Doc. 165

IN THE COURT OF COMMON PLEAS

CUYAHOGA COUNTY, OHIO

KENNETH PERRY, SR.,
ADMINISTRATOR OF THE
ESTATE OF KENNETH PERRY,
JR., DECEASED,

Plaintiff,

-vs-

JUDGE FEIGHAN
CASE NO. 75650

S & S STEEL PROCESSING
COMPANY & DELTA
BRANDS, INC.,

Defendant.

- - -

Deposition of RICHARD L. FOX, taken [illegible] upon cross-examination before Dawn M. Hagestrom a Registered Professional Reporter and Notary Public within and for the State of Ohio at the offices of Ulmer, Berne, Laronge, Glickman & Curtis, 900 Bond Court Building, Cleveland Ohio, at 1:30 p.m., on Tuesday, January 7, 1986, pursuant to notice and/or stipulations of counsel, on behalf of the Defendant Delta Brands, Inc. in this cause.

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APPEARANCES:

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On behalf of the Plaintiff;

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On behalf of the Defendant
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Douglas P. Whipple Esq.
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3200 National City Center Building
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On behalf of the Defendant
S.S. Steel Processing Company.

ALSO PRESENT:

Thomas L. Dettelbach, Esq.

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RICHARD L. FOX of lawful age, called by the Defendant Delta Brands, Inc. for the purpose of cross-examination, as provided by the Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposed and said as follows:

CROSS-EXAMINATION OF RICHARD L. FOX

BY MR. ISROFF:

MR ISROFF: Let the record reflect that this deposition of Mr. Fox is being taken by agreement of counsel. However, one of the counsel, who was aware of the agreement and the time, is not here yet, that being Mr. Whipple, however, we will start the deposition in his absence.

Q. Would you please state your full name for the record?

A. Richard L. Fox

Q. And what is your age?

A. 50.

Q. And what is your residence address?

A. 906 Hudson Road, Kent, Ohio.

Q. And your occupation?

A. I'm an engineering consultant.

Q. And for how long have you been an engineering

consultant?
A. Well, I have been solely an engineering consultant and a professor at Case Western Reserve.
Q. We received a copy of your CV from your attorney.
MR. ISROFF: And, possibly to

- - - -

(Thereupon, Mr. Whipple entered the deposition.)

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Q. Dr. Fox, would you please take a look at what has been marked as Exhibit 1, and would you tell me if that is a copy of your biographical data?
A. Yes, it is.
Q. And is it current?
A. Yes. Well, the date, the date on it is 2/04, but basically there hasn't been much change in

terms of the engineering materials.

Q. Okay. What, in connection with the degrees you obtained from the University of Pittsburgh, what were the major courses of study?

A. Well, Bachelor's degree was in mechanical engineering, and basically it was a traditional mechanical engineering degree.

Including physics, chemistry and mathematics, and then design courses in machine design, kinematics, vibrations, stress analysis, things of that sort, standard mechanical engineering degree.

Q. Okay. And what about the Master's?

A. The Master's degree was a more tailored program to my own interests at the time including a lot of, let's see if I can remember, I took a number of courses in dynamics and vibrations, that is graduate courses, advanced courses.

Some advanced machine design courses and some more mathematics, as I recall. It's been a long time, so I don't remember any details.

Q. What about your Ph.D?

A. That involved, again, a lot more mathematics, more dynamics, continued design systems engineering.

Let's see, there were some courses in classical mechanics, analysis of shells.

Q. What type of shells?

A. Well, a structure that mainly carries its loads in membrane, such as spherical shells or cylindrical shells, these are called shells, and the analysis of the stresses and strengths of those.

Q. Would those be considered areas of structural engineering?

A. Well, they're mechanical engineering, although structural engineers do study those and mechanical engineers study those, like analysis of shells and some of the structural analysis courses where specifically those, I mean, they're more -- well, I don't know how to answer that.

They run between the two fields. It wasn't structural design. See if you were a structural engineer you would be more, you would be taking structural design courses, concrete design, bridge design.

These were analysis courses, courses on how to analyze the stresses and reflexes and vibrations and so forth on these structures

Q So you could analyze a structure --
A. Yes.
Q. -- to determine how it would hold up?
A. Right.
Q. Did you write a thesis in connection with your Ph.D?
A. Yes, I did.
Q. What was the subject matter of that?
A. It was called, I'm trying to think of the title, An Integrated Method for Engineering Optimization, I believe it was
Q. What did that deal with?
A. Basically the field was a field I did a lot of work in at the time, was the, a form of computer aided design.

It was discovering and inventing methods to have the computer adjust variables and choose variables in problems so that you would get some optimal design resulting, which meant that you had to read a number of different stages

You had to first conceptualize your design and then extract from the design variables, from the concept the design variables that you wanted to adjust using the computer method.

Then you had to select the mathematical

approach, then you had to essentially establish what the analysis technology would be that would tell you whether the design was acceptable or not, so then you turned it over to one of these mathematical methods which would optimize and produce, let's say, the cheapest design or lightest design or longest lasting design

Q. Did it concern itself with any particular designs?

A. Well, it was more on the lines of design technology and specific designs although, of course, we exercised the program on a large number of different, the programs on a large number of different kinds of design, machine design, structural design, designs which I guess just called mechanical designs, but there were examples that I used as a, traditional examples, and then I invented some of my own examples.

Q. When did you become licensed in Ohio?

A. I am not sure that I remember. I believe it was around the early '70's, but I'm not sure. I could look it up, of course.

Q. You are a mechanical engineer?

A. I am.

Q. What is a mechanical engineer?

A. Well, mechanical engineer is one who has been trained to apply mechanical principles to the design of products and structures and systems

The mechanical sciences are basically stress analysis and dynamics as well as heat transfer and fluid dynamics erodynamics and some general systems technologies are all generally, including electrical technologies sort of an exclusive function that design is, kind of an exclusive function that draws al those various technologies together to produce a product, usually a mechanical product

Q. These are all of the physical attributes of how it works --

A. Right.

Q. -- is that right?

A. Yes.

Q. Or how something of a product, for example, would work?

A. Right. It's easier probably to say what it isn't than what it is, because it's a very broad field.

Q. What isn't it?

A. Well, it's not chemical engineering, we don't deal with chemical processes. Although, in

fact, we have to deal with chemicals in terms of designing against corrosion resistance or designing mechanical manifestations in chemical plants.

It's not electrical engineering in the sense, electronics engineering in the sense we don't design circuits, however we would sometimes for certain kinds of applications, relatively straight forward ones, usually.

It's not roads and bridges and buildings, tall buildings, except we get involved in heating, ventilating and air conditioning, elevators and certain components in large structures that are mechanical.

So that's the circle, boundary.

Q. Okay. Within the area of mechanical engineering over the past 20 years, have you specialized in any particular area?

A. Well, I have done a number of different specialties or subspecialties in engineering.

I was very interested for many years in optimization methodology, which is what I talked about earlier, and I had written a lot of papers and books about that.

I have also been quite interested in

vibrations and dynamics, and so I spent some years teaching and doing research and doing consulting in those areas.

Actually I did consulting in optimization methods, too.

And perhaps another area that I have spent a lot of professional effort on is product and industrial safety and engineering safety.

Q. When did you start devoting a substantial amount of time to the study of product safety?

A. Well, it's been a gradual process. I don't know really how to pinpoint it because I began doing some consulting work with attorneys back in the early '60's, and that peaked my interest in the problems of products liability and product safety, design of products against safety standards and things of that sort.

I was also interested in the whole area of, I taught, we were asked at one time in the university to put together freshman courses for a particular program that we had. And I put together a freshman course in, well, basically, society and technology basically was the subject matter. And what we did was read a lot of authors, and the students main objective was to

learn to write.

So what we had to do was to write various essays before these readings that they did.

And in that material, too, I began to develop an interest in technology and society and safety as a component of that.

[redacted] here someplace, I got a grant from, I think it was the Sloan Foundation and, yes, that was in [redacted] together from which I developed a course in product safety, genetic products, safety products liability and engineering safety -- no, I'm sorry, industrial safety.

Q. Did you ever write a textbook?

A. No, not on that subject.

Q. How did you go about teaching product safety?

A. Well, what we did was showed the students a set of problems that had arisen, let's say, take a sample of products, consumer products, problems that had arisen that I had either become aware of either through my own consulting work or of my reading, I follow the Consumer Products Safety Commission and related bodies, and showed them say a set of different consumer products

and the problems that had arisen and talked about design for safety in general at first and then as the students became, began to recognize what the problem areas that we were dealing with were, introduced the standards that is voluntary standards systems so that the students would know what the voluntary standard system in this country is, how it works, what industry standards, how they develop are, how governmental regulation affects design. All of these were oriented toward helping the student to know, as an engineer, what they had to design against, what was this world out there like, besides getting the product to do whatever it specifically needed to do, what was the world of regulation and codes and standards, plus what litigation was like.

So we taught them some things about what a products liability case was about, so that they would know something about what they personally and what the employers were liable for, what their responsibilities were, which, because in fact, this whole system is a way of communicating with each other system, at least the way I looked at it, and so I taught them in

fact what the communication was about, what it was saying.

Q. When did you teach this course?

A. Taught it probably right up to the time I left in '81, and I taught it for, probably from the mid '70's onwards, so probably for about seven years, something like that

Q. Did you concentrate your attention on consumer products?

A. We dealt with probably two thirds of the time with consumer products and about a third of the time with industrial products. No particular reason, I guess, but that was the way the time was divided up, probably

Q. Are there different concerns when looking at the safety of a consumer product on the one hand and the safety of an industrial product on the other hand?

A. Well, there are some concerns which are different, and then there ar some that are the same, obviously.

Q. Which ones are different?

A. Well, obviously in the industrial products the many of the people who come in contact with the product did not have a hand in its selection, s

there is some difference in the way the product, in fact, is confronted and the way, the knowledge that the person has about the product.

There is obviously an industrial situation, when there is a job to be done there is a product to be produced or a service to be provided, and that produces a certain atmosphere in the workplace which may be different from that in the home, although it isn't always because meals have to be provided and households have to be painted, and they have to be done in the limited time that a homeowner may have to do them, but there is something of a difference in the environment.

Thinking levels are different or they can be different. It is hard to train a home consumer about the use of a product. It is more, we have more access to training an employee.

I'm doing this on the wing, you know, and so I don't know when you want me to stop, so if you have enough differences.

Q. Well, if you can think of any others, I find this to be very interesting.

A. I am just doing this extemporaneously, so I don't feel I have a thorough discourse there but that's what occurs to me right now

Q. Have you done any research in the area of product safety?

A. Well, I did some specific research for the Consumer Products Safety Commission in the area of aluminum ladders, it was aluminum ladders it was confined to. So I did a fair amount of work with ladders And that research is formal research. I'm sorry, is that what you mean?

I have of course done informal investigations of a lot of different products over the years.

But if you are talking about formal scientific-type research, I would say the work I did for the Consumer Products Safety Commission was the only one I would call that type of thing.

Q. And, looking over your biographical data, I note that you have done some writing in connection with the area of product safety, is that correct?

A. Well, let's read. Tell me what you are referring to. I didn't really think I had done

much writing about product safety.

I wrote one paper for the engineering, Multiple Approaches to Design Education in Engineering, Journal of Engineering Education

Q. Which number is that?

A. That's number 21 on page 3 there. And that's, that, if I'm not mistaken, I think I talked a little bit about the products in products safety that we were teaching, but I don't think I wrote anything else.

What were you referring to, maybe I'm forgetting?

Q. I just looked at that briefly. Whatever there is. that is all in the biographical data?

A. Yes

Q. You have told me about your teaching you have done in the area of product safety?

A. Yes. I have done a lot of other teaching as well.

Q. What types of products have you informally investigated to analyze its safety?

A. Well --

MR. KAMPINSKI: Let me just understand the question. You are asking just generally as opposed to specifically the last

to

complete list of every product, no.

