 A. -- some questions about that.

1 Q. Do you recall this question and answer -- and
2 I can --

3 MR. VITALE: Your Honor, would you care to
4 have the deposition before you? That might be easier, I
5 guess.

6 JUDGE THOMPSON: Sure.

7 MR. VITALE: And just for identification
8 purposes at this time, we'll just mark it Exhibit 30?

9 JUDGE THOMPSON: That would be fine. Thank
10 you. And this is the deposition of Mr. Park?

11 MR. VITALE: Yes. For the record, taken on
12 July 30, 2001.

13 (EXHIBIT NO. 30 WAS MARKED FOR
14 IDENTIFICATION.)

15 BY MR. VITALE:

16 Q. And let me direct your attention to page 88.
17 Do you recall Mr. Evelev asking you, How do they determine
18 when an outage occurs?

19 Your answer was, They will see either a
20 flicker or loss of lights. They will have equipment either
21 chattering or stopping because of a change in voltage or an
22 absence in voltage and they will most likely have some other
23 control indications that I hadn't delved into. All of their
24 controls have what are called uninterruptible power supplies
25 on them which generally send an alarm when power to them is

1 interrupted.

2 Mr. Evelev said, Let's distinguish your
3 answer, because are you telling me your answer's exactly
4 what they told you? They told you that is how they
5 determine an interruption --

6 Answer: No.

7 Question: -- versus what your knowledge is?

8 And Mr. Evelev then says, How do they
9 determine when outages occur?

10 Answer: We did not have that conversation.

11 So did you not have conversations or did you
12 have conversations after the deposition about what Zoltek
13 understood to be outages?

14 A. We did not have, as I recollect, any different
15 discussion then what I reported in my deposition. But the
16 question you asked me was not about how they -- I don't
17 believe it was how they determine an outage. I believe it
18 was something about the specific outages that I might have
19 had a conversation with them about.

20 Q. Okay. I see your distinction and the record
21 will reflect what the question was.

22 Mr. Park, your opinion in this case is that
23 AmerenUE's provided unreliable service to Zoltek; is that
24 correct?

25 A. That's correct.

1 Q. And for what period of time do you believe
2 AmerenUE has provided unreliable service?

3 A. The period of time is -- I don't want to be
4 evasive about this, but all of the records that we have
5 examined took place -- the events took place over a fairly
6 long period of time, from late 1992 or 1993 up through the
7 present time.

8 There are periods of time that there were no
9 events whatsoever at Zoltek and there were periods of time
10 when there were many, many close together. So when I talk
11 about -- and give the opinion that the service to Zoltek was
12 unreliable and remains so, then I'm talking about the
13 totality of these events over that period of time.

14 Q. Okay. Well, you made a comment up to this
15 point in time. I think the only evidence of incidents
16 before the Commission goes to June 30, 2001. So let's limit
17 our time frame to beginning of '93 to June 30, 2001.

18 A. Certainly.

19 Q. Let's go by year. Do you believe the service
20 rendered to AmerenUE in 1993 was unreliable -- I'm sorry --
21 service rendered by AmerenUE to Zoltek was unreliable?

22 A. Yes.

23 Q. Okay. And on what do you base that opinion?

24 A. On the frequency of occurrences.

25 Q. Okay.

1 A. And, by the way, this same conversation is in
2 my deposition.

3 Q. Well, your deposition -- I'd offer that as
4 evidence, but I think Mr. May would object so I'm asking you
5 the questions now.

6 A. All right.

7 Q. Okay. So the frequency in '93. How about in
8 1994? Was the service unreliable?

9 A. Yes.

10 Q. And due to what? Well, what's the basis for
11 your opinion?

12 A. Generally, the frequency of interruptions.

13 Q. Okay.

14 A. The frequency of events.

15 Q. Okay. There's that term "interruptions"
16 again. Are you talking incidences --

17 A. Incidents, yes.

18 Q. -- as reported by Zoltek?

19 And what about 1995? And you're looking
20 through -- are we going back to your deposition or are you
21 looking at your testimony? What are you looking at, I'm
22 sorry?

23 A. I'm looking at my testimony, if you'd --

24 Q. Your direct?

25 A. My direct.

1 Q. Okay. That's fine. Is that listed in there?
2 I don't know if you had it by year. I think you gave a
3 summary-type answer. I just want --

4 A. It's by year and I can see the quantity of
5 events as provided by Zoltek and can see all the conditions
6 that I viewed in making my determinations.

7 Q. I'm sorry. I don't mean to -- you're looking
8 at the incident log?

9 A. Yes, I am.

10 Q. Okay. As opposed to -- it doesn't say in your
11 testimony '93 was unreliable, '94? That's what I meant.

12 A. No. That's from the deposition.

13 JUDGE THOMPSON: For the sake of the record,
14 he is looking at Schedule DAP-6 to Exhibit 9; is that
15 correct?

16 MR. VITALE: Thank you, your Honor. I
17 couldn't tell from this vantage point.

18 THE WITNESS: That is correct.

19 BY MR. VITALE:

20 Q. We're at '95. The unreliability is due to
21 frequency of events?

22 A. Yes.

23 Q. How about 1996?

24 A. The same.

25 Q. 1997?

1 A. The same.

2 Q. 1998?

3 A. To the extent I have data in 1998, the number
4 of events are rather limited though they are on a brief
5 period of time. And I'd have to say either it was reliable
6 or there's insufficient data to determine that it is not
7 reliable.

8 Q. Okay. And just to be clear, all these earlier
9 years I said same and I didn't mean to short circuit it, but
10 you're saying for all these years '93, '94, '95, '96 and
11 '97, before we get to '98, you say the service is unreliable
12 and the basis for that is the frequency of the incidents as
13 reported by Zoltek. Correct?

14 A. Yes.

15 Q. Now, in '98 you're saying it was either
16 reliable or if not, insufficient information?

17 A. That's correct.

18 Q. Do you have any reason to believe there are
19 incidents that weren't reported by Zoltek?

20 A. While I don't have any reason to believe there
21 are incidents that are unreported, I also do not have a copy
22 of the -- the fully typewritten listings that were discussed
23 in live testimony yesterday. I don't have any reason to
24 believe they disagree with what I have, but this is the
25 breakpoint between what is typewritten and what is

1 handwritten. So I'd like to give Ameren the benefit of the
2 doubt and I -- and I think that probably is not at odds with
3 the deposition -- the deposition testimony.

4 MR. VITALE: Well, if I could have a moment,
5 your Honor.

6 JUDGE THOMPSON: You may. I can loan the
7 witness my copy of the schedule to Mr. Rummy's testimony if
8 that would be helpful.

9 MR. VITALE: That would, your Honor, but I'm
10 looking for something else that I created.

11 JUDGE THOMPSON: Very well.

12 MR. VITALE: Here it is. I've got it.

13 BY MR. VITALE:

14 Q. Mr. Rummy's testimony, if I can count, or his
15 schedule for 1998 had 54 incidents on it, which I think --
16 again, if I can count -- is the highest frequency of
17 incidents throughout this period of time we've been looking
18 at. So if that's the case, your testimony is that 1998 was
19 unreliable as well?

20 A. Yes. That would be correct if that
21 information --

22 Q. And that's not information you had when you
23 gave your Direct Testimony?

24 A. That's correct.

25 Q. Okay. What about 1999? What is your --

1 first, what is your opinion as to the reliability of the
2 service in 1999?

