UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MISSOURI

EVELYN LEWY and JACK LEWY,	)	No. 83-3172-CV-S-2
Plaintiffs,	)	
vs.	)	Springfield, Missouri June 18, 1986
REMINGTON ARMS CO., INC. K-MART CORPORATION,	)	Volume 12
Defendants.	)	

TRANSCRIPT OF TRIAL
BEFORE THE HONORABLE WILLIAM R. COLLINSON, and a jury

Transcript Ordered By: Jack Headley

APPEARANCES:

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"Q. And is it your understanding that the general hunting public is aware of an advised of the principle that you shouldn't rely on your safety?

"A. That's another safety rule. Use your gun as if there's no safety on it."

MR. SHAW: Mr. Miller.

"Q. Do you agree with me that even the most careful gun handler who has been around guns, like yourself, for 40 or more years and knows how they operate and knows how dangerous they are -- do you agree that even they are susceptible to making a mistake and pointing the gun in a direction during the unloading process when they shouldn't point it in that direction?

"A. Anything is possible.

"Q. That could be something that Remington might expect when they produced the gun?

"A. No, I don't believe Remington suspected that that could happen. That would happen rather intentionally."

MR. PFANLFY: That's the end.

MR. SHAW: That's it.

THE COURT: Who do we have next?

MR. SHAW: Your Honor, defendants call to the stand John Linde.

JOHN PAUL LINDE, DEFENDANT'S WITNESS, SWORN

DIRECT EXAMINATION

SEE 2141

BY MR. SHAW:

Q. Could you state your name please?

A. Yes, I can, John Paul Linde.

Q. And what is your current address, Mr. Linde?

A. I live at 4806 Pennington Court, Wilmington, Delaware.

Q. And what is your educational background?

A. I have a bachelor's in mechanical engineering from the University of Wyoming.

Q. And could you tell us when you graduated?

A. I graduated in 1965.

Q. And by whom were you first employed?

A. I was employed by Remington Arms Company right out of college, in fact I interviewed at DuPont and my interview lasted for about 11 minutes and of all the opportunities I said I wanted to go to work for Remington.

Q. All right. And you started work for Remington then in 1966?

A. '65.

Q. Okay. And what was your first position with Remington.

A. I was an enginnering assistant and I worked in the test and measurements lab.

Q. And what were the kinds of tasks that you performed there?

A. I did strain gauge work where you measure the stresses on steel, high speed movies, worked on dry cycle testing, learned about endurance testing, learned about accuracy testing and

SEE 2142

it's an area where in Remington they usually start the new engineers so that they can learn all about the testing and the instrumentation of firearms.

Q. And what was your next position then with Remington?

A. Then I moved into being a design engineer and I was assigned small design jobs. I worked under more experienced engineers. I worked on such things as I designed a dry cycle device for a model 788 that would, you know, using relays and switches would open the bolt, throw the bolt all the way to the back, close the bolt, cock it and fire the rifle and so you could take a 788 and you could set it up and you could just let it run hour after hour to put many many cycles on it.

Q. And this was when that you were a research engineer?

A. Well, I was a design engineer and then I went from a design engineer to a research engineer.

Q. Okay. Are we up to research engineer now?

A. I guess you are, yes.

Q. Okay. And when was that?

A. Well, that would be like '68.

Q. And what kind of tasks did you perform as a research engineeer?

A. Well, as a research engineer you're given more responsibility and there I started working on feasibility studies. At that time I was working on over and under shotguns. We were looking at making an over and under shotgun so one of my tasks

was to buy all the leading competitive over and under shotguns, compare these shotguns from a design-manufacturing processability feature standpoint to the over and under shotgun that we had made like 30 years before that.

Q. All right. Did you move on to another position then within Remington?

A. Yes.

Q. And what was that?

A. I went to senior research engineer and this is again, as they give you more responsibility, as you gain the knowledge and the understanding to make decisions.

Q. What were the kinds of tasks you performed as a senior resarch engineer?

A. At this time I had a small group that reported to me and I was the primary designer on the Remington Model 3200 over and under shotgun and from the feasibility study we went from there and started designing a shotgun and the 3200 over and under was a completely new design, that is, there were no parts on there that were interchangable with any other gun that we had manufactured. So everything on that shotgun from the butt plate screws to the front sight was new.

Q. Do you hold any patents on that design?

A. Yes, I hold two patents on that design.

Q. And what are those patents for?

A. Well, one is the basic patent for the firearm and the other

SEE 2144

is the patent for the unique trigger assembly and safety mechanism.

Q. All right. Have we got you up to another position then? Where are you now and where are we now, about 1972?

A. Yes, at this time I moved up to senior research supervisor I guess at that time.

Q. All right. And what were you doing as a research supervisor?

A. Well, here again, they were having more people report to me and as we were moving ahead, the 3200 program was about a $5 million program from the time that you put all the money into the design and then all the equipment that it takes to manufacture a shotgun. On a shotgun or a rifle, each part you have to have a fixture to hold the part, you have to have a cutter, you have to have a gauge and so it's very expensive to tool a new shotgun.

Q. All right. Let's move on. Did you subsequently become a resaerch manager then, are we moving up the ladder?

A. Yes, I did.

Q. Okay. And what did you do as a research manager.

A. I was a research manager. I picked up, again, more responsibility and they gave me more jobs and kept expanding the number of people that reported to me.

Q. Now you were a research manager in 1974 I believe.

A. Yes, I was.

Q. Within your area of responsibility as a research manager did you have responsibility for bolt action rifle products of Remington Arms?