MR. KAMPINSKI: Objection.

sure what you are asking.

all types of products?

products

products I have looked at in terms of safety which were not connected with litigation.

I don't know what, tell me what your question has to do with.

Q. Why don't you tell me first, under what circumstances would you look at a product in terms of safety where it's not connected with litigation?

A. Okay. One client in particular comes to mind,

the Strong Manufacturing Company in Pine Bluff, Arkansas. I did a series of studies for them, that probably dramatizes it, I did some work for them where I tried to help them improve their overall safety picture.

They were building concrete placement equipment, a lot of construction-type equipment, heavy duty stuff where they sprayed what they called light weight concrete, which is concrete, Portland cement and sand which is mixed with something to make, to entrap air or light or even spherals of styrofoam, and they spray this stuff.

Well, they had a number of safety problems, and so I went over their equipment, under contract with them, and suggested changes in the equipment and rewrote their safety procedures, their manuals and their warnings and their instructions to users.

And, in addition, redesigned their signs and labels and stuff they put on the equipment itself, and in some cases advise changes in the equipment. That's one example.

Another example is I had a continuing relationship with Allied Steel & Tractors

Products. Which is a, I don't know whether they still exist, but they did at the time, make equipment, again, for the construction industry and the, they had me do a number of different investigations and studies for them, some of which involved overall design review which included safety review of some of their products.

Q. What type of products?

A. Well, the one that stands out again in my mind from recollection, this is some years ago, was a, an all-terrain vehicle that they were trying to market, which I think they never were successful with.

They built a prototype, I don't think they ever sold them, but they wanted a design review of that. And I went over that for both effectiveness of design and safety issues, because I was, that was something I had convinced them that they should attend to in a product like that particularly.

Q. Any others for which you have done consulting work?

A. I'm trying to think if anybody else has hired me directly as a safety consultant in that way.

Nothing comes to mind If ther were they were not big contracts.

Q. The other category was those matters where you undertook an investigation with respect to a product that was involved in litigation?

A. That's right.

Q. And what types of products have you analyzed in that regard?

A. Well, that's a big list, so in terms of industrial products I would say I have looked at all sorts of machinery, punch presses, injection molding machines, die casting machines, milling machines, lathes, grinders, various machinery from the paper making, not paper making but printing industry, coating machines for coating plyboard and things of that sort.

And relevant to this particular matter we are here for today, I have looked at at least one other slitting operation.

And oh, shears, press brakes, drill presses, zink, I said zink, die casting machines, aluminum foundry equipment.

It just occurred to me, as I was saying that it reminded me of one other job, set of jobs I did.

I did for a while do noise control analyses, so I don't know if you consider that safety or not, but I consider it kind of related to the whole area of industrial hygiene and industrial health.

I kind of got there from being interested in vibrations, which are what are at the bottom of noise and sound to noise control technology and I spent a number of years doing some consulting work in noise control

Q. In connection with these matter which you have investigated for litigation purposes, do you generally undertake your investigation on behalf of the plaintiff, the one who has been injured or is claiming damages?

A. No.

Q. Do you have an idea of what percentage of the time you do your investigation for the plaintiff and what percentage for the manufacturer or other defendant?

A. It seems to run about 40 to 60. 40 percent of the time manufacturers or defendants may call me and about 60 percent of the time plaintiffs.

Q. You indicated that you have investigated one other slitting operation. When was that?

A. I think it was in the mid '70's, around '70, '79. It was over in Indiana.
Q. And what was the name of the plant where this other slitting line was located?
A. Plant?
Q. Yes.
A. I don't remember.
Q. Who was the manufacturer of the slitting line?
A. Well, as I recall, doing this from recollection, the line in fact had been put together by the owner from components purchased from various suppliers and manufacturers.
Q. And what was the occurrence that gave rise to your being contacted and ultimately investigating this line?
A. Well, a man had, with no one around to actually see exactly what had happened, I think he was a foreman, night foreman, had apparently been inserting cardboard in a recoiler while it was running and was killed.
Q. You say the man, the deceased was the only one who was apparently around at the time?
A. Well, there was another person, at least one other person, you know, doing this from memory, okay, as long as we understand these facts are

old and cold, as I recall, he was a, I think he was a night foreman and there was probably somebody else on duty with him.

But at the time that it happened to him, that he was killed, nobody saw it, so there is no direct witness to his getting caught up in the coiler as he was found very shortly after.

I guess it was something about the sound of the whole operation alerted somebody else who was on the premises.

Obviously now I have answered your question that there was somebody else there who stopped the operation, or perhaps it stopped in some automatic way, but anyhow the operation was stopped and they cut him out of the coil, but he was dead.

Q. Were you retained to investigate that on behalf of the decedent's estate?

A. That's right.

Q. Much like in the present case?

A. I guess that's right, yes.

Q. Did you form any conclusions as a result of your investigation of that case?

A. I believe I did, yes.

Q. Do you recall what those conclusions were?

found that the

was the cause of

way

A.

gate which was interlocked with the controls of the machine or, this is an or, it could have been provided with other proximity sensing devices, such as, most notable, electric eye type devices to stop or seriously reduce the

speed of the operation when someone was in the area attempting to do whatever, but presumably attempting to insert cardboard.

I actually forgot what the question was now.

Q. How could it have been done otherwise?

A. Okay. And there, those are just two possible examples. And there could have been other ways to have provided the same functions.

There was not provided a tensioning stand in that particular installation, which would have dealt with the vast majority of the problem as it occurred in that operation.

There was no automatic or remote device for providing, for inserting coil tightening material or otherwise providing for coil tightening, which could have been done.

Those are some other ways it could have been done.

Q. During the course of your investigation and analysis of this situation in Indiana, was it?

A. Yes.

Q. Did you interview and speak with the owners of the machine?

A. I don't think so. No, I don't think I did.

Q. Did you have occasion to read transcripts of their testimony?
A. I may have. I don't recall.
Q. Do you know whether the employer in Indiana made a conscious decision that it was going to stuff paper while the slitting line was in operation?
A. Do I know?
MR. KAMPINSKI: You are asking him obviously if he recalls these particular details about that case?
MR. ISROFF: Yes, exactly.
A. That's one that I don't know whether I rendered an opinion on that or not. What my testimony was I can't remember.
Q. Do you have the transcript of your testimony in connection with that case?
A I probably do.
Q. Do you recall whether the owner of the machine in that Indiana case had been told that they shouldn't keep the machine running while cardboard was being inserted?
A. I don't recall.
Q. Do you recall why, do you recall the reason why the owner of that machine in Indiana did not have a tension stand?

know specifically. I can assume that it was cost

MR. WHIPPLE: Objection. Move to

id '70's, what type of remote device was available for tightening the coils?

A. I'm not sure what the technology was at that point. I can' remember. There may have been some available, not sure whether that was at issue in that case or whether we determined that was available or not.

MR. WHIPPLE: Objection. Move to strike.

Q. The very first thing that you mentioned here was that in Indiana the device could have been guarded with an interlock gate. What do you mean by an interlock gate?

A. A gate that was interlocked. It's an E D. You are asking me what that is?

Q. Yes.

A. Well, what you do in cases like where you are trying to prevent somebody from getting into an area when it's operating is you put a barrier up.

But obviously you have to provide access for maintenance, for whatever operations are necessary. So you provide a gate and barrier or some door or whatever.

In this case it would essentially be a fence with a gate that was interlocked, that is electrically interlocked to the control system of the slitting line so that it would stop the operation or it is even conceivable that you would decide that you could allow it to simply slow the operation down drastically so that it was at a crawl so that you could, perhaps, insert cardboard or do other necessary maintenance functions or whatever.

Q. And when you say at a crawl, do you mean something like a jog speed?

A. Very slow speed, yes.

Q. And such an interlocked gate or proximity sensing device would not be effective if the owner of the machine didn't want the machine to stop or drastically slow down while the cardboard is being inserted, is that correct?

MR. KAMPINSKI: I'm going to object. Are you asking him to assume somebody is going to bypass some type of a system? I

don't understand the question.

MR. ISROFF: Why don't you read it back and see.

MR. WHIPPLE: Just note I join in the objection.

MR. KAMPINSKI: I only object because I don't understand the question, not because it may not have any application to this case, I just want to make sure I understand.

MR. WHIPPLE: I'm objecting for the same reason.

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(Thereupon, the requested portion of the record was read by the Notary.)

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Q. Do you understand my question?

MR. WHIPPLE: Note my objection.

A. What the question asks is whether a particular mechanical device or electrical device or whatever would be effective if somebody had a wish for it not to be effective in some way, and I hear underneath of that an assumption about the connection of the two that I think you ar asking me, but I think I'd be more comfortabl(if you would ask it out loud

Q. Okay. Let us assume for a moment that the owner of the steel slitting line in Indiana had made a conscious decision that it wanted its steel slitting line to be running at either maximum or close to maximum speed while the cardboard is being inserted, okay?

A. Yes.

Q. Would it be fair to assume then that such an owner would not install and/or use the type of interlocked gate or proximity sensing devices that you have described?

MR. WHIPPLE: Objection.

MR. KAMPINSKI: I'm only going to object because I don't see what any hypothetical Indiana owner has to do with this particular case, and the assumed facts that you are asking him to assume as to the Indiana owner don't apply here, so with that keep going.

THE WITNESS: So what do I do?

MR KAMPINSKI: If you understand his question go ahead and answer it

A. It's not relevant, the question is not relevant because, as I said at the beginning, the owner of this equipment had assembled this slitting line himself, and he bought components from

different people and so it was his, so like if he didn't want it he wouldn't buy it He wouldn't have put it on it

Obviously he didn't put it on the equipment that he assembled so the question isn't going to fit the facts, do you understand what I mean?

Q. I understand what you mean, but in that case didn't you conclude that h should have had one?

A. Yes.

Q. And?

A. He didn't.

Q. He didn't have one. And if he had made a conscious decision that he doesn't want his machine to be stopped when cardboard is being inserted then he wouldn't have used the interlocked gate is that correct?

MR. WHIPPLE: Objection.

MR. KAMPINSKI: You are asking him to assume what the owner assumed when he decided not to put the interlocked gate on. I don't know how you can assume any of those things

That's not a fair question, Ron. He can only tell you the facts as they occur.

He didn't get inside of the head of the man who made the decision and tell you why he made

the decision.

MR. ISROFF: He rendered an opinion in the case, and his opinion was that there should have been a guard in the form of an interlocked gate as one situation.

A. And you are asking me what my assumption is about why it wasn't provided.

Q. No, I am not. Let me start over, one more try and then maybe we will go on.

By having an interlocked gate that would turn the machine off, that would not allow that owner to stuff cardboard or have cardboard stuffed while the machine is in operation, would it?

A. Right.

Q. So if the owner wanted cardboard to be stuffed while the slitting line is in operation he wouldn't have this type of an interlocked gate, would he?

A. That's right.

Q. Okay.

A. Because that would automatically exclude that if it works right.

Q. Did that case go to trial?

A. I believe it did.

Q. Did you testify in the trial?
A. I did.
Q. And what happened in the trial?
A. I think there was a defendants' verdict.
Q. Well, let me ask you, who was the defendant in the case, if you recall?
A. I can't remember the name of the defendant. There were, of course, actually there was more than one.
Q. By category who were the defendants? Was the employer a defendant?
A. I don't think so because in Indiana it's pretty airtight. I think maybe they tried in the, under dual capacity or something.

But the defendants were the manufacturers of the various components that were part of the slitting line and were not the same manufacturer, several different manufacturers.

Q. In the mid '70's were there any government regulations that controlled the design or use of a steel slitting line?
A. I don't recall. I'd have to go look at dates and stuff to remember that.
Q. Were there any industry standards that controlled --

A. Same answer, I can't remember.

Q. Okay.

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(Thereupon, a recess was had.)