3 A. I say that was also unreliable.

4 Q. Okay. And on the basis of what?

5 A. The frequency of events.

6 Q. Okay. And year 2000?

7 A. The same.

8 Q. Same unreliable and the same reason, frequency
9 of events?

10 A. That's correct. I'm sorry.

11 Q. And 2001 for at least a period that was
12 reported, which is half a year, I think there were
13 18 incidents?

14 A. And I would have the same opinion there. I
15 would like to add to that that while I have given the
16 opinion that each of those years was unreliable, I don't
17 want to give anyone the impression they were all equal in --
18 in every regard.

19 In some years that -- the power was more
20 stable, it was less unreliable than others. And that may
21 not be fully reflected in the figures themselves, but is a
22 rather subjective thing as communicated to me by Zoltek
23 staff; in other words, they have seen some qualitative
24 improvement and I don't want to give anyone the impression
25 that we have not noticed that.

1 Q. Okay. And when do you consider that
2 improvement starting as told to you by Zoltek?

3 A. They started to see it in small -- in small
4 steps I believe as early as late 1995. And while it's been
5 variable, the improvements have been slow in coming, there
6 have -- there has been improvements. Some of that has been
7 influenced by what Zoltek believes, and we were unable to
8 confirm or deny, as to the switching that took place or
9 maybe took place from one feeder to another that served
10 Zoltek at certain times of the year.

11 Q. Okay. And just to clarify that, because there
12 has been a lot of testimony about that, that's not something
13 you have any direct, personal knowledge of what happened?

14 A. No. I think we're all curious about that, but
15 I have no personal knowledge.

16 Q. And either does Zoltek or anybody from Zoltek,
17 as I heard the testimony. Is that your understanding as
18 well?

19 A. Well, that's not my understanding from the
20 testimony I heard from them.

21 Q. Okay. What is your understanding?

22 A. My understanding -- and I don't remember if
23 it's Mr. Moran's or Mr. Spahn's testimony, but they had had
24 direct conversations with Union Electric personnel -- field
25 personnel who had told them that.

1 Q. But you haven't looked into that yourself to
2 see if that somehow corresponds to any improvement in power,
3 has anything to do with incidents? You've just relied on
4 Zoltek's telling you that that's what they were told, it
5 seems like their power improved during that period of time?

6 A. Well, actually, no. I did attempt to verify
7 that. And, in fact, Mr. May had a data request to the
8 company asking exactly that information. And the company's
9 response was they had no such information and -- I believe
10 the response was they don't keep a contemporaneous record of
11 changes that are made in the switching to the system.

12 Q. Have you read any of the depositions taken of
13 any of the UE people in the course of preparing your
14 testimony?

15 A. Yes.

16 Q. You didn't see anything in the depositions
17 about when this feeder switch supposedly occurred?

18 A. I don't recall anything substantive there. It
19 doesn't mean it doesn't -- didn't -- didn't have any.

20 Q. Well, the UE witnesses will be here and we'll
21 have their testimony.

22 So but it's fair to say that for this entire
23 period of time, if you looked at it at least on an annual
24 basis, your conclusion at the end of each year is service
25 was unreliable due to frequency of events?

1 A. Yes.

2 Q. And that is whether they were voltage sags,
3 zero loss of power, in your estimation for the purposes of
4 your opinion, that doesn't mean anything?

5 A. No. I won't say it doesn't mean anything, but
6 it -- it doesn't mean as much as the frequency of the -- of
7 the events as -- as pretty well stated in my direct. I'm
8 very concerned about frequency of events and that doesn't
9 mean I'm not concerned about duration, but to an industry --
10 to a customer such as Zoltek, having 60 1-minute outages
11 during the course of the year is much more onerous than
12 having 1 60-minute outage.

13 Q. Okay. But you're basing your opinion -- I
14 think you've testified that you know roughly or you can
15 maybe go back and look at some records or maybe make a
16 judgment call based on duration of time which was an outage
17 and which wasn't, but you're looking at total number of
18 incidents, so I gather that's the key for you, the total
19 number of incidents?

20 A. Yes, it is.

21 Q. And the key also is the subjective effect or
22 the subjective view of Zoltek as a customer saying this
23 incident caused a problem to my plant?

24 A. Yes.

25 Q. Okay. So let's say just hypothetically there

1 are 50 incidents but that had no tangible impact in the
2 course of a year. Would you consider that to be unreliable?

3 A. Perhaps we should define what we mean by no
4 tangible effects.

5 Q. Well, you've heard the testimony from
6 Mr. Moran, he's produced a chart -- I don't have the exhibit
7 number, we can show you the exhibit, where he indicated
8 where he found tangible effects and it was a fairly limited
9 number of occasions. And that's Zoltek's definition of
10 tangible effect in their exhibit. So tangible effect on
11 processes and the equipment at the plant.

12 A. As long as we don't confuse the term "tangible
13 effect" with "economic damage," I can probably go along with
14 it.

15 Q. Okay. Why don't do you that? So no economic
16 damage you would equate to be tangible effect, that is loss
17 of either production time or loss of material?

18 A. No. I think you've misunderstood me. I don't
19 want to equate the two, so a tangible effect would certainly
20 include those that included damage but it may include
21 anything that caused a piece of equipment to malfunction
22 whether or not economic loss was --

23 Q. Okay. But if nothing happened to any of the
24 equipment during an incident and you had 50 of those events,
25 the lights flickered and nothing happened and that's all

1 that happened during the course of a year, is that
2 unreliable service?

3 A. If I am to take you at your word and nothing
4 happened --

5 Q. Yes. I'm giving you a hypothetical. I'm not
6 saying that happened.

7 A. Then, yes, I'll agree with you.

8 Q. Okay. Do you agree, sir, that Zoltek and any
9 other customer of AmerenUE has to expect some voltage
10 variation in the course of the delivery of electricity?

11 A. I don't know as they have to expect it, but
12 they probably have to tolerate it.

13 Q. So in the sense of it's the nature of the
14 beast, the nature of delivering electric power? There's no
15 such thing as perfect power -- you've heard that term used
16 before -- where voltage is never going to change, it's just
17 going to remain constant?

18 A. That's right. There is no perfect power.

19 Q. And customers should not expect that?

20 A. And I don't think most do.

21 Q. Okay. Do you, yourself -- in your opinion,
22 what is an acceptable voltage variation? And you can use if
23 you want, percentages, voltage numbers, incidents, however
24 you would define that. Let's say in the course of a year.

25 A. Well, I haven't been asked to -- to study this

1 in terms of something that really provides substantive
2 testimony, because again, you have some things that are
3 relating to frequency, some things that are related to
4 magnitude.

5 To try to be a little more clear, if there
6 were 1,000 events that varied two or three volts, had no
7 impact on anyone, that would be fine. If, on the other
8 hand, there were a few dozen and they were great magnitude,
9 that would have more impact. There are a few industry
10 curves that -- that take care of providing some weight to
11 each of those factors.

12 Q. Okay. And those curves are -- you've not used
13 those in your testimony?

14 A. I've not used those in my testimony, but I
15 don't want to event something yet anew just for the purposes
16 of this discussion.

17 Q. I understand. When you say "magnitude," what
18 do you mean by "magnitude"? You mean the impact on the
19 operations or do you mean a measurement of voltage
20 variations?

21 A. I mean a measurement of voltage variations
22 either in volts absolute or in percentages.

23 Q. Is there some standard that should be applied
24 in this instance to determine the acceptable, if you will,
25 amount of voltage variation during a sag event?

1 A. There are so many things that people offer up
2 or various trade groups offer up as something they would
3 like to see adopted as a standard, that it really makes no
4 standard at all.