A. No, I picked up the bolt action and the manually operated guns in 1975.

Q. All right. As you were still a research manager?

A. Yes.

Q. Okay. And that would include at that time the Model 700, is that correct?

A. Yes, I had all the bolt actions from the 540 X which is rim fire target rifle, the 40 XR which is another rim fire target rifle, the 40 Xs which are center fire target rifle, the 788, the 580s, the 700.

Q. Did you mention the 600 within that?

A. Oh, no I never but I had that also.

Q. Okay. And then did you subsequently take a new position within Remington after you were research manager in charge of those bolt action rifles?

A. Yes, in 1978, at the first of the year, I became the superintendent of product engineering and control and I moved from the manufacturing organization to the -- pardon me, from the research organization to the manufacturing organization and there I was manufacturing engineering and direct support of production. In that capacity I had the chemical and metallurgical control facilities, I had the engineering -- the direct

support of production, I had the new products engineering where we tooled the new guns and the new designs, had the quality control area with all its functions.

Q. Okay. As I understand it, you've got production where you're out on the floor, you're making the rifles and then you've got this process engineering and control or PE & C to add to Mr. Miller's alphabet soup a little bit, this process engineering and control, it's what provides the engineering support for the production of firearms, is that correct?

A. That's right.

Q. So you would work on the engineering aspects of how something might be done, how something might be tested, is that correct?

A. That's right.

Q. Okay. Now how long were you superintendent of process engineering and control?

A. From 1978 to 1984.

Q. And then in 1984 did you take new employment?

A. I was asked, yes, to move, and I moved from Remington to the DuPont organization and I became the technical supervisor or superintendent, pardon me, of the Calrez facility, and this is a facility where high performance elastimers are manufactured.

Q. Okay. Now while you were with Remington, was it part of your job --

SEE 2147

A. We didn't cover my last job.

Q. Oh, we've got another one?

A. Oh yes. And then a year later --

Q. Excuse me.

A. Well, that's right.

Q. Let's not leave them out, let's hear one more. Is there just one more?

A. Yes, a year later I was moved to be the manager of manufacturing and the technical programs for the engineered parts division. And the engineered parts consists of powdered metal, metal injection molded, vespel and Calrez parts and in each of these parts like I mentioned the Calrez parts, they're all high performance parts that we make for customers. As I was mentioning, the Calrez parts, we make O-rings, you know, an O-ring about like this that costs you a dime at the hardware store we sell for anywhere from fifteen to twenty dollars. These parts are going to like sumps in jet engines, they go down in deep oil wells and this elastimer will go up to like 600° F. The Vespel parts are the same thing. They're custom high temperature parts that are made for example Vespel goes into jet engines and automobiles and of course powdered metal we make precision parts there which is an outgrowth of the powdered metal parts in our firearms and are used in like valve guides and what have you.

Q. Okay. You don't sell what you can buy at the hardware

SEE 2148

store for 10 cents for 20 dollars do you like you said, that would be a pretty good mark up wouldn't it.

A. Oh no, we just make a limited number of pounds per year and this is really expensive material.

Q. All right. It sounds like it would be a pretty good deal to get into. All right, let's get you from DuPont back to Remington. When you were with Remington was it part of your job and responsibility to be familiar with the bolt action rifles manufactured by Remington?

A. Yes, it was.

Q. And was it part of your responsibility to be familiar with the bolt action rifles manufactured by your competitors?

A. Yes, it was.

Q. While you were Remington did you have an occasion to get out in the field, deal with gunsmiths?

A. Yes, from that respect I was very fortunate. In the research organization I got to travel, to go to gun shows, every year all the manufacturers present their products to the buyers and have these big shows where all the manufacturers display all their new products and all their current products and I would go to those almost every year so I could see what was new in the market every year. In both jobs I got to go out and travel with our field force where we would call on dealers, jobbers or wholesalers and customers. I've traveled like a week in Georgia, South Carolina and that area, I've traveled

SEE 2149

for a week in Southern California and that area.
Q. Right out there with the gunsmiths in the field, is that correct?
A. That's right. And I've also attended gunsmith conferences, so that I've got a really good idea of what goes on.
Q. So what you're telling us -- excuse me, Mr. Linde, I'll try not to interrupt you. What you're telling us then is from your own personal knowledge and experience, you've got that experience in the research area within Remington, including the bolt action rifles and you've got that experience and personal knowledge in the manufacturing area through the process engineering and control and then you've been right out there in there field with the gunsmiths, is that correct?
A. Yes.
Q. We've been here for a while, Mr. Linde, and we've heard an awful lot about an awful lot of rifles. We've been talking about center fire rifles, bolt action rifles. Now there are other rifles besides bolt action rifles that you can get that are center fire?
A. Very definitely.
Q. And what are those?
A. In fact probably the biggest selling rifle is your lever action center fire action, the famous Winchester 94, the one that John Wayne uses in all the western movies. And then also there's semi or auto loaders they call them that load them-

SEE 2150

selves and you just pull the trigger which are becoming more popular as time goes on. Also pump center fire rifles.

Q. All right. In your experience why do people buy a bolt action rifles? What is it that they look for?

A. I think there's really three major areas you look at on why a person wants a bolt action rifle. I think the first major concern is strength. The bolt action rifle is not only one of the strongest center fire mechanisms made, in terms of strength per weight ratio, there's bolt action .22 rim fires that are scaled down, there's bolt action center fire rifles that go up to the -- take the 458 Winchester magnum.

Q. Excuse me, now is that a big cartridge?

A. Yes, that's a big cartridge that you would use if you were going to hunt cape buffalo or elephant.

MR. McDONALD: Excuse me, Your Honor, but I believe this goes a little bit beyond the area in which the Court has ruled that this witness can testify and I would object to the entire line.

MR. SHAW: Your Honor --

THE COURT: Overruled, proceed.