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(Thereupon, Mr. Dettelbach entered the room.)

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MR. KAMPINSKI: Mr. Dettelbach has just entered the room in the middle of Dr. Fox's deposition.

My only inquiry would be to what extent you are going to be involved.

Are you entering an appearance, is that why you are here?

MR. DETTELBACH: I do not intend to enter an appearance formally or to question or to stay throughout the balance of the deposition, as much as I would enjoy hearing Dr. Fox's testimony.

I am only here because of a conversation that has been held between counsel for S.S. Steel and myself, and a statement which is going to be made which I wanted to be here for.

MR. KAMPINSKI: I just wanted to

know why you are here.

MR. WHIPPLE: Not to cause us anymore delay. Mr. Dettelbach and S.S. Steel and I have conferred, we have reviewed the matter of the 5th amendment claims that were made at previous depositions.

We made a determination that we are not going to continue to assert those claims, and we are going to give you an opportunity to do that discovery before trial that you might desire to do now that we have waived that claim.

We are not waiving any other objections we have to your questions, but as to that one we are waiving that one, and you are free to proceed with your discovery and we will do everything we can to accommodate you.

MR. KAMPINSKI: Are you waiting for a response from me?

MR. WHIPPLE: No. We are indicating it for the record. We want it clear on the record that we have made that announcement. We have made it at this point rather than delay that any further, that there are still a number of days left to make those arrangements if you indeed want to do that.

going to object

't prevent you from

can understand

MR. DETTELBACH: Thank you.

Now, he has had a number of associates and

you know, under a different auspices.

He was with, I can't even remember the other firm. But he was with a different firm when I first met him, so it may have been in connection with the other firm.

But the attorney that I remember working directly with was Warren Holland.

Q. And do you remember the name of the party who Mr. Holland was representing?

A. Yes, I think it was Riggles, R I G G L E S.

Q. And do you remember the names of any of the defendants?

A. Not really. I wouldn't want to guess. You know, I have names swimming around in my head, and I'm not sure.

Q. And would you also furnish to Mr. Kampinski so he can furnish to me a copy of the deposition transcript and trial testimony transcript with respect to the Riggles case to the extent you have it?

A. Let me ask him.

MR. KAMPINSKI: Well, I don't know. I'll have to think about that.

I suppose if you make the appropriate request and the court rules on it then we can deal with that. I'm not sure you are really

entitled to that.

Q. Dr. Fox, when were you first contacted concerning the matters relating to this lawsuit?

A. I'll have to consult my file. Well, my record doesn't show the first time I was contacted. Actually it shows the first billable time.

Q. When was that?

A. That was February 17th, 1984.

Q. And what did you do on February 17th of 1984?

A. I went to S.S. Steel plant and looked at the slitting line and took some pictures. And I guess I, we were there for a while.

Q. Did you go there with Mr. Kampinski?

A. Yes, I went with him.

Q. Was it Mr. Kampinski who called you?

A. I believe so, yes.

Q. What else did you do at S.S. Steel on February 17th of 1984?

A. I recall we sat around a lot. And I think some statements were being taken or something. But I can't remember the details.

I know I talked or heard Mr. Brown speak while I was out there, and I don't recall any other specific personnel.

Mainly my function was looking at the

machine and taking some pictures.
Q. Did you make any notes?
A. Evidentally not. It's not in my file.
Q. What does your file consist of?
A. Well, there is a log and my bills and some correspondence from Mr. Kampinski, a copy of the ANSI standard B11.14, 1983, a copy of the operation and instruction manual slitting line, which is, that's Delta Brands publication.
Q. Is that the manual for the slitting line which is the subject matter of this claim?
A. Yes, I believe so. That's, it was presented to me as such.
Q. From whom did you receive a copy of the instruction manual?
A. I believe this was from Mr. Kampinski.
MR. KAMPINSKI: I think that's right.
A. No one else would have given me anything. So that's where I got it.
Q. From whom did you obtain a copy of the ANSI standard?
A. I cannot say exactly. I may have my own copy or it may have been given, Mr. Kampinski may have given me a copy, I don't recall. He may recall.

Q. Do you have the ANSI standards in your office?
A. I have some ANSI standards.
Q. Do you recall if you have this particular ANSI standard?
A. Not offhand. I would actually have to consult my files to see what I have
Q. What else is in your file?
A. Okay. Some more correspondence from Mr Kampinski. This is an Emery Freight shipping invoice for a package of hydraulic valves from Delta to Perkins.
Q. I notice the document you just referred to had stamped number in the lower right-hand corner?
A. Oh, yes.
Q. I believe some of the documents that follow have such a stamp, is that correct?
A. Yes, it appears to be true, yes. I don't know what the significance of that is And then what follows, I don't know whether you want me to go through in details, but these look like installation, equipment installation, customer approval, several sheets of that with stuff on it.

MR. WHIPPLE: Excuse me, can you give me the document numbers in the lower

corner.

Q. I was going to ask why don't you give us the beginning document number and see if they're sequential and consecutive?

A. I don't know. What I'm concerned about is I noticed that the slitting line document also has those same numbers in the lower right-hand corner, and so if we are going to do that maybe we should be consistent.

They seem to range, that set of numbers ranges from 000043 to 000080, that's the slitting line documents.

Then this other batch, I'm not going to go through them all, but they seem to be consecutive 000020 to 000042, which I guess would coincide with those, so I guess they were in whatever sequence. So you would know, that identifies it for you.

Q. And what else is in your file?

A. Okay. And, as I said, correspondence from Mr. Kampinski and a set of slides that I took at that time.

Q. May I take a look?

A. Sure. If you want a glass --

Q. Do you have the photos?

A. No, I never had them printed. I usually don't unless there is some particular reason to do so.
Q. There appear to be 18 slides, is that about right?
A. It looks like 19 to me
Q. Sorry.
MR. KAMPINSKI: Just stop the trick questions.
MR. ISROFF: Note my objection to statement of counsel.
Q. Dr. Fox, the documents that you have just referred to as coming from your file, do they represent the sum total of all of the documents that you have assembled in connection with your investigation of this matter?
A. Assembled? I don't know what you mean
Q. That you have assembled and retained in your file?
A. Yes, that's the sum total of documents that I have assembled and retained in my file. I have, just to make it easy I have examined other documents and returned them.
Q. I'll ask you now, what else did you examine?
A. Okay. I looked at depositions of a number of

people. I haven't got all the names in my head but there were some people from Delta Brands.

And I looked at probably all of the drawings that were supplied as part of the request for production. I looked at a set of photographs taken by someone else. It may have been at the time I was there.

MR. KAMPINSKI: Dee Photo, just to make it easy.

A. There may have been some other things that I don't recall at the moment. But that's the bulk of it.

Q. Since February 17th of 1984, have you undertaken any research in connection with steel slitting lines?

A. Maybe you need to tell me what you mean by research.

Q. Have you read any other publications, any standards, any articles, any other work or, any other work other than those that you have contained in your file and what you have just listed for me?

A. What I'm doing right now is looking at my log, and I don't specifically list anything else. I don't think I did. I don't think I did.

Q. You don't recall doing any other research?
A. I don't recall doing anything else.
Q. Prior to February of 1984 had you done any research into publications, manuals, texts, sales brochures or any other reference sources in connection with steel slitting lines
A. Well, I'm sure that I did in connection with the case in Indiana. A lot of that research however, I wouldn't be able to recall the details.
Q. I was just going to ask you if you recall any of the details?
A. Not specifically.
Q. Did you call upon any of the research that you did prior to February of 1984 in connection with your analysis of this case?
A. Did I call upon? Say that another way so I'll understand.
Q. Did you make any specific references to any research that you may have done prior to February of 1984 in connection with your analysis of this case?
A. No.
Q. Okay. Did you do any testing or perform any experiments on either of the slitting lines at

S.S. Steel?

A. No

Q. How many times have you been to S.S. Steel?

A. Once as I recall.

Q. That was February 17th of 1984?

A. Right. I mean, that's my recollection. I get to an awful lot of factories and plants in this area over the last 25 years, so I may have been there before.

MR. WHIPPLE: Move to strike.

Q. Since February of 1984, have you done any testing or any experiments on any other, any slitting lines other than the slitting lines at S.S. Steel?

A. No.

Q. What were you asked to do by Mr Kampinski in connection with this case?

A. He wanted me to look at this line and become familiar with it and to render an opinion for him regarding the cause of the accident and the design of the machine.

Q. And you looked at the line?

A. I did.

Q. And became familiar?

A. I became familiar as I needed.

Q.

A. I did.

Q. And do you have to do any further investigation or research in connection with your opinion?

A. No.

MR. KAMPINSKI: Let me just object. Are you saying does he have to or would he like to?

Q. Do you intend to?

A. I don't intend to.

Q. Okay. Thank you.

MR. KAMPINSKI: The only reason I objected is there is still a pending motion with respect to discovery I requested from you regarding other lawsuits, which to my knowledge hasn't been ruled upon, which I indicated to the doctor I would provide him with if I ever get that information.

MR. ISROFF: I understand.

Q. What is your opinion as to the cause of the accident?

A. My opinion is that the overall system being used to produce this product was unsafe and that includes the machine and the way it was being used.

Q. Just let me interrupt for a second. What do you mean produce this product?
A. The product of slit steel.
Q. Oh, okay.

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(Thereupon, the requested portion of the record was read by the Notary.)

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Q. And you also indicated that you were asked to render an opinion with respect to the design of the machine?
A. Yes.
Q. And I take it also the use of the machine?
A. Yes.
Q. Okay. What opinion did you reach, what conclusion did you reach in connection with the design of the machine?
A. Well, it is my opinion that the slitting line is defectively designed in view of the fact that it does not have a device or devices to prevent workers contact with the dangerous nip point, inrunning nip point.
Q. Is that your entire conclusion with respect to the design?
A. Let's see. And further, that provision is not

made for the performance of an operation which appears to be universally necessary in the operation of slitting lines, and that is means for tightening coils as they are wound, well, differentially tightening them.

Q. Does that take care of your opinion?

A. I think so, although there is not enough detail in that, but, yes, that's basically my conclusion.

Q. Have you reduced these conclusions to writing?

A. No, I haven't.

Q. Any particular reason?

A. I wasn't asked.

Q. What opinion did you reach with respect to the use of the slitting line?

A. It's my opinion that the use of the line was dangerous and inappropriate.

Q. What do you mean by that?

A. Well, specifically, of course, what I mean is that workers were regularly, from the testimony I have heard, inserting cardboard in the inrunning nip of the recoiler while the machine was running in order to tighten coils.

Q. Is that a safe practice?

A. That's not a safe practice.

Q. Have you ever had any involvement with the construction, design or quality control of the steel slitting line?

A. Other than what I have told you no

Q. What devices were available in 1978 or 1979 which would prevent contact with the dangerous inrunning nip point?

I assume when you talk about the dangerous inrunning nip point, I assume you are talking about that point where the slit steel is being recoiled onto a recoiler?

A. Right, right. Well, the most straight forward and easily understood approach is to provide barriers.

Now, I'm confused. We have talked about this in regard to the other case, let's just I'll repeat myself here, that the provision of a barrier that keeps the employees out of the or any personnel out of the danger area while the machine is running.

This is provided with a barrier such as fence or even a cage that has, as we mentioned

to enter, but are interlocked so that when they do the machine is stopped.

And there are a

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o say about barriers unless you have some specific question.

Q. I'm talking about or we're talking about devices that would prevent contact with the dangerous inrunning nip point?

A. Right.

Q. What other devices were available in 1978, 1979 which would achieve this same purpose?

A. Well, the barrier, of course, keeps the person from getting in the proximity of the inrunning nip.

The inrunning nip is only dangerous because

it's, in fact, inrunning, that is because the recoiler is turning and winding up steel at a pretty high rate. And so the barrier keeps you from getting there.