5 There are several that have been mentioned in
6 Ameren testimony that are fairly well accepted in the
7 industry though as far as I know, have not been adopted by
8 Ameren or other utilities. They've been mostly offered up
9 by the computer industry for their own reasons. They --
10 they are somewhat self-serving in the utility industry in
11 that they're a fairly -- fairly high standard for customers
12 to meet as opposed to the utility to meet.

13 Q. Okay. But if I can understand your testimony,
14 whatever those standards may be that are out there, you
15 haven't applied any of those or used -- or measured any of
16 the voltage variations that you saw here from AmerenUE
17 against any standards to determine unreliability?

18 A. Again, I don't recognize them as standards,
19 but merely as -- as approaches that people have offered and
20 have suggested that they should be adopted as standards.
21 It's not that I'm trying to be evasive or I don't think any
22 standard can be constructed, but the situation at Zoltek on
23 Ameren is unusual in a lot of respects and that's why we're
24 here.

25 Q. Okay. Unusual in what respect? Unusual in

1 terms of the number of voltage variation incidents or
2 unusual because of the impact on the Zoltek plant when a
3 voltage variation occurs?

4 A. I don't think there's any particularly unusual
5 impact on the Zoltek equipment when it occurs. As you've
6 heard testimony from others and, in fact, in my own Direct
7 Testimony, there's nothing particularly unique about the
8 Zoltek process. Yes, they produce a unique product, but the
9 processes and the equipment are not uncommon either in that
10 industry or in St. Louis, in general.

11 What is unusual, I think, are the quantity of
12 blips, interruptions, outages and whatever other statements
13 we've had as far as trying to define these events throughout
14 those years that is not common among their other customers
15 or at least -- I'll stop there. It's not common among other
16 customers.

17 Q. You say their equipment is not uncommon. What
18 do you base that? You've not done any investigation on the
19 sensitivity of that equipment to trip in the event of a
20 voltage sag?

21 A. No. That's not necessary to do. The
22 equipment is highly modular, at least the controls and
23 relays and such in there. They're not particularly
24 different from one type of furnace operation to another.
25 They have a lot of programable logic controls, they have a

1 lot of relays, some of those are adjustable, some of them
2 are not. It's pretty common stuff applied to a high
3 technology product.

4 Q. Let me ask a different question. The voltage
5 sags -- talk about voltage sags, not outages and complete
6 loss of power. When voltage sags occur at Zoltek -- and we
7 have a general sense from at least the little bit of
8 monitoring that's been done of certain times when sags
9 occurred and the rest we're guesstimating I guess from blips
10 because that's all the information we've got. But when sags
11 occur at Zoltek, is that the only place they occur on the
12 system --

13 A. No.

14 Q. -- UE's system?

15 So sags would be occurring in how wide an
16 area, would you suspect? If Zoltek experiences a sag, how
17 far out on the system would other customers be expected to
18 experience a sag?

19 A. Well, to get really specific, I'd have to see
20 a circuit map of that area, but I can say with reasonable
21 certainty that from the point on a particular feeder where
22 Zoltek is located on downstream of them it would be
23 universal.

24 Q. Okay. That could be miles?

25 A. I don't know how long that is. I don't know

1 if they're the last customer and so it can't go beyond them
2 or if there's a mile or two miles or five miles beyond them.

3 Q. What's the distance, so I can understand?
4 We're talking from what, the substation down the feeder to
5 the plant? Is that the distance you're talking about?

6 A. No. I'm sorry, it's not. When I talk about
7 downstream, I'm talking about from the point Zoltek is
8 located to the end of the feeder where there are no further
9 customers, not from the supply side.

10 Q. So the sag could start at Zoltek and go
11 downstream?

12 A. No. I'm saying from their location on, I'm
13 certain that the sag would be experienced. It may be
14 experienced very far upstream of them as well, but I can't
15 be certain of that.

16 Q. And for anyone having the same kind of
17 uncommon -- or strike that -- the same kind of not uncommon
18 equipment, the sags would have the same kind of effect on
19 manufacturing processes, multiple outages as are described
20 in this incident log?

21 A. A similarly situated customer should have the
22 same type of experience in that location.

23 Q. Okay. Let's go back to the standards we were
24 talking about with voltage variation. And I understand your
25 testimony is you feel that all the standards out there,

1 everybody's got their own reason and you don't really use
2 any of them. But you have not, just to be clear, applied
3 any voltage variation standard as part of your opinion that
4 the service was unreliable as you've testified?

5 A. I -- I've not made any illusion to that in my
6 Direct Testimony. The Surrebuttal does mention the -- the
7 regulations promulgated by this Commission.

8 Q. We'll talk about that, but does that lend
9 support to your opinion or are we going back then just to
10 the frequency of incidents?

11 A. I'm going back to frequency of incidents.

12 Q. Now, you conceded, I think earlier in your
13 testimony, that some of the things -- you say that on all of
14 these things other than the seven. Let's go back to that.
15 Seven items are identified in that incident log as being
16 caused by Zoltek. Have you done any investigation to
17 determine if any of the other 270 events might possibly have
18 been caused by Zoltek?

19 A. Yes, I have.

20 Q. What was that?

21 A. That -- that investigation, again, was from
22 the documents produced, but is fairly clear. And I'll
23 explain to you how I approached that. I looked at the
24 events that were produced by -- or the event log that was
25 produced by Zoltek. I examined with reasonable care the --

1 the logs that were produced by the monitoring on Zoltek's
2 facilities by Ameren and by Hewlett Packard.

3 I found that for all of the outside services,
4 and I consider Ameren an outside service in that event,
5 there was general agreement as to the events recorded. In
6 other words, if Zoltek saw an event, so did Ameren and so
7 did Hewlett Packard. There's general agreement that if
8 one -- one person had data -- or at least the most sensitive
9 data, then the other person got it too.

10 From that, we -- we could then look and see
11 that there -- if there's no big disagreement in those data
12 points, then there should also be no disagreement on the
13 data points that Zoltek has collected at times when Ameren
14 was not there to measure.

15 Q. Okay. Let me see if I understand your
16 testimony. We're talking 277 events, 7 of which Zoltek has
17 admitted. Then you're looking at the number of events that
18 have been monitored at various times by either AmerenUE or
19 Hewlett Packard and you see a correlation there?

20 A. We've sampled them.

21 Q. Okay. And then from that you extrapolate out
22 to then somehow assume the remaining incidents that are on
23 the log and for which you have no data from AmerenUE or any
24 outside monitoring source were not caused by Zoltek. Is
25 that how I understand your testimony?

1 A. That may be part of it.

2 Q. Okay. I'm trying to understand. You said you
3 did an investigation and you're looking at documents. And
4 when I asked you what you considered, you said, I considered
5 AmerenUE and their monitoring records corresponded to what
6 Zoltek had. And I accept what you're saying. We'll talk
7 about that exhibit. But that's for fairly limited number of
8 the 277 incidents. Correct?

9 A. That's right.

10 Q. For the remaining incidents for which you have
11 no data other than the incident log as recorded by Zoltek,
12 what else did you use in your investigation to confirm that
13 these outages weren't caused by Zoltek?

14 A. Well, that is data and I don't believe it
15 requires additional support. It's every bit as valid as the
16 information that Ameren as furnished. The fact that it's
17 not as detailed doesn't seem to matter. It's every bit as
18 valid.

19 And whenever the two entities both were
20 measuring, they were in agreement. So there's no reason to
21 doubt the other items that Zoltek has measured.