BY MR. SHAW:

Q. All right, excuse me, you were telling us about the big cartridges and this is an aspect of the strength of bolt action rifles, is that correct?

A. Yes. If you were -- you'll find it like on a Winchester

94, the lever action, you won't find that with anything much more powerful than a 30-30 or a 35. The action just won't take it. On an auto loading rifle, what you'll find there is they can take some magnum cartridges but very few because to get the strength into the action the rifle just has to weigh too much. So this is one advantage that bolt actions have and this is one reason that customers want them and prefer that action type. Another reason would be really it's dependable. If you have an auto loader you're relying on that cartridge, the energy from that cartridge when it's fired, to function your action for you and to do that, to take those actions away from that you're doing, there have to be many more parts in an auto loader. So consequently an auto loader tends to be less dependable. If you take a look at the bolt action, the bolt action is probably the simplest mechanism that you can get to actually fire a cartridge. And because of its simplicity, that adds to its dependability and I think when you look at it, it's really evidenced by what you're heard here about all the military rifles that have been made in bolt action rifles. They were made in bolt action rifles because of the dependability. But I think really from the Second World War or even from the First World War, what's really driven the bolt action rifles though is the accuracy. If you talk to any rifle shooter, that's one of their key performance measures. I mean if you talk about a car, somebody will say here's how fast it will go or here's its

SEE 2152

acceleration or how well does it steer. When you're talking about a bolt action rifle, what people are really talking about is how accurate is it. And if you take a look at what's happened to bolt action rifles since the Second World War, you can see there's been a tremendous improvement in how the barrels are made, how the stocks are put on the barrels, on the trigger mechanisms, on the scopes that even go on them. For example, our own experience on the barrels, we used to use cut rifling. We went from cut rifling to button rifling. We went from button rifling to what we now call the GFM machine. It's a big machine that we bought in Austria that hammers that barrel around the carbide mandrel to get a perfect bore and it run a perfect bore barrel after barrel. if you go to the scopes which is something we don't have anything to do with but when you think about it, the scopes that were made like 20 to 30 years ago, like a target scope would be that long, and have a little tiny eye piece that you looked through. The scopes that you can buy now, you can buy a 20 power or a 10 power scope that's short, very crystal clear and better yet, when you shoot it, the cross ear won't flux or change. I think an area where there's been a lot of changes over the military rifles to get this accuracy potential is in trigger mechanism. If you take a look at the trigger mechanisms that exist today there really have been a number of changes and of the course the real reason there is the trigger mechanism is really a link between

shooter and the rifle and I'd say next after -- you know, how well does the rifle shoot -- if you get a bunch of shooters together what they'll do is invariably pull the trigger and see how is that trigger pull because that's a real criteria on the quality and performance of a rifle. Now if you take a look at trigger pulls and I like to draw analogies to help explain but what you really want is if you're a rifle man you want a trigger pull that when you pull it it would break like breaking an icicle. The force goes up and up, nothing happens and then all of a sudden it just breaks with very little motion, and I'll describe that as what I'd call an ideal trigger pull. And to achieve that you need a mechanism and you need to work on that mechanism, you know, to drive your design in that direction, and if you take a look at the recently designed center fire rifles and the ones that have been designed since the second World War, you'll see that there's really been a tremendous drive in that direction to improve the trigger pulls, to maintain a position of leadership in that area where the customer can realy, you know, tell a perceivable difference.

Q. Now the --

MR. MILLER: Your Honor, could we approach the ben for just a minute?

THE COURT: You may.

BENCH CONFERENCE, ON THE RECORD

MR. MILLER: Your Honor, I let him go on for a little

ways with this definitely opinion testimony as to what people prefer in the form of the trigger pull, short and crisp trigger pulls, as to what improvements have been made on trigger pulls and style, mnufacture and design since the second World War and it hasn't gotten in an area that has bothered me yet but if this is an indication of how the testimony is going to proceed and obviously what he's been doing is rendering opinions for the last few minutes and I'm afraid we're going to be fighting this issue all the way.

THE COURT: Well, haven't heard any objection. I can't do anything about it unless somebody objects.

MR. MILLER: That's what I'm doing at this point now. I'm objecting to testimony of opinion.

MR. SHAW: Your Honor, I would submit all he's doing -- we've laid the foundation, he's been experienced in this area, he's just talking about what his experience was as he was working in Remington and what it is that is drawn from that experience which I believe is not expert opinion. He's just talking about his own perceptions and knowledge.

THE COURT: That's his opinion, isn't it?

MR. SHAW: That's his observation, Your Honor, based upon his perceptions and I believe that doesn't necessarily fall within the expert opinion rule, that a witness who is not submitted as an expert can testify as to things that are his own perceptions based on his experience without having to

SEE 2155

qualify him as an expert.

THE COURT: Well, it's a ticklish question. I never have understood that exception you're talking about in lay witness's testimony but what has this got to do with this lawsuit?

MR. SHAW: We're just --

THE COURT: It sounds like you're qualifying him as an expert. That's the only purpose of asking him these questions.

MR. SHAW: That's not our position, Your Honor. We're just explaining things for the jury.

THE COURT: What are you explaining?

MR. SHAW: His experience with triggers and fire control systems and how they work, demonstrating this witness's knowledge. They made this witness an issue in this case, Your Honor. They have brought his name up time and time again with regard to functions that he performed and I think it's important for the jury to see this individual's understanding of the systems that he was later assigned to evaluate, again a factual question in 1975. They're the ones who have continually brought up Mr. Linde.

MR. MILLER: I don't have any problem with him testifying sa to what he saw. If they go on that it will be fine with me.