Another way of approaching the problem is to provide a device which stops or slows the machine drastically when personnel become in that location or get themselves into that place.

For example, there is the devices, electric eye devices are possible and are used in a lot of industrial equipment just for that purpose.

There are other proximity devices which sense the proximity of a person. I don't know how many would be practical in that case.

One possible very simple proximity device is a pressure sensitive matting, floor matting or floor structure so that when people stand in the area it senses their presence and stops the machine. So these are ways that you can sense presence.

My opinion probably would be electric eye is the next most sensible approach.

Q. Any other devices?

A. Those are the ones that occur to me in terms of preventing contact with the inrunning nip.

Q.

A.

to tighten the coils. While they are coiling they get loose. And so one way to prevent that eventuality, to prevent people from needing to get into that area at all is to provide other means for that function.

Q. And what other means are you talking about?

A. Well, again, I feel like I'm repeating ourselves, but one means is to provide a tensioning stand, which is a device which keeps the coils all under tension even though they may be recoiling at different diameters, which is what the problem is, across the sheet of steel the coil may develop different diameters, and so different tensions if there is not something done to prevent that.

So a tension stand is one way of doing that. Basically it's just a device, it's not a small thing, it's a device which provides friction on each of the strips of steel.

And if necessary that sometimes has to be

accompanied with a pit to allow for the sag or festoon of the steel.

Q. The pit is part of the construction of the shop, is it not?

A. Well, it's the start of the installation part of the slitting line. You don't put a pit in unless you put a slitting line in.

Q. How deep is the pit?

A. It depends.

Q. Typically?

A. Well, I can't say offhand.

Q. About 20 feet deep?

A. I think that depends upon, it really depends upon the operation. It depends on what kind of problems the steel is going to produce. Each coil of steel and the various grades and various usages of steel provide different problems with recoiling. And so whether you need a pit at all or how deep a pit you need has something to do with what happens with the particular sets of steel mix that you use, that is the mix of coils and so on.

Q. Some gauges of steel don't have any tension problems, is that correct?

A. That's right, that's right.

Q. Any other means that were available in 1978, 1979 to eliminate the function of stuffing cardboard?
A. Well, there have been some devices that have been experimented with, and I am not aware of how successful or not they have been for automatically stuffing the cardboard, and that is stuffing the cardboard more remotely without the necessity for them to get into that position.
Q. Keep the worker out all together?
A. Yes.
Q. You don't know if that's effective or workable?
A. Let me tell you, as an engineer I know it could be done, it can be made to work. Whether anybody has taken the trouble to do so I don't know.
Q. Have you ever designed --
A. I know that experimentation has been made on those because I have read about some of that, but I don't know whether they are effective.
Q. Have you ever designed such a remote stuffing device?
A. No.
Q. Are you familiar with any other means to

eliminate that function?

A. Well, offhand, no, not where the slitting line, as for the slitting line as it's designed.

Q. Now, the barriers and other devices that you have been talking about are all intended to keep employees away from this inrunning nip point, is that correct?

A. Yes.

Q. And to avoid the employee who would be stuffing cardboard at this inrunning nip point from being injured by either the inrunning nip point or the traveling steel coils as they go by him, is that correct, as they are traveling by him as he is in there to stuff the cardboard?

A. I have to repeat your question because it was long.

Q. Why don't you.

A. You are asking if these devices are for the purpose of preventing an employee from being injured while doing that operation?

Q. Yes.

A. Yes.

Q. Okay.

A. I would say basically. I mean, a tensioning stand has additional functions. It also

provides more uniformly tight coils of steel and so on, but that is one of the functions it performed is to obviate the need for.

Q. Isn't another means of protecting the employee to stop the operation of the slitting line and insert cardboard while it's stopped?

MR. KAMPINSKI: Are you asking Faim to assume that that can be done? I don't understand your question.

Q. Do you understand my question?

A. Well, what I take it to mean is that you are asking me if that's a practice that you could engage in to protect the employee?

Q. Yes.

MR. WHIPPLE: Object to the question.

A. Well, that's a tough one from a safety standpoint, because obviously whereas logical persons we can say, "Yes, if you stop the machine every time that someone is going to stuff cardboard no one will get hurt, at least not that way," that's a logical truth.

From a system safety standpoint, however, that is not an approach that is acceptable because it essentially says that you are relying

if somebody forgets to do it a certain way or chooses not to or is requested not to do it that way, so it's not, as a safety specialist I would say that is not the way to approach a problem.

Q. And you are looking at it from the behavioral aspects of the employees?

A. I guess in a sense I'd have to say yes. If we had robots doing this work and we knew they weren't going to malfunction we could say that this was going to work, it would work. But then we don't care much if we destroy a robot once in a while.

Q. Do you know of any studies that have been undertaken with respect to employees following a directive to stop the steel slitting line before inserting cardboard at the recoiler?

A. Do I know of any studies? I don't know of any studies.

Q. Do you know of any situations where such a directive has been issued and it has not been

followed?

MR. WHIPPLE: Objection.

A. Yes.

Q. Where?

A. Well, my understanding that the, that in the situation that we are talking about here, the instructions admonish that that's not to be done and that's what happened.

MR. WHIPPLE: Objection. Move to strike.

A. I also know that's what happened in the other case I investigated, that was not supposed to be the practice and that's what was done.

MR. WHIPPLE: Objection. Move to strike.

Q. And the other case that you investigated, who made the instruction, whose instruction was it to stop the slitting line before inserting the cardboard?

MR. WHIPPLE: Excuse me, Ron. May I have a continuing objection as to the practices of the Indiana lawsuit?

MR. ISROFF: Sure.

A. As I recall, somebody in the employers company testified that they told these men not to do

that, so that was at least their testimony anyhow.

Q. And what is your understanding with respect to the instruction or precaution in this case as to its source?

A. Well, all I know is that it, all I know for sure is that it says so in the manual, not to do that.

Q. But you don't know what the practice or the policy of S.S. Steel was, do you?

A. Well, I know, I believe it's Mr. Brown said that they always stuff cardboard, that they felt there wasn't any other way to do this.

Q. What does that tell you?

MR. WHIPPLE: Objection.

MR. KAMPINSKI: I object. I mean, what does it tell him as to what Mr. Brown was thinking?

Q. I don't understand why that was responsive to my question.

A. You asked me what?

MR. KAMPINSKI: I understand what it was.

A. I said the instruction or precaution I was taking, I guess I was really giving that two

meanings when I answered th
it originates in the manual.
Q. Is the instruction manual from Delta Brands?
A. Yes. But my understanding, from hearing Mr. Brown, was that they didn't follow that and that it wasn't even expected that they would.
Q. It wasn't expected by whom?
A. His employer. That was the way I understood his conversation.
Q. The barrier that you talked about with the interlock.
A. Yes.
Q. Was that available in 1978, 1979?
A. Sure.
Q. And do you know who made them?
A. Anybody could make them. That's facetious, I suppose. Anybody who manufacturers simple devices can make them.
Q. Were they in production?
A. Barrier guards of the type I'm talking about have been in production for all kinds of industrial equipment since the turn of the century.
Q. Do you know of any barrier guards of that kind that were in production or use in connection

with steel slitting lines in 1978, 1979?

A. Do I know specifically?

Q. Yes.

A. I don't know specifically of any.

Q. Okay. If such a barrier guard were to be used and the interlocking gate turned the machine off, what then would be done by the slitter helper after he passed through the gate and approached the recoiler?

MR. WHIPPLE: Objection.

Q. How would it work?

A. Well, you are saying the machine is shutdown, okay. If you are going to open the gate it shuts the machine down.

Actually a preferable approach would be really for the operator to shut the machine down in a prescribed way so that it's done properly rather than to have it shutdown on an emergency mode which would happen if you opened the gate.

So what you are really trying to do is prevent people from just whipping the gate open and going in.

What you are trying to do is to encourage the operator to bring the machine down to a stop or a very slow crawl and then the gate opens.

Now, in order to do that you have to the system has to be controlled to permit that so the operator then enters the area and inserts cardboard in the n leaves and closes the gate behind him and then the machine can be brought back up to speed.

Q. And the steel slitting line, I'm going to refer to the steel slitting line number one as the steel slitting line which was the one involved in this incident, it was the first one purchased by S.S. Steel.

A. I understand.

Q. Did slitting line number one have the capability of being stopped by the operator prior to the insertion of cardboard? Yes?

A. Yes.

Q. Did it have the capability of being operated at a very slow speed at the time of insertion of cardboard?

A. I believe so. I'm not sure of the latter, but I believe so. When I say I'm not sure, I'm not sure that I would agree that it was a slow enough speed you can get it down to until I actually saw the operation

Q. You haven't?

A. I believe it can be.
Q. So the only thing that is missing is this barrier with the interlocked gate?
A. A device to enforce this, yes.
Q. A device to enforce it?
A. Yes.
Q. The capability is there?
A. That's right.
Q. And how would this enforcing barrier operate, with a little switch on the door?
A. Well --

MR. KAMPINSKI: Well, let me object at this time. Are you asking him when you ask him, "This enforcing barrier," when you say this one are you talking about the one that was provided by Delta Brands?

MR. ISROFF: The one he is talking about.

MR. KAMPINSKI: Okay.

A. How would it operate?
Q. Yes.
A. Preferably it would have a switching system that would sense the door being opened and send a signal to the controller that the door was being opened, to be processed in whatever way the

control-er then processes okay

Q. And is it possible to bypass those types of switches and sensing devices?

MR. WHIPPLE: Objection.

MR. KAMPINSKI: Let me just have a continuing objection as to possibilities that are disputed by any facts in this case

Q. Can they be bypassed?

MR. WHIPPLE: Objection

A. Depends. It depends upon the design, of course. You can design interlocks so that they are relatively tamper proof, meaning that requires a substantial intervention to short them out or bypass them

A good example, just for reference, is the way your microwave oven is interlocked. I hallenge anybody in this room to bypass the interlock switch on their microwave oven. It's been very cleverly designed. You have to really move microwaves, you have to tear into them

That's just an example prototype of the way such interlocks can be designed.

You can go even further than simple mechanical interlocks using a lot of the very interesting solid state devices that are

available and really make it hard for the backyard mechanic to be able to do anything with it.

Q. A presence sensing device would work in what fashion?

A. Very similarly except that it would, it would sense when someone was beginning to enter the area where the danger exists and would shut the machine down at that point

So you would put, for example, again this would be the preferable way, I think if you were going to go that approach, would be to put electric eye barriers, that is electric eye patterns in the areas that represent the approach to this and the approach and the zone itself that a person has to be in in order to do this operation.

And as soon as those electric eye paths are broken the machine is then shutdown if it hadn't already been shutdown.

Q. That would be quite effective for someone accidentally getting into that area, wouldn't it?

MR. WHIPPLE: Objection

A. Well, I guess. If you are talking about

somebody wandering in unintentionally, yes, I guess it would be.

Q. If the operator of a steel slitting line established a policy of stopping the slitting line and then telling the slitter helper to approach the recoiler, stuff cardboard, leave the area and then restarted the slitting line, under those circumstances the barrier gate that we have been talking about is nothing more than an insurance policy, is that right, to be sure they can't go in there?

MR. WHIPPLE: Objection.

A. I wouldn't accept that description of it.

Q. No? Why?

A. Well, the process that you have described is a very, has very commonly in other industries caused a lot of problems and happens this way.

You, first of all you shut the slitting line down, you shut the operation down, I have seen this in a numerous other types of operations.

You shut the operation down, somebody goes into a danger area to do a job and invariably sooner or later somebody turns the machine on too soon, okay, or somebody decides that today,

just today they are going to do it without shutting the machine down, and for whatever human reasons people have for doing things like that, maybe they have been told to or maybe they just feel like it.

But that's why we put safety devices on machines, because people do make mistakes and they do things without thinking straight, and that's why we put safety devices on.