22 Q. I'm not asking you whether you have any reason
23 to doubt the other items, but what data have you used to
24 determine -- take 277, take away the 7 that Zoltek admitted
25 were their fault or were caused by Zoltek. I hate to use

1 the word "fault" here because I think we've gotten really
2 off on a bad track with that.

3 But let's take those 7 out to 270. And as I
4 think I counted -- and this is the schedule to your
5 surrebuttal where you provide the total number of incidents
6 where you have actual information that you say correlates,
7 whether from AmerenUE or Hewlett Packard, I think there's 27
8 there?

9 A. Yes.

10 Q. So let's take 250 if my subtraction is
11 correct. Of those 250, your testimony is that you believe
12 those were not caused by Zoltek because of what you saw in
13 those other 27 and the 7 that Zoltek admitted were caused by
14 them?

15 A. That's a rather large sample in the sampling
16 business.

17 Q. Well, regardless of whether it is, that's what
18 you're relying on?

19 A. Yes, sir.

20 Q. Okay. When you say investigation, the
21 investigation has been a review of the documents recording
22 the 27 incidents that AmerenUE and Hewlett Packard had?

23 A. Yes. And applying them to the others.

24 Q. Okay. But you've not investigated any of the
25 other 250?

1 A. Well, the fact that I studied the log is an
2 investigation in my view.

3 Q. Okay. Well, that's interesting.

4 Now, you testified earlier that based on that,
5 you're coming up with 270 less the 7 from the incident log
6 that you consider to be on AmerenUE's system, I think was
7 the term you used. Correct?

8 A. Yes.

9 Q. Okay. And that some of those were caused by
10 things within UE's control and some were caused by things
11 not within UE's control. Is that your testimony?

12 A. I believe that it was.

13 Q. How many of the 270 that you believe occurred
14 on Ameren's system were caused by things within UE's control
15 and how many were caused by things outside of its control?

16 A. That is something that is more within Ameren's
17 ability to study than it is mine, because I do not have
18 access to the Ameren system for that kind of analysis.

19 Q. Okay. Well, data requests were made in this
20 case by -- you said you've looked at data requests that were
21 made by Zoltek's attorneys?

22 A. That's correct.

23 Q. So based at least on everything that was
24 received from AmerenUE that Zoltek's attorney has for you,
25 you couldn't determine that?

1 A. No.

2 Q. Okay.

3 A. It could not be determined.

4 Q. Okay. And you haven't made any effort to
5 determine that?

6 A. Oh, yes. I've made an effort to determine
7 that through -- through the data requests. It's the only
8 avenue for data that we could possibly utilize.

9 Q. And from that you haven't been able to make
10 that determination from the responses to the data request?

11 A. That's correct.

12 Q. Okay. So as you stand here today, you can't
13 tell what percentage of the 250 -- I'm sorry -- 270
14 non-Zoltek-caused incidents were caused by things outside of
15 AmerenUE's control?

16 A. I cannot say them with certainty, no.

17 Q. Okay. Do you believe it's fair to include
18 and -- when you're defining unreliability and looking at
19 frequency of events, which is your benchmark for
20 unreliability, to include in the frequency of events the
21 number of incidents that are outside of AmerenUE's control?

22 A. Only if we can get a firm definition of what
23 is and what is not within Ameren's control.

24 Q. Okay. Well, that was your testimony, I
25 believe and I'm just picking up on what you said. You said

1 some were and some weren't within their control. How do you
2 define within their control and outside their control?

3 A. Those things that are outside of their control
4 are what I would call an interruption of service due to
5 supply conditions, something that is completely beyond the
6 geographic area of the substation serving Zoltek in this
7 case.

8 Certain severe weather conditions that are
9 directly related to the line, and I'll get more specific
10 about that in a moment, such as light -- direct lightning
11 strikes. Certainly automobile strikes or other vehicle
12 strikes against lines.

13 There -- you might want to argue with me some
14 about weather conditions. I have a fairly strong feeling
15 that Ameren can exercise more control over some of its
16 facilities from a maintenance standpoint as they relate to
17 weather than Ameren does, especially with regard to tree
18 control on longer feeders, the exposure that that places the
19 lines under.

20 So I think a lot of the circumstances that
21 Ameren might consider outside of its control I consider very
22 much within its control.

23 Q. Okay. Anything else? How about animals?

24 A. Animals fall into that same thing when you
25 talk about trees. It does not fall into every category.

1 Small animals will always find a way around something.

2 Animal strikes can be minimized in certain
3 ways. I cannot accuse the company of not doing enough to
4 control small animals if a few animals still get through,
5 but there are some things that utilities can and do
6 undertake in order to minimize those.

7 Q. Okay. Anything else?

8 A. There's -- there's some other technical things
9 we could go into, but they have a pretty minimal impact on
10 the system overall.

11 Q. Let's talk about those things now. And in my
12 hurried notes I can't even read my own writing, but it was
13 interruption of power due to supply things and another place
14 in the system. "Things" is probability not the term you
15 used, but that was your first statement; is that --

16 A. Yes. As an example, if Ameren was being --
17 was finding some of its electric supply purchased off system
18 from others --

19 Q. Okay. I got you.

20 A. -- and that supply failed, they have a
21 responsibility to replace that, but it is outside of their
22 control at that very moment.

23 Q. And when you use that term "interruption"
24 there we go again -- I want to make sure. Are we talking
25 about interruption total loss of power or does that include

1 voltage sags?

2 A. I'm talking total loss there.

3 Q. Total loss?

4 A. It could manifest itself in a term that's
5 sometimes used as a brownout, but that's a rare occurrence.

6 Q. Okay. Now, severe weather directly related to
7 lines, direct strikes. And you're talking about where that
8 bolt of lightning comes in and hits that line that's
9 servicing Zoltek or a tree falls directly on that line.
10 Correct?

11 A. Well, I'd stop at the lightning.

12 Q. And are we talking here about total loss of
13 power or does that include voltage sags or variations?

14 A. I'm thinking mostly in the most severe sense a
15 direct or near direct lightning strike is a rather permanent
16 type of outage situation until it's repaired. There are
17 those where a lightning strike is farther away from the line
18 but will cause a recloser breaker operation with an
19 instantaneous reclose and that -- that -- the utility has
20 some control over it, not a great deal.

21 Q. Okay. Let's talk about that. I want to make
22 sure I understand your testimony. Because you were very
23 sure to talk about directly related to the line, I think was
24 the term you used.

25 Are we talking about -- first, let me go back

1 because I'm not sure I understand your testimony. You're
2 talking about outages, complete loss of power. That's
3 pretty much what you're talking about with this kind of
4 weather incident?

5 A. I'll say this --

6 Q. Do you say for this line recloser -- is that a
7 variation or is that an outage issue?

8 A. It can be either because the nature of that
9 particular piece of equipment and how it is set. When I
10 used the term a moment ago instantaneous reclose, it's
11 pretty close to instantaneous and would probably be
12 reflected at Zoltek's location as a blip or very short
13 interruption from a few cycles to maybe as long as a second.
14 Depends on how Ameren sets its relays.

15 Reclosing operations after that -- I don't
16 want to get too much into industry vernacular, but those
17 would be anywhere from a few more seconds to as long as a
18 minute or two or however long Ameren sets it. So it can be
19 either one.

20 Q. And when the reclosers re-establish power
21 after that cycle, which is less than a cycle, a cycle.
22 Correct?

23 A. Yes.

24 Q. What is the duration of a cycle?

25 A. One-sixtieth.

1 Q. Okay. And a second, or as you say, even in
2 the case of a couple seconds or couple minutes, that is the
3 system working for the recloser to get the system back on
4 after the weather incident. Correct? That's how the system
5 is designed to work?