THE COURT: The evaluation, that's the problem, the

SEE 2156

evaluation. Stay away from that.

MR. SHAW: All right, we'll move on, Your Honor.

AFTER BENCH CONFERENCE

BY MR. SHAW:

Q. Mr. Linde, you're familiar with the trigger or fire control system on the Model 700, are you not?

A. Yes, I am.

Q. And you've been familiar with it as part of your efforts in the research department, is that correct?

A. Yes.

Q. And you further became familiar with it as part of your efforts and work in process engineering and control, is that correct?

A. Yes, I did.

Q. All right. If you could, I'd like you to step down please. There are some things that I would like you to explain to the jury very briefly with regard to this fire control system.

A. Okay.

THE COURT: Mr. Shaw, is this any different than the many explanations that we've had?

MR. SHAW: Yes Your Honor, we believe it to be different in a material regard. We will acknowledge that there have been a number of explanations or attempted explanations with regard to this fire control but there are certain features of this fire control, of the operation, including of this connec-

SEE 2157

tor, which we do not believe have been explained and further to illustrate something to the jury we have a cutaway model that Mr. Linde would like to show to the jury which has the firing pin visible and we thnk that that may have been a problem because we continually talked about this rifle and yet we don't have this firing pin up there and I promise Your Honor that we will not be very long with this.

MR. McDONALD: Your Honor, if this is a model, it is one that we've never seen as of this date.

MR. SHAW: It's not a model, Mr. McDonald.

MR. McDONALD: We're two and a half weeks into trial and we have never seen that model.

MR. SHAW: Well, it's not a model. It's just a Model 700 bolt action rifle where we have cut away so that you can see the fire control -- this makes me nervous to do this at all. Where you can see the fire control and you can see the firing pin --

THE COURT: Have you ever shown it before this trial as ordered by this Court to show all exhibits, did you ever show it to these lawyers?

MR. SHAW: We have listed it as an exhibit.

THE COURT: Have you ever shown it to them as a physical exhibit? Have you ever shown it to them and given them a chance to examine it?

MR. SHAW: They can have an opportunity now, Your

SEE 2158

Honor.

MR. HEADLEY; They didn't show us theirs either and neither side made that demand, Your Honor.

MR. McDONALD: That's not so.

THE COURT: Well, they have the right to examine it. Do you want a while to examine it?

MR. SHAW: We think it's very helpful, Your Honor. If they would like to use it, they're welcome to use it.

(Pause in proceedings, after which:)

BY MR. SHAW:

Q. Mr. Linde, would you like to use this? We will mark this as Exhibit 39A. Mr. Linde, as you're explaining, you might want to tell the jury -- Mr. Miller has asked about this -- there is plexiglas I believe in here which is screwed in and you might want to point out to the jury that you normally don't have that plexiglas covering and those screws in there are not part of the rifle.

A. Yes. I'd like to go through just briefly the operation and the reason I'd like to go through it briefly is that if you just look at this model --

MR. HEADLEY: You'd better speak up Mr. Linde.

A. Okay. When you just look at this model right here, it's kind of hard to figure out exactly how that model fits into the rifle, particularly how does this model here relate to the firing pin.

SEE 2159

MR. HEADLEY: Make sure the jury there can see it.
A. I will, I haven't started yet. So what I'd like to do here is just show you on this cut away, and as I said, this plexiglas, you really can't see into the trigger assembly on the real rifle and that's been put in there so that you can see. But obviously here's where the cartridge goes. You close the bolt on the cartridge and here you can see the firing pin and that's the firing pin spring. Now that spring has about, oh, 24 to 27 lbs. on it urging that firing pin forward. So to release 24 to 27 lbs. would be kind of difficult. You need some kind of mechanism to release it to get the pounds down like three to five lbs. so that you can release this mechanism and that's what the trigger assembly is doing. If you take a look at it, the firing pin comes through the front of the bolt so you pull the trigger, the firing pin goes forward. Now when I open the bolt you can see the firing pin comes rearward. Open it and you can see the magazine, see another cartridge, close it and you can see the firing pin picking it up. Now the firing pin, right here, this is a projection on the bottom of th firing pin and you see the angle, the angle on that projection on the front? It angles back like this. That's not the sear, that's right, it's got an angle on it but it's got an angle like the sear. Okay, it's angled back and that angle is the one that comes to this surface right here and that's the sear and the firing pin is bearing right there. So that sur-

SEE 2160

face is what's stopping the firing pin from going forward. So I come forward, take a look right there. See that shiney surface, that surface right there? That surface right there on the back is this surface right here and you can see the cross pin and that's a sear and when I pull the trigger, if I have pressure down on it, the sear falls down. So when I pull the trigger that sear falls away allowing the firing pin to go forward. Okay. I'll go through it. You see that firing pin here, pull the trigger, see the firing pin come forward, come back and it catches on that sear. Now here's the safety. The safety is located right along the side of the receiver. I pull the safety and that safety and that safety comes in and this cam which you've had people I imagine explain to you, comes underneath the sear and when it comes underneath the sear it lifts the sear so it's blocking the sear but it's also lifting the sear. Now when it lifts the sear, this is kind of difficult to see but I can show you. If you'll look right there at the firing pin head, see, that's the end of the firing pin and when I put the safety on see the firing pin come back ever so slightly? That's raising the firing pin back. So that safety is not only coming in and wedging underneath the sear, but it wedges the firing pin back. So this safety mechanism in this rifle blocks two of the key elements or two of the three elements in the firing chain, it blocks the firing pin and it blocks the sear. Now when I put the safety on you can see the

SEE 2161

firing pin come back. Back here, go forward, back, forward.

MR. HEADLEY: Show that to the Court. If the Court wants to have him show that to you too, Your Honor, we didn't mean to exclude you.