So I wouldn't agree that's just an insurance policy.

Q. Have you seen the number one steel slitting line at S.S. Steel in operation?

A. No.

Q. Have you ever seen any steel slitting line in operation?

A. Yes.

Q. Where?

A. In, certainly in the case in Indiana, I watched that slitter in operation. And my recollection is I have been in another factory with a steel slitter, but I can't remember which, and saw it in operation because I was curious at that point.

Q. Would you characterize the slitter helper's job

at S.S. Steel as being dangerous?

MR. WHIPPLE: Objection.

MR. KAMPINSKI: You mean in the way in which they had to conduct?

MR. ISROFF: At S.S. Steel.

MR. WHIPPLE: Objection.

A. Well, given the machine and the way it was, yes, I would consider that a dangerous job.

MR. WHIPPLE: Move to strike.

Q. Do you know how or why Mr. Perry got caught in the recoiler?

A. Do I know?

Q. Yes. Have you been told?

A. I was told that he was stuffing cardboard and got caught. That's about the amount of detail I know.

Q. No more detail than that?

A. I may have been told more but I don't recall.

Q. During the course of your investigation of this matter, did you have occasion to talk to any of the slitter helpers at S.S. Steel?

A. I seem to recall a conversation with Mr. Brown, if that's his name, and I don't know whether he is a slitter helper or foreman or something.

Q. That's the only conversation you remember?

A. I think that's the only one.
Q. That was on the 17th of February?
A. Right.
Q. And did Mr. Brown tell you anything about Mr. Perry in the way Mr. Perry was performing his job on the day of the accident?
A. If he did I don't recall.
Q. Do you have any reason to believe that the operator or helpers, slitter helpers at S.S. Steel did not appreciate the danger of the slitting operation?

MR. KAMPINSKI: I'll object to that question.

MR. WHIPPLE: Joining in.

MR. KAMPINSKI: You are asking him --

MR. ISROFF: Yes.

MR. KAMPINSKI: -- to get inside the heads of the slitter operators?

MR. ISROFF: We have been doing a lot of that.

MR. KAMPINSKI: Have we?

MR. ISROFF: Yes.

A. Do I have any reason to believe that they did not appreciate the danger, is that the

question?

Q. Yes.

MR. KAMPINSKI: Just make sure my objection is on the record for that question for a number of reasons, not the least of which, there is no defense of strict liability as well as there is no defense of noncomplying employer, and, therefore, it's not relevant in this lawsuit under any set of circumstances.

MR. ISROFF: Are those your only claims in this lawsuit?

MR. KAMPINSKI: Well, I may have some others.

In any event, it's also not relevant for the reason he was required to do it by his employer indicating that under those set of circumstances it would not be so.

If you want more reasons keep going.

MR. WHIPPLE: Move to strike assumption of counsel.

MR. ISROFF: That's fine.

MR. KAMPINSKI: Do you remember the question?

A. Yes. That's a tough one, because obviously they do now. They saw somebody get killed. And my

belief is that when people do dangerous things they often find ways consciously or unconsciously to deny the danger of what they are doing, to be unaware of it. So it's really hard for me to say.

I don't know what the lore was in the plant about how dangerous that was, and I don't know what any individual person does with their knowing of how dangerous that it is. Clearly nobody thought that it was benign.

But I doubt that somebody could get into the mouth of that thing and recognize how near to death they were without, and do it.

I think if they really effectively knew how dangerous that was they wouldn't do it

But I don't think it's, I don't think that's something that people are typically awar of or they wouldn't do it, couldn't do it

Q. Are you aware of any prior injuries sustained by any of the employees of S.S. Steel on this on the slitting line?

A. I believe I, well, I'm not sure. I believe I was told that somebody was, had a more minor injury, one or more minor injuries, but nothing to this extent.

Q. Did your investigation and analysis uncover any malfunction in the recoiler at the time of Mr. Perry's accident?
A. Not per se.
Q. You talked a little while ago about other means to eliminate the function of stuffing cardboard while the machine is in operation or actually to eliminate stuffing cardboard, and you mentioned a tensioning stand.

Now, those were available back in 1978, 1979, were they not?
A. That's my understanding.
Q. And do you know what the cost of tensioning stands were at that time?

MR. WHIPPLE: Objection.

A. No.
Q. I'm sorry, what is your answer? I didn't hear.
A. I said no.
Q. Do you know what the cost of creating a pit that would be necessary for a tensioning stand would be?

MR. WHIPPLE: Objection.

A. No.
A. By the way, the particular plant involved has a fairly high headroom, and it's conceivable that

they could get by without needing much of a pit if they put more of the slitter up on a pedestal, platform, do it the other way, or at least partially.

Q. Have you ever seen a steel slitting line in operation that had a barricade of the type that you described earlier?

A. My recollection is that by the time I got to the factory in question, in the case in Indiana, that they had such a barrier in place, but I'm not sure of that.

Q. Have you ever seen a tension stand in operation?

A. No, I don't think so.

Q. I believe you testified earlier that it was your understanding from reading the instruction manual that the manufacturer in this case, Delta Brands, had a caution in there to stop the slitting line before inserting the cardboard, is that right?

A. Well, I'm not sure they say it in just that way. Let's take a look, if you would like me to check.

Q. Go ahead.

A. Well, that's one place that it's mentioned. Well, just this momentary scanning of the

manual, there is no place, at least in that quick scanning, and it's my recollection that's the way it was, there is no place where it says all of that in one place.

What it says is, in one place it says, "Do not attempt for any reason to --" it says, "Do not for any reason attempt to feed paper or other material into the recoiler during the operation. This is a very unsafe practice and many people have been injured doing this."

Q. Isn't that what we have been talking about?

A. You said where it says to stop the machine before doing that. It doesn't say that. It doesn't say to do that. It says, "Don't do this."

Q. It says, "Don't do the opposite"?

A. That's right.

MR. WHIPPLE: Excuse me, doctor. You are reading from what document?

A. 000078, bottom third of the page.

Q. Okay. Indulge me for a moment and assume that the owner of the slitting line were to follow that precautionary statement, and assume for a moment that the employees of the owner of that machine were also to follow that precautionary

statement, and assume for a moment that, therefore, they stop the machine, then approached the recoiler and stuffed cardboard, and then walked away from the machine, and then restarted it, okay?

A. Assuming this is happening on one occasion, many occasions? What are we --

Q. I'm talking about one occasion.

A. One occasion, okay.

Q. Are you with me?

A. Assume that's happening, okay.

Q. Will it work?

A. Will what work?

MR. WHIPPLE: Objection.

Q. Will the placement of the cardboard in the recoiler work? Will it take up the slack that it's designed to take up?

MR. WHIPPLE: Objection.

A. Yes, I believe so, in most cases.

Q. Okay.

MR. WHIPPLE: Move to strike.

Q. Dr. Fox, did the design or manufacture of the steel slitting line that was manufactured by Delta Brands and sold to S.S. Steel violate any regulations in effect in 1978 and 1979?

MR. KAMPINSKI: Well, wait
minute. I'm going to object to the ext
the question assumes that the standards
effect in '78 and '79 are the sole and e
standards that might have been applicabl
time, at either the sale or installation
second machine and or the death of Mr. Pe

MR. ISROFF: Well, that was
to be my next question.

A. What you asked, in fact, was not standards
said, "regulations."

Q. Let me expand it, if it's okay with you, t
include standards, regulations, standards i
effect in 1978 and 1979?

A. I did not specifically address that issue.

Q. Let's take it up to the time of Mr. Perry's
accident in December of 1983. Did the desig
manufacture of slitting line number one viol
any regulations or standards that were in ef
in 1983?

A. I didn't address that.

Q. Did the use of the steel slitting line at the
time of Mr. Perry's accident in December of 19
violate any standards or regulations in effect
at that time?

MR. WHIPPLE: I'm sorry, the date was?

MR. ISROFF: December of 1983.

A. I didn't investigate that particularly. I am under the impression that there was an OSHA citation, but actually I'm not sure of that even, but that's my impression.

MR. WHIPPLE: Move to strike.

Q. Are you aware of any others?

A. I didn't investigate that. I'm not aware of.

Q. Going back sometime ago --

MR. KAMPINSKI: Just so there is really never any confusion, I may ask him to comment upon the applicability of one or more ANSI standards at the time of trial, just so you are not surprised by that at some point. That may be applicable to both of you.

Q. Are you familiar with those ANSI standards?

A. I read them over. And, of course, as you know there is one set in my file.

Q. What ANSI standards do you expect to comment upon at the time of trial?

A. I think you will have to ask Mr. Kampinski because I don't know.

MR. KAMPINSKI: I'll be addressing

those questions to you.

Q. At this time you don't know which ANSI standards you will be addressing at the time of trial, is that correct?

A. That's correct. My opinion isn't based upon those standards. It is my opinion. So I didn't, you know, I read them over and I'm aware of what some of the content issues are, but I have not, like, made a solid reading of the machine against the standards so that I could answer your question knowledgeably.

Q. A lot of your opinion, Dr. Fox, is based on common sense, isn't it?

MR. KAMPINSKI: Are you asking him if he has an opinion as to whether he has common sense?

A. I'm not sure what you mean. It seems like common sense to me, but I have a Ph.D in engineering and I have a PE license in the state, so I don't know.

Q. Okay. Now, when I asked you about the opinions and conclusions you arrived at as a result of your investigation and analysis you also indicated that you concluded that the use of the steel slitting line was dangerous and

inappropriate. Excuse my paraphrasing, but these are the notes that I wrote down at the time.

You also indicated the workers were regularly inserting cardboard at the inrunning nip point.

Now, why in your opinion was the use to which the steel slitting line was being used in December of 1983 dangerous and inappropriate?

A. Because the practice of doing that with the machine running was dangerous and inappropriate.

Q. Okay. And in December of 1983 who could have corrected the dangerous and inappropriate situation?

MR. WHIPPLE: Objection.

A. Many people. Actually my understanding is that Delta Brands could have installed, retrofitting, a barrier guard or other device to prevent that practice, which I'm under the impression they were aware of.

Or the employer could and/or the employer could have instructed-employees not to do that under any circumstances, you know, under penalty of being furloughed.

Q. How much time, Dr. Fox, have you spent in

connection with the analysis you have performed in this case exculsively to date?

MR. KAMPINSKI: You don't want to know the bill yet?

MR. ISROFF: No.

A. About 16, if my adding is correct, it's about 16.7 hours.

Q. And have you billed for your time?

A. Yes, I have.

Q. How much have you billed?

A. A total billing to date, which includes all of that, has been $1,708.

Q. And have you been paid that?

A. I have.

Q. At what rate are you charging your time?

A. Well, up until the 1st of January I was charging $100 per hour.

Q. After the 1st of January?

A. $120 per hour.

Q. Does it matter when the request was made?

MR. KAMPINSKI: I was informed of the change in rates well before the deposition.

MR. ISROFF: I believe my question was asked in a humorous fashion.

Dr. Fox, I don't have any further

questions. And I thank you.

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CROSS-EXAMINATION OF RICHARD L. FOX

BY MR. WHIPPLE:

Q. Dr. Fox, do you have knowledge as to the type of steel S.S. Steel uses on this slitting line?

A. I don't.

Q. Do you have knowledge as to the gauges of steel that S.S. Steel uses on this line?

A. I don't.

Q. Do you have knowledge as to the maximum speed at which this slitting line can operate?

A. No.

Q. Do you have knowledge as to the range of speeds in which it ordinarily operates?

A. No.

Q. Do you have knowledge -- well, you had indicated that you were aware that it had the capacity to operate at a slow speed, but you weren't sure if it was slow enough, am I paraphrasing you accurately?