6 A. Yes. And in the event of a close lightning
7 strike, you'd probably get just one operation, an
8 instantaneous reclose if those protective devices were
9 programmed that way. If you had a direct strike, more
10 likely you would see three or four what we call shots on
11 that -- that set of relays and a lock-out which would cause
12 a more extended outage.

13 Q. Okay.

14 A. A direct strike is going to do some damage.

15 Q. Right. Somebody's got to go out there
16 physically and do something with the line or switch the line
17 or repair the line?

18 A. Yes.

19 Q. Okay. Do you know how many of the incidents
20 on the log provided to you by Zoltek were due to
21 weather-related incidents?

22 A. I did the best I could to cross-reference
23 those. There was a -- I don't recall if there was
24 occasionally some information there that said storm. I
25 don't know if that's correct or not. I did have some logs

1 from the Ameren substation that was serving Zoltek for a
2 period of time, they may still be serving it.

3 That particular log was rather brief, covered
4 a fairly short period of time. It was specific as to what
5 Ameren's belief was the cause for that -- that series of
6 events and I think I probably commented on that in my Direct
7 Testimony.

8 Q. Can you tell me how many of the incidences
9 that are on the log were caused by weather-related incidents
10 outside of AmerenUE's control?

11 A. I'd rather refer to whatever it was I
12 testified to. I think I did make a calculation of that and
13 state it. If not, I can --

14 Q. In your testimony?

15 A. I think I did. If I did not, I can certainly
16 count them, because I believe the -- the exhibit is part of
17 one of the schedules attached to my testimony.

18 Q. We'll get to the specifics of your testimony.
19 I'm just trying to get an overall view.

20 You made a comment when you were talking about
21 weather about instantaneous recloser. Instantaneous, I
22 assume that means there is still some period of time where
23 voltage is either going to drop to zero or more likely
24 something less than zero, but drop before that recloser
25 takes effect. Correct?

1 A. Yes.

2 Q. And that's what you said was the blip --

3 A. Yes.

4 Q. -- or a second or cycle, however you want to
5 define the term. That's what Zoltek would experience?

6 A. Yes. That's one of the things that would
7 probably be considered a blip.

8 Q. And something like that potentially could have
9 an effect on Zoltek's equipment in plant. Correct?

10 A. It could.

11 Q. Okay. And do you include those numbers in
12 your determination of frequency and the unreliability of
13 service for AmerenUE, those incidents which are caused by
14 weather and things where the system works, power goes back
15 on but that blip has an effect on the processes of Zoltek's
16 plant?

17 A. It has to be included in certain instances.
18 The records for Ameren -- and I'm not blaming Ameren for not
19 having records on this. I don't know that they're capable
20 of keeping such records.

21 But those protective devices, the breakers,
22 the reclosers, don't care what causes them to open. They
23 only care about the magnitude of the fall and they will
24 react accordingly. Whether that event is a direct lightning
25 strike or it is a small animal strike or it is a tree strike

1 because the tree has grown only six inches from the -- from
2 the line and every time the wind blows it slaps it a little
3 bit, the protective device doesn't care.

4 Now, I don't want to hold Ameren responsible
5 for a direct lightning strike. I don't want to hold them
6 responsible for an automobile hitting the line. But if they
7 have cut back on their maintenance or if not cut back, not
8 done a good enough job with their line maintenance through
9 tree trimming and animal control guards, then I do want to
10 hold them responsible for not doing an adequate job there.

11 Q. Okay. Well, what evidence do you have or what
12 knowledge do you have about Ameren's tree cutting or animal
13 protection work with respect to the lines that service the
14 Zoltek plant?

15 A. All I have is what's reported to me through
16 the data requests that Ameren furnished. And I believe I
17 commented on that in my Direct Testimony and gave some
18 statistics there.

19 Q. Okay. Did you find anything where -- in
20 Wentzville in this area for the power supply that was going
21 to Zoltek that AmerenUE did something wrong in its tree
22 maintenance or with respect to animal control?

23 A. No. The log -- the information in the log
24 that Ameren provided simply said the cause, to the best of
25 its knowledge, of the particular interruption. And given

1 that I do a great deal of work in and around utility lines,
2 not necessarily Ameren's, but sometimes Ameren's and others,
3 I do have a good deal of familiarity with the way that
4 Ameren and other utilities tend to maintain or not maintain
5 their tree trimming programs. I also live in an area that's
6 served by Ameren and I can see quite clearly --

7 Q. Okay.

8 A. -- the results of that.

9 Q. We're not talking about the area you live in
10 and we're not talking about other utilities and we're not
11 talking about other parts of Ameren's service area.

12 And besides talking in generalities, can you
13 tell me what knowledge you have of anything that Ameren has
14 done with respect to its tree trimming or animal protection
15 that has caused or failed to not -- something not to cause
16 an incident at Zoltek? That's probably a bad question so
17 let me ask it again. I lost myself there.

18 Do you have any direct knowledge of anything
19 that AmerenUE should have done or could have done with
20 respect to tree protection or weather protection or
21 protection from automobiles or animals, all these issues
22 we've been talking about, with respect to the power supply
23 to Zoltek that would have not caused these incidents to have
24 occurred?

25 A. No. Only Ameren can furnish the information

1 and Ameren did not.

2 Q. You don't know?

3 A. I don't know.

4 Q. Okay. Now, this is testimony -- I'm not sure
5 it's in your direct, but I think it's in your -- it's
6 certainly in your deposition. How many incidents -- since
7 we're talking frequency determining reliability -- do you
8 consider in a year to be the measure of unreliability?

9 A. I've used a figure in my deposition and I'll
10 get to that -- well, the figure I think I used in my
11 deposition was 24 instances a year.

12 Q. I think it was 10.

13 A. Was it as low as 10?

14 Q. Yeah. As low as 10. I wanted to find out
15 where that came from, because I don't see that in your
16 testimony. I can refer you to that in your deposition if
17 you'd like.

18 A. Let's do that. I'm sure I'll agree with what
19 I said there.

20 Q. I'm sure you will. If you will look at page
21 101, it's the bottom corner of the four-page copy I think
22 you've got. And are you talking -- I'm looking at the
23 questions you were asked.

24 How many outages during an eight-year period
25 would you consider to be reasonable? Again, keeping in mind

1 that no utility provides perfect electric service.

2 And your answer was 10.

3 Now, it's unclear from this -- was your answer
4 there 10 each year or 10 total over the eight-year period?

5 A. Well, my answer there was to a question
6 Mr. Evelev asked and it was within the context of trying to
7 determine from his questioning whether I would consider
8 1 outage per year as -- as too many or 300 as too many.

9 Q. Well, I --

10 A. It was sort of a bartering thing trying to
11 find -- he asked me what -- I said 10 is good.

12 Q. Okay. Well, I don't read it that way. We can
13 all read it. He asked you a question further, You say over
14 200 during an eight-period is unreliable?

15 Your answer was yes. Correct?

16 A. Yes.

17 Q. Speaking to this incident log created by
18 Zoltek?

19 A. Yes.

20 Q. And he said unreasonable, you said yes.

21 He asked you. He didn't barter with you. He
22 said, How many outages during an eight-year period would you
23 consider to be reasonable?

24 And your answer was 10.

25 Now, was 10 -- that meant not just 10, but

1 maybe 24 could be reasonable as well?