THE COURT: I don't understand it at all but I don't want to see it, go ahead.

BY MR. SHAW:

Q. Mr. Linde, I hate to get you back down here but now that the jury has had the benefit of this cutaway model, I'd like you to explain a few things with this larger model and how the fire control works and one thing that I'd like you in particular to explain is --

THE COURT: Is this going to be contrary to what's been explained by all the other witnesses? We've had three or four witnesses explain that model. Now is this something contrary?

MR. SHAW: I believe, Your Honor, we would like a clear explanation of the connector.

THE COURT: Well, I don't want any more explanations if it doesn't change the explanations we've already had.

MR. SHAW: I don't believe, Your Honor, that there's been an explanation of the connector to which there's been much reference made as to what the purpose of this connector is in this fire control, how it works.

MR. MILLER: Your Honor, if that's the purpose, I'd

SEE 2162

make the same objection we made back in chambers to this testimony.

THE COURT: All right. We'll have a 15 minute recess at this time.

COURT IN RECESS AT 3:03 P.M.

CONFERENCE IN CHAMBERS

MR. McDONALD: Again I would object to the opinion testimony which apparently was going to be the purpose of the demonstration as to the purpose of the trigger connector. I'm afraid that's what is going to happen with this witness as I mentioned at the bench conference, that all he's going to talk about are opinions. I agree that there are certain factual issues that he can talk about such as size of parts, what he observed in the manufacturing process at Remington, what he heard, saw, felt, whatever you want to talk about. Gallery tests, he can probably talk about what those test results were but opinions, no, and I think that's what we're going to be facing throughout this and it's going to cause repeated objections from the floor and we're going to be fighting this issue a long time on that basis I think. So I would object to his testimony on the basis of opinion testimony as we stated in the earlier comments.

THE COURT: Well, this connector has been explained by everybody.

MR. SHAW: But Your Honor, only the plaintiffs have

SEE 2163

explained it and that's not to say that we agree with all of their explanations and you're right, there's been reference after reference to connector, connector, and for Mr. Linde who has experience with these rifles and their design and manufacture to not be able to say how something works, just the process of the rifle with which he is familiar, how it works without tha being called an expert opinion, for him not to be able to say what he has observed, that's been the entire issue in this case, what Remington knows or does not know and for the plaintiffs to say that we cannot bring in the person who was personally involved in much of this in 1975 through 1978, that they went into time and time again as to what Remington knew and didn't know, what they did or did not do, just because he will have to use technical terminology or deal with this fire control and they claim that that's an expert opinion, I believe that's incorrect.

MR. MILLER: Your Honor, one other comment. They've got two perfectly good witnesses here. We've got no objection to what they testify about because they have been identified as experts, Mr. Hutton is an in-house employee and --

THE COURT: Well you haven't made it plain to me what you think this question is at all. My objection to this testimony is that this connector has been explained so many times. What opinion is he going to give about -- how does this call for an opinion?

SEE 2164

MR. MILLER: The statement made by Mr. Shaw was would you please explain the purpose of the trigger connector which necessarily involves opinion as to what the purpose is. It's not talking about how big it is or how small it is or how it works, it's the purpose behind the trigger connector. And like I said, they've got other people to expain that. I'm afraid we're going to have four or five witnesses, however many they've got, go through all these questions --

THE COURT: No they're not cause I won't let them. We've gone through it too many times already. You all went through it too many times. We've gone through it so many times it's pitiful. Nobody can point a finger at another person saying theey're being repetitive in this case. It's terrible but don't use the word "purpose". You want to know how it functions, is that what you're asking?

MR. SHAW: Yes.

THE COURT: Well, ask him how it functions, what it does and how it functions.

MR. SHAW: All right.

THE COURT: Now that's not an opinion, that's a statement of fact. I'm going to object if you start asking why it's there or the purpose of it or how it's an improvement over the older models or anything like that, that goes into opinions. Let's just keep it plain and factual. I am disturbed about you bringing in a new exhibit that nobody has ever seen before.

SEE 2165

MR. HEADLEY: Your Honor, we never saw their bolts before they had them in the courtroom and had Mr. Olson on the stand. We hadn't seen their physical exhibits. They hadn't seen ours. Neither side asked so --

THE COURT: The rules doesn't say you have to ask. The rule says that they shall meet and confer and --

MR. HEADLEY; Oh well, that's true. I guess what I'm saying is that wasn't done by either side and they've been using exhibits in the same way in their part of the case.

THE COURT: They have brought in a lot of exhibits that they've never shown to you before, I realize that.

MR. HEADLEY: All right.

THE COURT: I think you're condoning all that now. You've had divorce cases I guess in years gone by, haven't you, you're condoning the sin by --

MR. HEADLEY: Guilt by association. Misery loves company.

MR. McDONALD: Sauce for the goose is sauce for the gander, whatever.

THE COURT: Is there anything else you're going to cover this afternoon that we've got to talk about?

MR. McDONALD: No sir.

THE COURT: I guess this witness will be on the rest of the day and part of tomorrow.

MR. SHAW: We anticipate that.

SEE 2166

THE COURT: I never did get from his testimony -- I presume because he's at Wilmington he's still with Remington?

MR. SHAW: He's with DuPont now, Your Honor, in fabrication.

MR. MILLER: In fact, did he say he interviewed with DuPont originally and had a choice and he chose to work at Remington? I didn't understand that part of the testimony.

MR. SHAW: I didn't either.

MR. HEADLEY: Yes, he's from Wilmington.

MR. McDONALD: I take it that he's going to limit his testimony to the facts he at least saw while he was there, not facts which he believes he thinks he knows about today that go on at Remington, is that correct? I will be firsthand fact, correct?