A. That's correct.

Q. When you were referring to that slow speed, do you have a, do you have knowledge as to what that slow speed is at which that machine

operates?
A. No.
Q. Do you have an opinion as to the speed you had in mind when you used the phrase, "Slow enough"?
A. Not specifically.
Q. You were just referring to slow enough so that it would not be hazardous to the individual who was inserting the cardboard?
A. Right. That would be for me an empirical question. I would want to do some tests and make some observations to see what I felt was, from the safety standpoint, slow enough.
Q. And you have never performed any such tests?
A. I have not.
Q. Do you have any knowledge as to the speed at which the steel slitter was operating at the time Mr. Perry's accident occurred?
A. No.
Q. With respect to the slitting line you observed in Indiana, can you give us a more specific date as to when that observation occurred?
A. Not without looking at my records. It was in the '70's.
Q. Well, I think you said mid '70's?
A. Mid '70's.

Q. What safety devices, if any, do you recall being on that machine that were addressed on the hazard of the inrunning nip point?
A. Well, as I said in the earlier questioning, my recollection, it may be that there was a barrier when I saw the machine, which was not the condition it was in at the time of the accident, but I'm not even sure of that. That recollection wouldn't be a reliable one.
Q. Is it your recollection that at the time of the accident there were no safety devices addressed to the hazards of the inrunning nip point?
A. I'm not absolutely sure of that either, okay, but whatever they were they didn't prevent that from happening.
Q. So your testimony is you simply don't recall?
A. I don't recall specifically, that's right.
Q. Whether that machine had any safety devices directed toward that hazard, is that correct?
A. That's right. The only one that it would have had is some kind of a barrier, and it didn't have any other, okay.

And my recollection is not clear, as I stated, without having reviewed the case, whether it had the barrier or not at the time of

the accident or at the time that I saw it.

Q. Did I understand you to state that you have at least on one other occasion seen another slitting line?

A. Yes. I don't recall where or when.

Q. Do you recall that slitting line having any safety devices directed towards the hazard of the nip point on the recoiler?

A. I don't recall.

Q. You had indicated in response to Mr. Isroff's questions that you were advised of minor injuries that occurred at S.S. Steel prior to this incident.

Do you recall, do you know whether any of those injuries related to the nip point of the recoiler?

A. I don't know. I don't recall.

Q. You made reference to the headroom of this particular slitting line. Do you remember that testimony?

A. I made reference to the headroom in the building.

Q. Right. In reference to the discussion about a tensioner pit?

A. Yes.

Q. When you say headroom, what does that term mean?
A. Well, the building has a very high ceiling, and I was speculating that one could go up a distance with the entire slitting operation in order to keep from having to dig a deep pit.
Q. All right.
A. Obviously I haven't done a study of that, and it's just a speculation.
Q. Okay. Do you have knowledge as to the height off the floor that the steel presently operates on this machine when it's in operation?
A. I'm sure that varies.
Q. And do you have any knowledge as to the range in which that variation falls?
A. Well, I don't, as I sit here, have numbers that I could quote. Obviously you can, it's not going to go any higher than the tangent line drawn between the coiler and the slitter, obviously it's not going to get that high because of the weight of the lines, so that's the upper limit. It couldn't go any higher than that. And obviously it's not going to go any lower than the floor.
Q. You have not taken measurements to date, though, have you?

A. No.
Q. The measurement of that, the height of that steel off the floor obviously, then, did not, was not used by you in reaching your opinion in this case, was it?
A. Not explicitly, no.
Q. Did it relate to your opinion in any respect?
A. Not that I know of.
Q. All right. You didn't take the measurement?
A. I didn't take the measurements.
Q. It wasn't important in reaching your opinion, correct?
A. That's right.
Q. You were referring to, you made reference to the ANSI standard that you have in your file.

Is there a portion of that standard that, in your opinion, pertains to this particular slitting line?

A. Well, what I answered earlier was that I have not made a specific study of this standard against this slitting line or this operation.

Obviously I have read it and, read the standard over and there are passages which relate to the material we are talking about, you know, I want to make it clear. And there are

passages which talk about this specific problem.
Q. Are there passages that you can identify for us right now?
A. It would require me to go through and carefully read the document in our presence here, if that's what you want me to do.
Q. You have not digested them?
A. That's right. I don't have the paragraph numbers and page numbers, and I don't have the organization of the standard completely in mind.
Q. Who promulgates the ANSI standards?
A. Well, ANSI standards are voluntary standards put together by a group of people who, or I should say that are put together by a committee that's formed essentially self-formed, and they consist of generally interested parties and the particular material at hand, okay.

Those interested parties get themselves together and apply to the American National Standards Committee, ANSI, or institute, American National Standards Institute, and ask if, in fact, ANSI will authorize the formation of an ANSI standard by this committee. ANSI may or may not accept the committee as representative of the interests involved.

Then the standard is put together after a lot of meetings and so on by these committee members and their representatives.

Q. With respect to the ANSI standard you identified as B11.14?

A. Yes.

Q. Do you know who the interested parties were who promulgated that standard?

A. Well, it may say in the front of the standard, if you would like me to go look.

Q. Can you tell me generically what types of entities these were, in other words, were they manufacturers?

A. I can't tell you generically without looking specifically. But on past experience they would be typically manufacturers, insurers, there may be some representation of labor, there may be some representation from the government, there may be some representation even from the general public in some way. There may be representation by employers, okay.

Offhand, I think I have covered all the categories. But the composition is essentially self-determined, and the only thing that ANSI does is it requests some kind of, some kind of

documentation that these people represent the interests involved.

Q. As to this particular standard; do you have knowledge as to whether employers were represented?

A. It would be an easy matter for us to look at the list of people involved.

Q. You would refer to the standard itself to make that determination?

A. That's the only way you can do it. It tells you everybody who was officially part of the committee. It doesn't tell you who the unofficial observers were.

Q. Dr. Fox, do you have any notes, exhibits, charts, photographs, et cetera that you anticipate using in your testimony at trial to assist in giving your testimony?

A. I have none. You have seen those photographs. I don't know whether anything is going to be done with them or not. I doubt it.

Mr. Kampinski is trying the case, and I assume he has things that he will let me look at between trial or show me during trial, and I don't know what those are specifically.

Q. My question is directed only at your personal

knowledge.

A. No, I don't have any specific knowledge. I don't have any specific notes or anything of m own.

Q. Other than the photographs?

A. Other than what you have seen.

MR. KAMPINSKI: Just so there is confusion, Doug, I believe the agreement, wh was allowed with Dr. Fox by Liberty was they would get a copy of the photographs, and I they did from Dee Photo, and those I antici using. And I will be using documents that been presented by the defendants I anticip using, also.

MR. WHIPPLE: I'm more refer materials that have been generated by Dr. himself.

MR. KAMPINSKI: I'm sorry.

Q. So there is nothing other than the photo is that correct?

A. That's correct.

Q. I see, Dr. Fox, from your resume that as being inactive in a number of profe societies. Can you tell us what that hips in all of tho

societies, and the dues picture was getting me down, so I dropped my membership, I let my memberships lapse.

Most of those organizations would reinstate me if I went back and paid my dues.

Q. So that basically indicates those were societies in which you were formerly a member, but are no longer a member?

A. Right.

Q. With reference to the numerous articles you list in your resume, can you tell us which of those relate to the issue of safety factors on a slitting line?

A. None of them do, none of the articles that I published.

Q. With respect to the activities you list on pages four and five, can you tell us which of those activities dealt expressly with the safety or hazards relating to a slitting line? I'm not saying exculsively, but if they dealt with that amongst others would you identify those for me, please?

A. Well, let's see. There were a number of workshops that I went to, have gone to over the years relating to products liability, road

safety design and so on, manufacturer, product safety, and I don't know specifically which of those I might have, we might have talked about industrial safety that relates to this problem or not.

I'm sure that it came up in some way. I have had a lot of education and courses in my time.

Q. And you were referring to industrial safety generally rather than the specific safety problems relating to a slitting line, is that correct?

A. Yes, I would say that's correct.

Q. Do you recall any of those activities where the safety problems of a slitting line per se were discussed?

A. I don't recall any.

Q. You indicated in response to Mr. Isroff's question, and I don't mean to misparaphrase you, that somewhere in the vicinity of 40 percent of the time you are call by defendants and 60 percent of the time you are called by plaintiffs to give expert testimony?

A. Yes, or render assistance in some way in investigating or preparing the case.

Q. In terms of actually testifying at trial, would those percentages be the same or would those percentages be a little different?
A. I wouldn't have any way of estimating that. As you know, a vast majority of cases that are prepared are settled.
Q. I'm simply asking you to recall back to the times you actually testified at trial and tell us what percentages of those times you have been for the plaintiffs and what percentage for the defendants?
A. I can't recall. I just wouldn't have that available.
Q. Dr. Fox, do you have knowledge as to why it's important for the coil to be tightened by means of cardboard or some other alternative?
A. Well, there must be two ends to that why, one is why do they need to be tightened and why weren't they just automatically tight enough. I don't know which why you are asking me.
Q. Why they need to be tightened. Why is that an important function, as a matter of fact to use your phrase, I believe you said universally necessary to differentially tighten the coil?
A. Yes.

Q. Why is it universally necessary?
A. If the coil isn't tight enough when you take it off the mandrel it's going to fall apart, basically.

And, secondly, when it goes into its application it's going to cause, very likely going to cause problems in the next application where the strip is being fed into some other machine.

Q. Is it not true that if the coil is not sufficiently tightened, as you said it may fall apart, that that could pose a serious safety hazard to anyone in the vicinity?
A It certainly could. It depends on the size of the coil. But, yes, it certainly could
Q. You had made reference to some drawings that you reviewed in reaching your opinion. Can you tell us which drawings those were or what they were drawings of?
A. They were presented to me as virtually all of the drawings representing the slitting line components, including the recoiler and the slitter and the peeler and so on.

I gather that I did not have one hundred percent of the detail drawings.

I had a lot of assembly drawings which were applicable for my purposes. Those drawings included hydraulic schematics, wiring dynamics, electrical, well, layouts, plant layouts, components, various elements, including a picture of a barrier guard.

Q. When you say a picture of a barrier guard you mean a drawing?

A. A mechanical drawing of a barrier guard. It was an assembly drawing which did not have called out on it; or at least I did not have access to the detail drawings, so I don't have a complete knowledge of what that represented.

Q. Did you observe any such barrier guard when you were at the plant?

A. I only looked at the one slitter line. As a matter of fact, I think we were prevented from looking at the other one, any other line.

MR. WHIPPLE: Move to strike.

A. So that was all that I recall seeing is that one.

Q. My question is did you observe any such barrier while you were at the plant?

A. No.

MR. KAMPINSKI: Let me move to add

the fact that we were prevented from seeing the other slitting line.

MR. WHIPPLE: Move to strike counsel's comments.

Q. Do you have any knowledge as to the source of the schematic drawing of the barrier guard, from whom Mr. Kampinski received it?

A. Well, it was given to me purporting to be something that was supplied by Delta Brands in response to a request for production. I know nothing more than that about it. It also had Delta Brands logo or at least their title block.

Q. All right. Do you have any knowledge as to whether or not that particular schematic drawing accompanied the slitting line when it was delivered to S.S. Steel?

A. The drawing?

Q. Yes.

A. No.

Q. Did you review any statements, transcripts of statements of individuals in preparing your opinion in this case?

A. Yes.

Q. Did you review, do you recall reviewing a statement of Marvin Brown?

A. No, I did not. I don't think, it has just recently been taken, as I recall.
Q. Do you remember him giving a statement on February 17th that was transcribed by a court reporter?
A. Yes. That's why we sat around a lot.
Q. So you were present when he gave that statement?
A. I don't know whether I was in the room or not.
MR. KAMPINSKI: You were in and out.
A. I don't recall the details.
Q. Do you remember reviewing the transcript of that statement?
A. I don't specifically remember reviewing it.
Q. So you may have or may not have?
A. Well, I very likely did, but I can't remember it.
Q. Do you remember reviewing a transcription of a statement of Kelvin Davis?
A. These are --
Q. Who, if I may add, was operating the line at the time of the accident?
A. Yes, I believe I did. I don't remember the details of any of these. It was some time ago that I reviewed them.