2 A. Yes.

3 Q. Okay. So you weren't setting a standard here
4 or saying what you would apply -- that if you'd had a log
5 come to you with an incident list and there were 11 on
6 there, that you would say that's unreliable because of
7 frequency?

8 A. They'd have to be looked at in their totality.

9 Q. What do you mean by "totality"? I just told
10 you 11 in a year. You're looking at frequency as your
11 measurement of unreliability. I give you an incident log
12 from Zoltek and it has 11 incidents on it. We'll put aside
13 whether that had any effect on the plant, but there's
14 11 incidences so just like this log here. Is that
15 unreasonable -- unreliable, I'm sorry?

16 A. I don't think we can just look at a specific
17 small period of time and arrive at anything that's useful to
18 the parties. I would want to look at a broader period of
19 time, and that's exactly what I did. The fact that somebody
20 wants me to go to a few-month period and say, well, it was
21 reliable during this period because there was only two
22 interruptions is -- is just unfair.

23 Q. Okay. Is there any standard in the industry
24 that's used for measuring reliability either incident-wise,
25 total-minute-wise, time-wise?

1 A. People use lots of things. Very typical in
2 the industry is something that Ameren uses and that is
3 minutes of outage hours -- excuse me -- minutes of hours
4 outage per consumer per year, which is a fairly good but
5 gross measure for performance of a utility throughout its
6 service area. It's not very good when talking about a
7 single customer, because the service, as you can imagine,
8 from one area of a utility to another can vary quite widely.

9 Q. So the customer -- each customer has its own
10 subjective view of what the effect of incidents are on a
11 plant?

12 A. Sure. You could certainly have a utility that
13 had -- I'll use a wild figure of 10 minutes of outage per
14 customer per year. I don't know of anyone in the country
15 has one that good. And that particular utility could have
16 someone who had no outages whatsoever and somebody that had
17 1,000. It's an average.

18 Q. Are you asking the Commission here to apply a
19 standard of reliability based on each individual customer's
20 perception and impact of various incidents?

21 A. No. I'm asking them to look at Zoltek's
22 situation.

23 Q. So to me that means you have to look at each
24 customer, because these same incidents may not cause a
25 problem in somebody else's plant and if they don't have the

1 same impact but they have the same incidences, same sags and
2 things but they don't have an impact, then it's reliable as
3 to that customer but not reliable as to Zoltek.

4 A. That's why we look to the wisdom of the
5 Commission.

6 Q. Okay. I'm going back -- you say you looked
7 at -- when you considered frequency, you looked at the
8 totality of the picture, eight years. Now, you answered 10,
9 but as I understand your testimony, when you said 10, that
10 didn't mean more than 10 couldn't also be reliable.
11 Correct?

12 A. That's correct.

13 Q. Okay. Well, tell me what would be reliable,
14 the number of incidents over this eight-year period that
15 we're talking about here.

16 A. I'm going to have to use more words than you
17 would like here because this is a very qualitative and
18 subjective area that -- we're again looking at not just the
19 frequency of the outages, but the magnitude as I've
20 discussed before and I don't want to annoy you with more of
21 that.

22 But in a given year whether it's 10 or 12 or
23 20, it could be -- it could be different each year. I'm not
24 trying to skirt your question in any way, but if we -- we
25 had eight years with two dozen incidents every year, I think

1 that's pretty poor service. If we have some with -- some
2 years with 10 or 12 or even have some years with -- with 20
3 and other years that have 2 or 3 or 4, that may be pretty
4 good service on the whole.

5 Q. So you're kind of giving Ameren kind of a
6 moving target here. It depends whether it was reasonable.
7 You look at it after the fact and you look and see how many
8 incidences there were and you look at what the impact might
9 have been on the customer and then you determine if the
10 service was reliable or not?

11 A. Well, I -- you may call it a moving target,
12 but I'm going to give you some credit for those good years
13 when they've done particularly well. We've had a lot of
14 problems at Zoltek. Perhaps somebody two miles from there
15 has just had a stellar performance and maybe one year they
16 had 20 outages and are mad as wet hens about it and four
17 other adjacent years they had one outage and didn't say
18 thank you. I do want those things to be taken into
19 consideration.

20 Q. So if they had a lot of incidents and didn't
21 complain but they had one incident and they did complain, is
22 that unreliable, the one incident? You look at the
23 frequency of the events. Correct?

24 A. The fact that there's a complaint doesn't mean
25 it's reliable or unreliable. That determination has to be

1 made.

2 Q. Okay. And your determination, as I thought I
3 asked you when we went through each year, was based on
4 frequency?

5 A. Yes. More than anything else.

6 Q. Is there some benchmark -- you keep talking
7 magnitude and things and I understand that. But is there
8 some benchmark that AmerenUE has to say we had X number in
9 this eight-year period that -- where you crossed that
10 threshold where it becomes unreliable?

11 A. If it was so easy as to be able to put your
12 hat on a single number that would make all this go away, we
13 would have done that before we got here.

14 Q. Well, how is a utility like AmerenUE to gauge
15 the reliability? How's the Commission to do it? Is it
16 again an after-the-fact-type thing, we look and see and you
17 had 10 incidents but it didn't have an impact so that
18 somehow because there was no magnitude at the customer's
19 location, therefore, that's okay, that's reliable but that
20 same 10 the next year created problems and then it becomes
21 unreliable?

22 A. I didn't quite follow you there, but I --

23 Q. Your answer is it depends and I'm trying to
24 understand it depends -- I mean, again, I see a moving
25 target. I'm trying to understand what kind of a benchmark

1 is there for a utility like AmerenUE to look at except
2 something after the fact and you look back and see what
3 happened at the customer and say, Oh, that was a bad year?

4 A. I really don't see it as a moving target. I
5 think we've got a system that works here. Most situations
6 on Ameren's system are undoubtedly resolved between the
7 company and customer long before it reaches a period like
8 this based on -- on a customer's complaint and Ameren's
9 addressing of that complaint and situations are resolved.

10 This is a complicated situation. It's gone on
11 a long time and that's why it's gotten here. It's not
12 because it's a moving target.

13 Q. Is it fair to say that you don't have a number
14 that you can tell the Commission that you believe would be a
15 reasonable number of events or incidents to have occurred
16 over this eight-year period?

17 A. That's correct. I don't have a single hard
18 number. It is a qualitative judgment.

19 Q. And would the number -- whatever that
20 qualitative judgment, would that include incidents outside
21 of UE's control? Let me back up. We're only talking about
22 incidents on UE's system first; is that right? We're not
23 counting incidents that may be customer caused or issues
24 like the seven that Zoltek has here. Correct?

25 A. That's correct.

1 Q. So now we're on UE's system. As you've
2 testified, there are things inside or within UE's control
3 and things outside of UE's control and we don't have a real
4 hard number of which incidents were or were not within their
5 control on this list. But when you start considering what's
6 reasonable or reliable and you count events, do you include
7 the ones not in UE's control?

8 A. In most instances, I say no. I don't want to
9 rule them out entirely because there are situations, unusual
10 weather years -- if you had situations outside of Ameren's
11 control that caused a really unusual number of -- of
12 instances and I'll say -- let's say it caused 50 incidents
13 completely outside of Ameren's control and nobody disputes
14 that and then you've got 10 more incidents that were within
15 their control, well, those 10 incidents alone probably would
16 not have elicited a complaint, but combined with the others,
17 they would -- they would come to a complaint.

18 Q. Maybe you didn't understand my question. I'm
19 not talking about what's causing a complaint. We're talking
20 about reliability. And, you know, everybody complains when
21 the power goes out. They don't want to know what caused it.
22 They just want the power put back on.