MR. SHAW: That's correct.

THE COURT: I've got a coke coming and I'll take a few minutes to drink my coke.

CONFERENCE IN RECESS

COURT IN SESSION AT 3:28

THE COURT: You may proceed.

CONTINUATION OF DIRECT EXAMINATION

BY MR. SHAW:

Q. Mr. Linde, when we left off you were going to explain to the jury and the Court what the function of the connector is.

A. Okay. The most obvious function of the connector is that

SEE 2167

it's a hard steel piece and this hardened steel piece at its top surface as you can see, it's exposed and it's very easy to come in and grind it. So it's ground and then it's polished with crocus cloth to get the surface finish. That surface finish is what's important to give the rifle a very good crisp trigger pull when the trigger is pulled. Now secondary -- not secondary but another critical function of the connector is that it minimizes the trigger travel. Now let me demonstrate that. First I want to say this is a 10X model, that's ten times the size of the normal trigger assembly but the springs are not ten times as powerful because if the springs were ten tims as powerful this spring would have like 50 to 60 lbs. pushing that trigger back and it would take me 30 to 50 lbs. to pull the trigger. So in the model you can't make everything 10X or I couldn't show you how it works. Getting back to the connector, the connector is this shape right here. To cause the rifle to fire, the firing pin, as we were talking about, that edge is pushing down here, it's pushing both forward into the pivot and down onto there, onto the sear. The sear on the connector.

Q. Can I help at all? Do you need any help? Have you got it?

A. This amount right there, that engagement right there is what we call engagement. I don't know if that's been explained to you but that is the sear engagement and on this model it's

set 15 to 20 thousandths of an inch. The rifle is ready to fire. I pull the trigger. That moment it goes. Now what I'm gong to do is I'm going to hold the trigger or try to hold the trigger right where it's at. As the firing pin proceeds forward, you see what it's doing to that connector? It's pushing the connector foward. Now what that's done is two things. The motion, the forward motion or the motion of this sear coming down is not imparted to the trigger. The trigger stop screw could be adjusted right to that point, okay, and that gives it a very short trigger pull. Now let me go through it again. You take this like 20 thousandths engagement, 15 to 20 thousandths engagement, I pull the trigger and the distance from here to here is about the same as the distance from here to the trigger. So I pull that trigger 15 to 20 thousandths, I go a little past and -- I've got to screw it up a little bit -- right there. Screw it in just al ittle bit. Go just a little past, pick up on the connector and it pushes the connector forward as the firing pin comes forward. So the total motion to fire this rifle at the trigger is 15 to 20 thousandths plus like 5 thousandths clearance. So from 20 to 25 thousandths motion this trigger can pull and release that firing pin. If the connector was not there then you can see that the distance that that connector is forward is about 15 to 20 thousandths. See the motion right there? That is about 15 to 20 thousandths, so without the connector motion, the trigger motion

SEE 2169

to fire the rifle would be about double. So what this connector does is it almost cuts in half the motion on the Model 700 rifle to fire it. Now if you take a look at how the connector is designed, when I do that, when I come forward and kick it you can see how the connector pivots, this bottom leg right there, pivots about the bottom.

Q. I think you've mentioned this, Mr. Linde. You have this lower leg on the bottom of the connector which was not originally on the 721 722s, is that correct?

A. That's right.

Q. And now what is the funcction of that lower leg again?

A. Well, I was showing how it pivots. You can see where it pivots, it pivots right here. And what it does is it gives the connector a common pivot point. On the 721 722 where the connector would come down here and just end, what would happen, this connector I should say first is heat treated. It has to be heat treated to get very very hard because steel when it's heat treated will tend to warp a little bit, you could get connectors that would have a little bow in them and so if you get that the pivot point would change. It could change from connector to connector and to get a consistency, to get it to pivot the same place every time, you add the little hook on the bottom and also it aids in the assembly.

Q. All right. And the function of this lower leg is not to prevent the connector from rising on the face of the sear, is

that correct?

A. No, no it's not. It will but that's not its primary function.

Q. Now what is the function of this spring here, Mr. Linde?

A. Okay. That's the trigger return spring and as I said, that's the spring that returns the trigger back to the initial position. If this, you know, was true to life that would be probably be about 50 to 65 lbs. on that spring returning this trigger. In the operation of the gun, the trigger spring up here puts on about oh, 24 to 27 lbs. and this spring here --

Q. You mean the firing pin spring?

A. The -- pardon me?

Q. Would it be easier with this cutaway to show or not?

A. Well, this shows, you know, the relative difference. You can see how big the firing pin spring is as compared to the little trigger return spring. The trigger return spring is right down here. Now if in the gun where you've got 24 lbs. or 27 lbs. pushing here, you come up to here, it comes over and starting down and you've got this force pushing here, and pushing it down. If this spring here was pushing back in the rifle at 24 lbs. it wouldn't let the rifle release. So this spring here has to be less than the main firing pin spring. I don't know if I'm coming across but it has to be lighter than the firing pin spring to allow the rifle to fire.