Q. Do you remember reviewing a statement of Ed Tanner?
A. You know, I don't remember specifically.
Q. You don't remember one way or the other?
A. I don't remember one way or the other.
Q. Do you remember reviewing the statement of Mr. Lloyd Pease, P E A S E?
A. I don't remember one way or the other.
Q. Do you remember reviewing statements of more than one person who was working at the plant?
A. I don't remember one way or the other.
Q. You made reference to impractical safety devices. Do you remember when you were discussing that in response to Mr. Isroff's question, this was about the time you started talking about the matting and the electric eye?
A. Okay. What did I say? I don't remember.
Q. I hesitate to paraphrase. I was going to inquire further as to what you were referring to when you said that safety devices, that they may be impracticable?
A. I guess what I was referring to there, I said, well, we could put, you could put pressure sensitive matting on the floor, for example, the kind they use to open doors and stuff in public

buildings.

Q. Supermarkets?

A. Supermarkets. But I'm not saying that would be practical in this situation for a number of reasons, and so that's the one thing that occurs to me, as I reflect on what I meant when I said impractical.

Q. So I get a better understanding of what you meant by the concept of impractical, what would be impractical about a matting for example?

A. Obviously you have an industrial situation, you want to be sure that whatever you are going to provide isn't going to get torn up and deteriorate rapidly under heavy industrial use.

I'm sure you could go, you could take that concept and harden it, that is make it more resistant to damage and wear, but whether that's a practical approach really depends on what kind of developements you have to do in order to make that work.

Q. If you had a safety device that provided an element of safety but prohibited the function of the machine, would that be an example of impactical?

A. In other words, are you suggesting that if there

were such a thing as a safety device that kept you from getting hurt but didn't allow the machine to function, would that be impractical. That kind of answers itself. Of course it's impractical.

Q. You indicated that you didn't really have, well, I'm misstating, that you couldn't really say how deep a tensioner stand pit should be, it would vary from machine to machine?

A. Well, it would depend upon on the application, it would depend upon the kind of, to be repeating myself, it would depend upon the mix of steel and the tendency of the steel to get, to have differential thicknesses and differential lengths in the strips as they cut.

Q. Do you have an opinion as to the range of depth of a pit or of that area beneath the steel that would be involved here? Can you give us a range?

A. No.

Q. Have you ever observed one of these pits in any of the slitting lines you have ever inspected?

A. No.

Q. Do you have any knowledge as to whether there are any hazards associated with the use of a

tensioner stand or a pit?

A. Yes, there are some dangers, hazards.

Q. What would those hazards be?

A. Well, the obvious one is people can fall into the pit, so you have to guard the pit, and that's not trivial because you have to get the strands across the pit.

And the tensioner itself has a running danger. It's not necessarily as severe because it isn't a nip, it is more of a shear point, but it's still a dangerous point of operation. People have to be prevented from getting to that area as well. And there may be more.

There are always, you know, when you have rotating machinery you have the potential for injury there. And there may be more of which I'm not really aware of.

Q. When you referred to the inrunning point, is that the inrunning point between the steel slits in the recoiler?

A. No. Well, that would still exist, although it would be somewhat ocluded by having the presence of the tensioner there. But there is also the slits, the strips of steel still go into the tensioner, so there is some potential danger

there.

Q. All right.

A. And you still have, of course, the edges of the steel which are very sharp and dangerous.

Q. Now, you have that safety concern, that is the edges of the steel, in any slitting line, don't you?

A. Yes.

Q. And is that a danger that the electric eye is designed to guard against?

A. It can be.

Q. That's a different type of hazard from the inrunning nip point of the recoiler, isn't it?

A. Well, it is different for two reasons. One is, of course, it's a cutting hazard, and it's a very severe cutting hazard, it can be lethal. And the other is a crushing hazard, so it's different in that respect.

The other difference is that without means to tension, to differentially tension the coils, the inrunning nip of the recoiler is an invitation, in a sense, to people exposing themselves to the hazard, because the cardboard has to be put in or something else has to be done.

So it's a different kind of a hazard than the edges of, the sharp edges of the steel. Because those are a kind of hazard where if somebody comes in contact it's through inadvertence, it's through their getting up against it when they don't have to for any reason.

Q. There is no functional need to come into the vicinity of the edge of the steel?

A. Well, you know, that's in general that's the case, yes, although you do have, you have your scrap coming across the floor, and if the scrap line breaks then you have to get it restarted, rethreaded, so it's possible that there is some functional need to get near the edges of the steel again.

But it's a less of a regular, it seems to me it would seem to be less of a regular occurrence, but it's a different kind of hazard.

Q. Now, Mr. Isroff asked you about the safety devices that were generally available in the years 1978 and 1979. My question to you is whether between the dates '78 and '79 and the date of December of 1983, were there any safety

devices that became available that were not available prior to that time?

MR. KAMPINSKI: Excuse me. Specifically as it related to the S.S. Steel situation?

Q. Specifically as it relates to an inrunning nip point of a recoiler in general?

MR. KAMPINSKI: Do you understand his question specifically in general?

A. I wasn't even getting hung up on that. I'm not aware of any changes that have been made between those two dates.

Q. Okay.

MR. ISROFF: What two dates?

MR. WHIPPLE: '78 to '79 to December of '83.

Q. Have you ever operated a slitting line yourself?

A. No.

Q. Have you ever designed a slitting line?

A. No.

Q. Have you ever repaired a slitting line?

A. No.

Q. Have you ever installed safety devices on a slitting line?

A. No.

Q. Or designed safety devices to be installed on a slitting line?
A. No.
Q. Do you have any knowledge as to whether or not S.S. Steel was aware of ANSI standard B11.14 prior to Mr. Perry's injuries and death?
A. Do I have any knowledge of whether they were aware of it? No, I don't.

MR. WHIPPLE: Thank you. I have no further questions.

MR. ISROFF: Just a couple, very brief.

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FURTHER CROSS-EXAMINATION OF RICHARD L. FOX

BY MR. ISROFF:

Q. Dr. Fox, prior to this case I believe your testimony has been that you were called upon to testify in court and by deposition, is that correct?
A. That's correct.
Q. Approximately how many times have you been called upon to testify in a deposition?
A. The only way I can answer that question is to estimate, because I don't keep any kind of count.

Q. I would appreciate your

A. Let me give you the basis of my estimate so you will understand how tenuous it is.

If I kind of reflect on what I have done over the last 25 years, it seems to me that maybe on the average of once every couple of months somebody has taken a discovery deposition like this.

So what does that come to, 25 years? I mean, I am just going to impress on you that that's the only thing I can do.

Q. Six a year for 25 years?

A. Yes.

Q. So what does that come to, 150?

A. 150, okay.

Q. Approximately how many times have you testified in court?

A. Again, the same basis of the way I can try to estimate that. I don't have any records that would give me that.

I'd say once or twice a year, and in the early years not that frequently, so, you know, maybe I have testified 20 times, 25 times, something like that, but that's just really loose.

Q. Bet it is not the first time you have ever be asked that?
A. It's not the first time I have been asked.
Q. In connection with your biographical data and the professional societies that you have listed, are some of these societies societies for which you simply have to pay dues to become a member and other societies those societies for which you have to take some type of an exam or have some minimum qualifications?
A. They were both, okay. I could go through them if you wish. They're not that many.
Q. Why don't you then.
A. The American Society for Engineering Education was a society that you could join. Usually you joined if you were a professor of engineering.

Sigma Xi is a society which you are inducted into. It's an honorary society for people who have done outstanding scientific work or made contributions.

The American Society of Mechanical Engineers requires that you be a mechanical engineer and have had a certain number of years, I think it's six, of responsible engineering practice and that you be qualified to call

yourself a mechanical engineer, which does not yet mean that you have to be licensed, but you are required to have a Bachelor's degree in engineering, mechanical engineering.

The American Society of Safety Engineers, as I recall, had some requirements that I was, I had a member grade membership. There were other grades, associate grades and other member grades you had to have a certain number of years, I think it was six, of responsible engineering safety practice

The Ohio Society of Professional Engineers, you have to be a professional engineer which in turn means you have to have a Bachelor degree in engineering, you have to have taken the engineering training exam and the professional licenser exam and an oral exam, and that you have had I think it's six years of responsible engineering practice in the State of Ohio or applicable practice.

The American Society, the American Institute of Aeronautics and Astronautics you merely joined, as I recall, if you were interested in aeronautics and astronautics.

Q. The industrial setting in which S.S. Steel

Processing was, would be classified as, the company would have to have employees with mechanical and electrical backgrounds, wouldn't it?

A. Well, I assume. I'm not sure what you mean by mechanical and electrical, but I assume they have people who can maintain their equipment including the slitting line, and that might, that certainly would involve them being mechanics and having some mechanical knowledge.

Q. Probably also be handymen?

A. Handy, yes. And probably some people who specialize in electrical circuitry and so on.

Q. And in that type of a setting, we're not talking about a microwave in the home, I'm talking about the setting of which S.S. Steel would be situated it wouldn't be very difficult to make an interlock for a safety gate that you have been discussing tamper proof?

MR. WHIPPLE: Objection.

A. I think that I'd go back to what I was trying to say earlier, and that is it really depends on the level of intent you are trying to protect against.

If you make a safety device that -- well,

another analogy you can put a lock on your front door, okay, on your home that will keep out a certain class of burgulars, but it won't keep out some heavy duty folks, okay.

You can go to the next level of protection and reinforce doors and windows and so forth and so on. You can never produce a fortress that will keep everybody out, okay.

The same is true with this kind of a set up, you can provide an interlocking system that requires a very heavy level of intent and involvement to override, okay. You can provide one that requires the machine to be rewired, partially rewired and so on.

It's not going to happen without essentially expressed permission of the, whoever controls the company's business because it's going to cost something to do.

MR. WHIPPLE: Move to strike.

Q. When you say the company, you mean the owner of the machine?

A. The owner of the machine. I'm trying to answer the question. You can't make anything tamper proof, it's true.

Q. If there is an intent, an expressed intent to

bypass such a barricade and an interlock it can be bypassed?

MR. WHIPPLE: Objection.

A. If the intent is stronger than your intent to keep it from being bypassed, yes.

Q. Okay.

MR. WHIPPLE: Move to strike.

MR. ISROFF: Thank you very much. What are we going to do about signature?

MR. KAMPINSKI: I always like the deponent to read what they have said.

MR. ISROFF: Since we don't have seven days and will not have seven days, can we have some type of understanding as to the use of this deposition in light of the upcoming trial?

MR. KAMPINSKI: It's my understanding you can use a deposition signed or not for impeachment purposes. The only one that might be effective -- off the record.

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(Thereupon, a discussion was had off the record.)

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MR. KAMPINSKI: Back on the record because it's really a contradictory response

that I have provided.

I and Dr. Fox really have no objection to a waiver of signature with the understanding that if there are any obvious mistakes, which hopefully there won't be, but if there is a not left out or if a yes is a no, that he has the right to change it as soon as he gets it.

MR. ISROFF: In a timely fashion, sure.

It is okay with you?

MR. WHIPPLE: Yes, that's fine.

(Signature waived.)

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CERTIFICATE

The State of Ohio,) SS:
County of Cuyahoga.)

I, Dawn M. Hagestrom, a Notary Public within and for the State of Ohio, authorized to administer oaths and to take and certify depositions, do hereby certify that the above-named RICHARD L. FOX was by me, before the giving of his deposition, first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the deposition as above-set forth was reduced to writing by me by means of stenotypy, and was later transcribed into typewriting under my direction; that this is a true record of the testimony given by the witness, and the reading and signing of the deposition was expressly waived by the witness and by stipulation of counsel; that said deposition was taken at the aforementioned time, date and place, pursuant to notice or stipulation of counsel; and that I am not a relative or employee or attorney of any of the parties, or a relative or employee of such attorney, or financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office, at Cleveland, Ohio, this _____ day of _____ A.D. 19 ____.