23 I'm talking about your measuring of
24 reliability. We're now down to incidents on UE's system and
25 we're counting frequency of incidents which you say is a

1 qualitative judgment, but you have to look at the
2 quantitative number. Do you start by looking at incidents
3 that are solely within UE's control or do you include, when
4 you start that analysis, things that are outside of UE's
5 control but on their system?

6 A. Based on your question, I'd have to say you do
7 have to include it because you could have things completely
8 outside of the company's control and have an unreliable
9 system. It may not be your fault that it's unreliable, but
10 it's still unreliable.

11 Q. Well, how are things outside of UE's
12 control -- how can those be corrected to --

13 A. I'm not --

14 Q. Okay -- to get to a reliable standard or to a
15 reliable level of service? Let's put it that way. They're
16 not in UE's control but they're causing unreliable service,
17 as you say. You have to include them in your analysis. And
18 yet they're outside of UE's control, so by definition UE
19 can't do anything about them.

20 So how is UE to get -- so I guess you're
21 saying that you could have unreliable service that UE can't
22 do anything to make more reliable. Is that your testimony?

23 A. No. That's not -- that would mischaracterize
24 my testimony. The -- the -- the objective here of what I'm
25 trying to convey to you is that if you can't control your

1 system, it may not be your -- your fault, but it can still
2 be an unreliable system.

3 Now, it may be that technology marches on and
4 somebody finds a way to begin to get control of some of
5 those items. And this is rather hypothetical because most
6 things that cause an outage on an electric power system are
7 well understood by utilities even when they can't be
8 directly controlled by utilities.

9 Q. Okay. So your testimony is that we could have
10 an unreliable system made up of things outside of the
11 utility's control? That was your testimony. Correct?

12 A. Yes.

13 Q. And, again, by definition since they are
14 outside of the utility's control, then it's not within the
15 utility's control to make the system reliable if those types
16 of events occur?

17 A. That's still a hypothetical. It's not our
18 situation here at Zoltek.

19 Q. Well, you've said that you don't -- haven't
20 analyzed to look at, you didn't get sufficient records from
21 UE to make a determination of which of these things are
22 within their control or not within their control?

23 A. Well, that's because you couldn't provide it.

24 Q. Well, you don't have the testimony. You don't
25 know, do you?

1 A. I do not know.

2 Q. Okay. I mean, you know about how tree
3 trimming -- in your deposition you know the tree trimming in
4 your area of town isn't great so you assume it's not great
5 out there, they probably should have done something better
6 with the trees, but you don't know what they could have done
7 better with the trees in Wentzville, do you?

8 A. That's correct, I do not.

9 Q. Okay. Let's talk a little bit about some of
10 the specific things in your Direct Testimony as to
11 Exhibit 9. And I may have gone over some of these. These
12 are just some follow-up questions I want to go through.

13 You mention on the bottom of page 3 of your
14 Direct Testimony -- you say, Other Zoltek witnesses in this
15 case will discuss the various power quality studies that
16 have been performed and the representations made by Ameren
17 officials.

18 Do you see that?

19 A. Yes.

20 Q. Okay. I want to understand what you mean by
21 power quality studies. We're talking about the monitoring
22 that was done by UE in 1993 and 1994?

23 A. And I believe in 2000.

24 Q. And 2000?

25 A. Yes.

1 Q. You consider that a power -- and what about
2 what Hewlett Packard did in --

3 A. I would put it into the same category.

4 Q. What did Hewlett Packard do in 1997?

5 A. I've only see the output that probably you
6 have seen as well of the computer printouts that were
7 furnished to us by Zoltek and I believed furnished to you by
8 Zoltek.

9 Q. Do you know what Hewlett Packard was measuring
10 at the plant?

11 A. I know what they were measuring. I don't know
12 how they came to do it. I don't know if they were invited
13 by Zoltek or --

14 Q. Okay. I meant -- no. I didn't mean that. I
15 mean, where were they measuring? Were they measuring the
16 computer down at the electric output with respect to the
17 computers or the equipment in the plant?

18 A. What their intent was I don't know, but the
19 location of the equipment was on the secondary side of the
20 service entrance, a part of the system that Zoltek can allow
21 someone to enter. Not part of Ameren's equipment.

22 Q. Okay. Going on with your testimony on page 4,
23 line 10, again, I want to make sure there's some clarity
24 with respect to terms being used. You say, If a power
25 interruption occurs during the process, and that is this

1 manufacturing process here, the fibers can overheat and
2 burn. And you go on to talk about different causes -- or
3 different results from that happening?

4 A. Yes.

5 Q. Power interruption there, are you talking
6 about a total loss of power or are you including voltage
7 sags?

8 A. I'm including either of those items to the
9 extent they can cause the -- a halt to that system. And
10 there -- I don't want to say that both always cause that,
11 but a surge of a -- excuse me -- not a surge, a sag of
12 perhaps say hypothetically 15 percent for a very short
13 duration, a few cycles might not cause it to shut down. The
14 same amount of sag for twice that number of cycles might
15 cause it to shut down. Similarly, something 25 percent for
16 a very, very short time might not cause it to drop out.

17 Q. Okay. And, in fact, if I read Mr. Moran's
18 chart, Exhibit 19 I believe. I don't want need it. I just
19 want to make sure I identify it.

20 JUDGE THOMPSON: I believe it was 19.

21 BY MR. VITALE:

22 Q. If I read that correctly, some blips have a
23 tangible effect on the equipment, some didn't. Some
24 one-minute events as recorded by Zoltek had effect on the
25 equipment and some didn't?

1 A. That's correct.

2 Q. Okay. Okay. Now, let's go back just for a
3 second because that's a question I didn't ask you. When you
4 were looking at your totality of incidents to try and
5 determine whether the system's unreliable or not, I didn't
6 ask you about this, I don't think. I'd asked you earlier,
7 but I want to put it in that context.

8 Are you including incidents where something
9 happened but there was no tangible effect on the Zoltek
10 equipment? Would that be part of your definition of
11 unreliability? And so let me premise the question.

12 We've got a total period of eight years. You
13 have 100 incidents and they're all on UE's system. You're
14 convinced of that. They're not anything caused by Zoltek.
15 They may or may not be within UE's control, but none of them
16 had an impact -- a tangible effect, as we used that
17 definition before, on any of the manufacturing processes at
18 Zoltek. Does that enter into your determination of whether
19 the system was reliable or not?

20 A. Going back to the conversation we did, in
21 fact, have earlier where we were separating out the terms of
22 tangible from economic damages, there are -- there are
23 impacts that are -- that are possible that don't shut down a
24 piece of equipment that still are under the term
25 "annoyance," which you couldn't call perhaps unreliable.

1 Let me try to be more specific about that. I
2 know we probably made too many references to things like
3 VCRs, but if -- if there's a quick blip or reclose operation
4 and my VCR at home goes off and comes on, that annoys me.
5 It doesn't cause me any economic damage.

6 And while if one of my neighbors asked me if
7 my power was unreliable I'd say, Sure it is, I'm always
8 coming home with my clocks blinking. But that's not, in a
9 technical sense, correct.

10 And if I apply that at Zoltek where they will
11 have a number of light flickers that do nothing more than
12 annoy them, then that has less influence on my saying
13 unreliability.

14 Now, I recognize that within those
15 200-and-some-odd instances there are quite a number that do
16 not rise to the level of interrupting equipment or causing
17 economic damage, but they're part and parcel of the totality
18 of these and that's why I kind of show a fairly small number
19 as being something that could still be considered unreliable
20 if those particular events did actually cause a problem with
21 equipment.