Q. Mr. Linde, would you say that this trigger spring is rela-

SEE 2171

tively light in comparison to the firing pin spring?
A. Yes, it is.
Q. All right. I don't mean to hide you up here. Let me show you what's been marked as G-84-7 which is the -- let me show it to Mr. Linde first and then maybe we'll put it on the easel perhaps. Now this is the drawing for that trigger spring from Remington, is that correct?
A. Yes it is. It's this spring right here.
Q. Okay. And what is the rate of that spring, Mr. Linde?
A. Its rate is right here, 225 lbs. per inch.
Q. Okay. And what material is this spring made of?
A. This spring is music wire right here, music wire and its stress relieved after it's wound.
Q. And is it subjected to something such as heat treating?
A. Well the stress relieve is what a tortional spring is -- that's the heat treatment it gets. When you wrap music wire, and music wire is the most common tortional spring material for high quality springs, and when you wrap it to give it just a slight stress relief, that's what this operation is so that the spring will maintain its shape.
Q. And so it's a strong spring then would you say?
A. Yes it is, a very high rate and at this rate if you put it between your fingers, you'd have a hard time compressing it.
Q. Now can you tell from this drawing here what the specification is for the length of that spring?

SEE 2172

A. Yes. If you take right here, here's what it's inspected to and it's to work freely in a 117 diameter hole and that would be the hole that it works in would be something greater than that. So if you compared this, that spring will always work freely in the hole. To work freely on a .60 diameter pin, and if you'll notice there's a projection on that screw and so that's so it will go ovr that projection. And here it gives a load and a length and that's the inspection. You compress the spring to that height and then you check to make sure it measures that length. The solid height is 150 thousandths, the free length is 200 thousandths min, so the spring should not be any shorter than 200 thousandths.

Q. Mr. Linde, let me interrupt you. A spring that was .200 as reflected on Exhibit G-84-7 that spring drawing, a spring that was .200 would be within Remington specifications, correct?

A. Yes, it would.

Q. Is there anything else you would like to tell us about that spring?

A. No.

Q. Now you weren't here for this, Mr. Linde, but Mr. Butters who was an expert for the plaintiffs had stated that the specification for this spring was .203. Is that correct?

A. No. If you look in this you see it says inspection, manufacture, design data, and when you have springs wound the spring manufacturer, he has a certain leeway in the manufacture

SEE 2173

to get to the inspection, just with the nature of springs. And here's what he's trying to achieve. He's going to try to achieve this load of 5 to 6.7 at that length. He's not going to let it get any smaller than 200 thousandths min. He's going to wind this spring left-handed. And then when he sets up his manufacture this is the characteristics that he's going to set up to. He's going to set up with this wire diameter, outside diameter, free length, coils and those two ends will be ground. It's just a standard procedure in spring design- manufacture.

Q. All right. Excuse me, I believe and I probably misquoted him which I wouldn't want to do -- Mr. Butters I think said that .200 length was out of specification. Now with that question in mind frm the drawing before you can you tell me if a spring that is .200 would be out of specification?

A. No, it is not. It says free length .200 min.

Q. Okay. Now the model 700 fire control parts are made to very close tolerances, is that correct, Mr. Linde?

A. That's right.

Q. And how does Remington make these parts to very close tolerances, let's take for example the trigger.

A. The trigger on the Model 700 is made in what we call our powdered metal process. That is the outside form right here of that trigger, it's a form that is put in a carbide die, so if you can picture that form if you had a round piece of carbide with that form in it that sits in a press like a 50 ton press

SEE 2174

and you have a punch both at the top and the bottom acting on it. What happens is you set it up, you have a certain alloy material which is a powder. You put the powder in to that cavity, the punches come down and form the part. Now it's a little more complicated than that. You have to work everything out but that form that you see here is in that carbide die. Once you get everything set up you can be sure of consistency from part to part because they're all coming out of the same die with the same punches. Now of course the powder then is taken and run through a high temperature furnace and centered and then we go back into another set of dies and we strike it again to get our final thickness.

Q. And through those processes then you maintain those tolerances, is that correct?

A. Yes.

Q. And then with regard to the connector, how are those tolerances kept?

A. Okay. The connector, this connector is a special material that we buy and that is steel that is pulled through a series of dies, through a series of carbide dies and it keeps its form until it forms down to this cross sectional size. That material comes to our factory and we inspect it to make sure it meets the chemical and metallurgical requirements and then that material is forwarded to one of our vendors who takes die sets and forms that. He shears it off into pieces and forms it up

SEE 2175

into this section. So the carbide dies that this material is pulled through determines the thickness, the width and the height, so that part is pretty much determined by those dies and once you get that material running right, you know you have it.

Q. And it's through those manufacturing processes that you keep the tolerances on the connector, is that right?

A. that's right.

Q. One final question. We've got this housing here and how is this housing made to keep those tolerances?

A. The housing is two stampings. If you take a look at each side, they're identical except for a few holes. The vendor who makes that housing, he uses the same die set for both sides. He comes in and he stamps the housing -- not the housing, the side plate, and you get all the holes in the correct position on that one side plate, you get it set up and then you start running it, you can be assured that each side is going to be the same and that everything is going to be in specification. Now to get the clearance between the two, what we do is we have at the front and the back -- here let me -- there's a spacer here and a spacer here and these are powdered metal spacers made the same way as I just described previously. We take these spacers and we make them a little oversized and then we put them on a surface grinder, big flat grinder, we come down and we grind them to the close tolerances. So you're just tak-

ing it and you're putting a lot of these spacers on it, on a plate, you come in and you surface grind it down to the tolerance you need. You take one spacer, one side plate, excuse me, place it in a fixture, you put the front spacer on, the back spacer on, then you put the top other side plate on, you put rivets through it and you press it together. So this width here is determined by the ground spacers, the rivets and how much you compress it.

Q. Now from what you've told us, for instance, you have these holes here in these side plates represented by this clear plexiglass and those holes are drilled through both side plates at the same time, is that correct?

A. They're either formed or they're drilled.

Q. So that the hole correspond to one another precisely, is that correct?

A. That's correct.

Q. Now you have some clearances in here between the trigger and the sear and the side plates. Now, there's been some discussion with regard to particles that can fall down between here. We've pulled out human hairs, we've swept dust off the table and everything but can you explain to the jury and the Court how this sear and the trigger and connector function with regard to the housing plates as far as these particles are concerned?