Dawn M. Hagestrom, Notary Public, State of Ohio
650 Engineers Building, Cleveland, Ohio 44114
My commission expires October 20, 1987

Biographical Data for

Richard L. Fox

~~Pers~~onal:

Phones: (216) 678-5527 **Residence**
(216) 229-2414 Messages

Birth Date: March 28, 1935
U.S. Citizen
Height: 5'7"
Weight: 150 lbs.

Education:

6.S.M.E.	University of Pittsburgh	1957
M.S.M.E.	University of Pittsburgh	1961
Ph.D.	Case Institute of Technology	3965

Registration

Registered Professional Engineer, State of Ohio, E-03-7927

Employment

Engineer, Melpar, Inc.	1957-60
Ford Foundation Fellow, Case Institute of Technology	1961-62
Graduate Assistant	1962-65
Faculty, Case Institute	1965-81
Consultant	1965-Present

Consulting Clients:

Allied Steel and Tractor Products, Midland-Ross Company, National Castings Company, Lear-Seigler, Standard Oil of Ohio, TRW, Babcock and Wilcox, Mercury Clutch, Cyclo Index Corp., Cleveland Machine Controls, and a number of other companies, private inventors and legal firms.

Research Interests and Specialties:

Dynamics, Vibrations, Mechanical Design, Computer Utilization in Engineering and Optimization Methods in Structural and Mechanical Design, Forensics and Engineering, Product Safety.

Professional Societies:

American Society for Eng ati
Sigma Xi (Honorary Science Society) (Active)
American Society of Mechanical Engineers (ASME) (Active)
American Society of Safety Engineers (ASSE) (Inactive)
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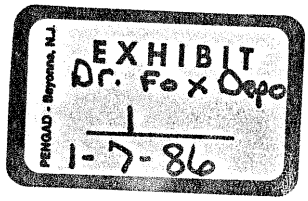

Articles:

1. "Synthesis of a Simple Shock Isolator", (with L.A. Schmit) NASA CR 55, June 1964.

2. "An Integrated Approach to Structural Synthesis and Analysis", (with L.A. Schmit) AIAA Journal, Vol. 6, No. 6, June 1965, pp. 1104-1112.

3. "Constraint Surface Normals for Structural Synthesis Techniques", AIAA Journal, Vol. 3, No. 8, August 1965, pp. 1517-1518.

4. "The Generation of Interelement-Compatible Stiffness and Mass Matrices by the Use of Interpolation Formulas", (with F. Bogner and L.A. Schmit) presented at the Conference on Matrix Methods in Structural Analysis, WPAFB, Ohio, October 25-28, 1965, available

5. "Advances in the Integrated Approach to Structural Synthesis", (with L.A. Schmit), J. of Spacecraft and Rockets, Vol. 3, No. 6,

6. "Optimum Design of Curve-Generating Linkages with Inequality Constraints", (with K.D. Willmert) presented at the 2nd ASME Conference on Mechanisms, Lafayette, Indiana, October 10-12, 1966, and in the Journal of Engineering for Industry, Febraury, 1967, pp. 144-152.

7. "A Cylindrical Shell Discrete Element", (with L.A. Schrnit) and F. Bogner) AIAA Journal, Vol. 5, No. 4, April 1967, pp. 745-750.

8. "Finite Deflection Structural Analysis Using Plate and Cylindrical Shell Discrete Elements", (with F. Bogner and L.A. Schmit) presented at the AISS/ASME 8th Structures, Structural Dynamics, and Materials Conference, on March 29-31, 1967, and in the AIAA Journal, Vol. 6, No. 5, May 1968, pp. 781-791.

9. "Developments in Structural Analysis by Direct Energy Minimization", (with E.L. Stanton) AIAA Journal, Vol. 6, No. 6, June 1968, p. 1036.

10. "Rates of Change of Eigenvalues and Eigenvectors", (with M.P. Kapoor) AIAA Journal, Vol. 6, No. 12, December 1968, pp. 2426-2429

11. "A Minimization Method for the Solution of the Eigenproblem Arising in Structural Dynamics" (with M.P. Kapoor) presented at the Air Force Second Conference on Matrix Methods in Structural Mechanics, WPAFB, Ohio, 1968, available as AFFDL-TR-86-150.

12. "Structural Optimization in the Dynamics Response Regime: A Computational Approach", (with M.P. Kapoor) presented at the AIAA Structural Dynamics and Aeroelasticity Specialist Conference, New Orleans, La., April 16-17, 1969, and in the AIAA Journal, Vol. 8, No. 10, October 1970, pp. 1798-1804.

13. "An Approximate Analysis Technique for Design Calculations", (with H. Miura) AIAA Journal, January 1971, pp. 177-179.

14. "A Mathematical Programming Approach to the Design of a Transmission", (with F. Cinadr) presented at the Design Engineering Conference (ASME), April, 1971, Americana Hotel, New York, New York.

15. "Mathematical Programming Applications in Structural Design", (with F. Moses and G. Goble) Symposium on Computer Aided Engineering, University of Waterloo, May 1971.

16. "Optimum Design of a Linear Multi-Degree-of-Freedom Shock Isolation System", (with K.D. Willmert) presented at the Vibrations and International Design Automation Conference, ASME, Toronto, Canada, September 8-10, 1971, to appear in Journal of Engineering for Industry.

17. "Automated Design Optimization of Supersonic Airplane Wing Structures Under Dynamic Constraints", (with H. Miura and S.S. Rao) presented at the AIAA/ASME/SAE 13th Structures, Structural Dynamics, and Materials Conference, San Antonio, Texas, April 10-12, 1972.

18. "Optimization Technology as Applied to Mechanism Design", (with K. C. Gupta), Journal of Engineering for Industry, Trans. ASME, May 1973, Paper No. 72-Mech-A.

19. "Automated Kinematic Analysis of Planar Mechanisms", (with K.C. Gupta and A. Banerjee), presented at the Mechanisms Conference and International Gearing Symposium, San Francisco, California, October 8-12, 1972, Paper No. 72-Mech-90

20. "An Efficient One-Dimensional Search Procedure for Barrier Functions, (with L. Lasdon and M. Ratner), Mathematical Programming, 1973.

21. "Multiple Approaches to Design Education", (with J.D. Schoeffler, D. Rothenberg, and A.B. Kuper) Engineering Education, V. 64, No. 5, Feb. 1974, pp. 332 et seq.

22. "Computers in Optimization and Design", Presented at the ASME Design Engineering Conference, Chicago, Ill., April 1-4, 1974, 74-DE-31.

23. "Spring Design as a Mathematical Program", SMSMD Dept. Report No. 55, January 1974, Presented at the ASME Design Engineering Conference, Chicago, Ill., April 1-4, 1974.

24. "An Efficient One-Dimensional Search Procedure" (with L. Lasdon, A. Tamir, and M. Ratner), Management Science, Vol. 22, No. 1, Sept., 1975, p. 42.

Book:

"Optimization Methods for Engineering Design", Addison-Wesley Publishing Co., Reading, Mass., February 1971.

Book Contributions:

1. Chapter entitled "Sequence of Unconstrained Minimizations", for AGARD Manual Current Mathematical Tools, published by NATO, 1970.

2. Chapter entitled "Mathematical Methods in Optimization" in An Introduction to Optimization, Solid Mechanics Division, University of Waterloo, Waterloo, Canada, 1969.

3. Chapter entitled "Structural Optimization and Design" in "Optimization and Design" Avriel, Rijckaert and Wilde eds. Prentice-Hall, Inc., N.J., 1973.

Patent:

Vibratory Compactor (with 3. Braff), 3427939, issued February 18, 1969.

Activities:

Summer 1967: Participant in ONR Symposium on Numerical Methods, Fort Collins, Colorado.

January 1970: Instructor in an Intensive Course on the Use of Computers in Structural Analysis and Design, IIT/Kanpur, India.

April 7970: Instructor in NASA/AIAA short course on Structural Optimization, Denver, Colorado (This course has been recorded and is available, with text materials, through AIAA).

Summer 1971: Instructor in a NATO summer school on the Impact of Optimization on Technological Design, Louvain, Belgium.

May 1972: Attended an Engineering Institute on "Product Liability: Design and Product Safety," University of Wisconsin, Madison, Wisconsin.

1971, '72, '73: A co-principal investigator on a grant from the Sloan Foundation for the improvement of design education for complex systems.

1972, '73: Co-principal investigator on a grant from ONR on Nonlinear Optimization Methods.

1973 to present: Editorial Board Member of the Journal "Engineering Optimization" published by Gordon & Breach

June 1974: Attended an Institute on "Manufacturing for Product Safety, University of Wisconsin, Milwaukee, Wisconsin.

1974 to 1977: Editor for Computer-Aided Design and Optimization of the Journal of Mechanism and Machine Theory.

Spring 1975: Product Safety Course development funded by Complex Systems Institute.

April 1975: Organized and Chaired Session on Mathematical Programming and Optimization at ORSA/TIMS Meeting in Chicago.

1975 to 1977: Participation in ANSI A14 Ladder Standards Jesting Task Force at the request of the Consumer Product Safety Commission.

December 1975: Invited to address Eastman Kodak Staff on Product Safety.

January 1976: invited to address Cleveland Academy of Trial Lawyers on the Use of a Technical Expert.

April 1976: Participation with Ohio Academy of Trial Lawyers in a trial demonstration at their annual convention.

April 1976: Elected to board of Directors of Cleveland Society of Professional Engineers.

April 7976: Awarded contract to assist the Consumer Product Safety Commission in the development of Ladder Safety Standards.

July 1977 to July 1978: Taught special pre-engineering course for , ac! junior high school students.

September 1977: Chaired Session on Optimization at ASME Design Engineering meeting.

1978-79 Academic Year: Fulbright Lecturer at the University of Zambia, Africa. Teaching engineering, assisting in rural development work and appropriate technology development.

August 1980. Invited by Beijing Institute of Technology, Beijing (Peking), China, to lecture on Optimization Methods in Engineering Design.

Courses Taught:

Graduate

Advanced Dynamics (Goldstein or Meirovitch)*
Advanced Vibrations (Meirovitch or Hurty & Rubenstein & Notes)
Engineering Analysis (Crandall & Notes)
Optimization Methods (Fox)

Undergraduate

Computer Methods in Design (Fox and Notes)
Kinematics (Mabie & Ocvirk)
Solid Mechanics (Higdon, Olson, Stiles & Weese)
Relation of Materials to Design (Martin & Notes)
Mechanics I and II (Beer & Johnston)
Engineering Vibrations (Thompson)
Experimental Mechanics (Misc. sources)
Product Liability and Safety (Misc. sources)

Graduate Students and Thesis Topics

K. Willmert, MS '69, Linkage Optimication
L. Moore, MS '68, Linkage Optimization
M. Schrader, MS '68, Truss Optimization
M. Kapoor, Ph.D. '69, Optimum Structural Design, Dynamic Loading
K. Willmert, Ph.D. '70, Shock Isolator Optimization
F. Cinadr, MS '70, Transmission Optimization
W. Kosc, MS '70, Computer Aided Machine Design
K. Gupta, MS '71, Kinematic Analysis
S. Rao, Ph.D. '71, Optimization of Supersonic Wings
H. Miura, Ph.D. '71, Optimization of Supersonic Wings
A. Banerjee, Ph.D. '73, Automated Design of Cam Systems
H. Manglik, MS '74, Computer Aided Design of Springs
W. Smith, MS '77, Gear Pump Design Optimization

*Books typically used