22 Q. Okay. Let me see if I can break that down a
23 little bit and understand what you're saying. Are you
24 saying that no -- I don't want to talk about VCRs or clocks.
25 I want to talk about Zoltek, because your testimony is based

1 on Zoltek's subjective belief about the problems at their
2 plant.

3 Are you saying that if these incidences did
4 not have a tangible impact on their processes and were only
5 an annoyance, as you call it, that that should be counted as
6 an incident to determine the reliability of the system?

7 A. I don't want to discount them completely.

8 Q. Well, how much weight --

9 A. I don't want them to be counted in such a way
10 that they have the same weight as something that actually
11 causes them harm, if you will, because it interrupts their
12 process. But if you have quite a number of things that
13 interrupt your process, those can certainly stand on their
14 own. But it adds to the weight of that if there's also a
15 lot of the other going on as well.

16 Q. So if we had a lot of incidents on AmerenUE's
17 system either within or without UE's control but none of
18 them had tangible effects on Zoltek's processes, then the
19 service isn't unreliable?

20 A. If I take your statement at face value where
21 none of the effects --

22 Q. Right.

23 A. -- had those, then I'll agree with you. I'd
24 probably be annoyed at the service, but I wouldn't call it
25 unreliable at all.

1 Q. So, again, the unreliability is how Zoltek
2 reacts and what happens within the particular customer's
3 operations whether those incidents are unreliable or not?

4 A. I've only agreed with you in that extreme case
5 when no incidents ever cause any --

6 Q. Right. I understand. And if there are a few
7 that impact and the rest don't, then you have to kind of do
8 your qualitative analysis?

9 A. That's correct.

10 Q. Again, we go back to the number of incidents
11 has to be measured by whether that particular customer by
12 the same incident that this customer over here only has
13 annoyances, but this customer has the same incidences but
14 they impact his processes, his service is unreliable but the
15 other customer's isn't?

16 A. No. I can't take that -- take that at face
17 value, because there are customers -- Ameren, for instance,
18 asserts that Zoltek's equipment is the reason that Zoltek
19 has problems; in other words, Zoltek's equipment is too
20 sensitive. There may be equipment out there in somebody's
21 plant that is too sensitive. I don't think it exists at
22 Zoltek. So your example to me offered up one where the
23 opportunity is there to accuse the customer of having
24 ineffective equipment.

25 Q. I'm not accusing anybody of anything, sir.

1 I'm just trying to understand how you judge unreliability,
2 since you said there are so many standards out there but
3 you're not applying any one, you're just making a
4 qualitative analysis.

5 You're telling me that the same -- if an
6 incident -- and there are multiple incidents at a
7 customer's, does not have a tangible impact on the
8 processes, they're annoyances, but you don't consider the
9 service unreliable. And if that same customer next door has
10 the same incidents but it impacts the plant and it causes
11 problems, then that service to him is unreliable. Is that
12 your testimony?

13 A. It could be depending on what it is that's
14 being interrupted.

15 Q. Okay. So it's what happens to the customer
16 that makes it unreliable, not the level and how the service
17 is being provided to the customer?

18 A. It's influenced by that.

19 Q. Influenced by which?

20 A. The -- the determination of reliability or
21 lack thereof is certainly going to be influenced by the
22 nature of the -- of the customer being served.

23 Q. Okay. So, again, back to my question. If we
24 have a customer who has the same incidents and frequency but
25 doesn't cause any problem and the same incidents occur next

1 door but it causes problems, service is reliable to one, but
2 not to the other?

3 A. Is the equivalent -- is the equipment
4 equivalent at each plant?

5 Q. Let's process that, because you say this
6 equipment isn't that uncommon at Zoltek, that --

7 A. If the equipment's equivalent at each plant --

8 Q. Yeah. Right.

9 A. -- and one's having problems and one's not --

10 Q. Right.

11 A. -- then it's an impossible situation.

12 Q. So is it your testimony these incidences here
13 are only happening at Zoltek's plant? Do you have knowledge
14 of that? These incidents that they're reporting are only
15 occurring at that plant?

16 A. I know they're occurring at that plant. I
17 don't know if they're occurring at adjacent locales. We did
18 not do a survey.

19 Q. If these are things on the system and not
20 unique -- they're coming from outside and they're not unique
21 to Zoltek and there's other manufacturing customers --
22 there's lots of customers out on this same system and none
23 of them are down here before the PSC with a complaint
24 because they're not experiencing the same impact as Zoltek,
25 their service is reliable on the same incidents and Zoltek's

1 is not?

2 A. There's been testimony in the last two days
3 that has examined where Zoltek is actually served from. And
4 sometimes it -- they are served by the same feeders as
5 adjacent customers and sometimes they are not. And I don't
6 think it's been settled as to at what times each occurred.

7 Q. Okay. I'm not asking you -- I'm asking you
8 just generally as a proposition. The same service is being
9 given to two customers with the same manufacturing plant or
10 type of equipment as Zoltek. And, again, you say Zoltek's
11 equipment is not uncommon, not overly sensitive.

12 And the same incidences occur, you say these
13 incidences are possibly occurring elsewhere, it's not
14 possibly unique to Zoltek, but the impact isn't felt of
15 those incidences by Customer A but is felt by Zoltek. One
16 service is reliable, the other is not on those facts?

17 A. Well, on those facts -- those facts are
18 technically impossible to create.

19 Q. Okay. So then we're saying that all of these
20 incidents are unique to Zoltek and not to other customers?

21 A. No. It's merely your example is impossible.

22 Q. Why is that?

23 A. Because we -- you've posited that you have two
24 essentially identical plants receiving identical service.
25 One is receiving blips and one is not -- or one is -- one

1 has impacts on its system and one does not and I don't think
2 that's possible. I'd like to agree with you, but I can't.

3 JUDGE THOMPSON: Mr. Vitale, if I could stop
4 you just for a moment. Do you expect to be much longer?

5 MR. VITALE: Yes, your Honor.

6 JUDGE THOMPSON: In that case, we're going to
7 go ahead and recess for the day now. That is of assistance
8 to the employee whose job it is to close up the room after
9 we're done. And we will start tomorrow at eight o'clock
10 again. Is that acceptable?

11 MR. VITALE: Yes, your Honor.

12 JUDGE THOMPSON: I think we're going to need
13 every minute we can find. Maybe we should have sandwiches
14 brought in.

15 MR. VITALE: Your Honor, so we can make it
16 clear, if we are looking like we're going to not finish and
17 if we could take the out-of-town people out of order if
18 that's acceptable.

19 JUDGE THOMPSON: I'm perfectly happy to take
20 people out of order. We can take that up tomorrow.

21 MR. MAY: I have no problem with doing that,
22 Judge. I just wanted to ask a question also. If we do not
23 complete tomorrow, we will not be here on Friday. It will
24 be in February. Correct?

25 JUDGE THOMPSON: That's absolutely correct.

1 This room is booked so if we don't finish by five o'clock
2 tomorrow, then you're going to have to go back and have
3 another opportunity to have a shot at -- we're going to
4 start a rate case on Friday that will run for three or four
5 weeks.

6 So we will be back again tomorrow then at
7 eight o'clock. You will be on the stand, sir, and you will
8 be continuing your examination. Thank you all very much.
9 We'll see you tomorrow.

10 WHEREUPON, the hearing of this case was
11 adjourned until 8:00 a.m., January 24, 2002.

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