A. Okay. If you take a look at the top of the sear and you

SEE 2177

start here, the sear -- the clearance between the sear and the housing it would be 1 to 7/1000 of an inch. The clearance between the sear and the housing. Now if it was all the way to one side or all the way to the other side, if it sat right in the middle of course it could have a half a thousandths to three and a half thousandths. So if you were going to get a particle down there in this mechanism, you'd have to get a particle that's under 3/1000 or in this case if it was in the worst condition you would have to get a particle under 7/1000. now a 7/1000 particle is a pretty small particle. If you get particles down there and they're 7/1000, that particle size, you think about it, with the spring having a load of 5 to 6-1/2 lbs. on it, a little tiny particle of 7/1000, that trigger is going to return in that area that it continually wipes because it's wiped it back and forth and you could say it's wiping kind of like a windshield wiper on your car, it only goes a set stop to stop and it continues to sweep that, so if you have anything bigger it's going to push it forward or it's going to push it backward. The clearance between the trigger and the housing at the bottom would be a little tighter.

Q. You're speaking in examples here, in general terms.

A. No, I'm saying what the actual is. The clearance would be 1 to five thousandths on the trigger and so in that case you would have to have a particle under 5/1000s that that trigger would have to overcome.

SEE 2178

Q. And you're saying that you've got this return force that's caused by this spring here and that spring force is enough to overcome a particle of say 5/1000, is that correct?

A. Yes. If you look at it -- well, here's the way I'd look at it. If the housing was wider and you had more clearance, then you could have a bigger particle. If you carried that out and said well, gee, if the housing was twice this wide, then you could have a big particle and it definitely couldn't bind it up.

Q. Likewise you've got spring force here which you demonstrated --

A. That's right.

Q. -- on the sear and if a particle somehow of 5/1000 the size of a human hair or maybe a couple of Mr. McDonald's hairs got down here in between the sear and the side plates, this spring force would sweep that hair or human hairs out of the way, is that correct?

A. Yeah, on the top of it would be 7/1000.

Q. Okay. Three hairs. We're moving towards baldness then. Now you're familiar with other bolt action rifles I believe you told this jury by virtue of your experience with Remington and you've examined a number of other bolt action rifles, is that correct?

A. Yes, I have.

Q. Now in these other bolt action rifles that you have

SEE 2179

observed have you noticed that many of them have enclosed housings like this?

A. Yes, if you'll in fact look at the examples on the table, you'll see that the older military actions will have the things open and the newer commercial actions will have housings around the trigger sear and the parts that return them to their battery position.

Q. Well, I don't have a military one yet here, but like let's look at B-7. This is a Savage model 110. Now is that an enclosed housing?

A. Yes, it is. This right here would be a structure and they formed it a different way but it's got a structure and essentially got the same basic parts. It's going to have to have a trigger, it's going to have to have a sear and it's going to have to have a firing pin and it's got to have a safety lead.

Q. All right. Here's an Interarms Mark 10. I need some holsters here or something I think, Interarms Mark 10, whcih is Exhibit B-8. Now does that have an enclosed housing?

A. This is the one you just gave me here. If you'll look at this enclosed housing this is the recent commercial bolt action.

Q. Okay., And this Interarms Mark 10, that's a commercial bolt action rifle?

A. Yes, it is.

Q. And does that have an enclosed housing?

SEE 2180

A. Yes, in fact you can see it's quite similar to the Remington in the way it's adjusted even.
Q. All right. Let me show you what's been marked as B-10 which is the Weatherby Vanguard, does that have an enclosed housing?
A. Yes, it appears to be made out of aluminum but again it has the enclosed housing.
Q. let's look at one more here. I'm going to have to pick them all up. We've got what's marked as B-5 which is a Seiko. Now does that appear to have an enclosed housing?
A. Very definitely.
Q. All right. So an enclosed housing then from your observation and experience is not something that is rare with a bolt action rifle, is that correct?
A. It would be the opposite. It would be rare not to have an enclosed housing. I think the Winchester 70 would be the only leading bolt action rifle without an enclosed housing.
Q. Now you have adjustment screws on the model 700. Now from your observation with other bolt action rifles, is that fairly common to see adjustment screws on other bolt action rifles?
A. If you had looked at those you just handed me, every one of them had adjustment screws.
Q. Okay. I don't want to bring them back up again but I think what you're saying is it's common on bolt action rifles to see adjustment screws, is that correct?

SEE 2181

A. Yes.
Q. Now the model 700, and I don't want to get you down here again necessarily or get the cut away, but the model 700, you've told us that it has a safety which blocks the sear and also cams up that sear into the firing pin, is that correct?
A. That's right. The 700 safety, the cam comes under the sear as you just demonstrated, it lifts the sear up and when it lifts the sear up that angle also forces the firing pin back.
Q. All right. Now what is the function of that kind of safety we have here where we're not only blocking the sear but we're also camming up this sear into the firing pin?
A. The function is that you have a tremendous amount of interference between the firing pin right here and the sear and you're holding the firing pin back so if your rifle should fall or you should trip and fall with it and you hit the back of the firing pin on something, the rifle will not discharge because you've got a real good lug holding the firing pin to the rear. Also, by having the safety mechanism disconnected from the trigger, if the trigger should take a severe blow, there's no way that any kind of deformation or blow to the trigger is going to discharge the rifle.
Q. Because the trigger then, as you're explaining in the function of this safety, because the trigger is not part of this safety, not a trigger block safety, then you don't have to worry if the trigger is hit causing the gun to discharge, is

SEE 2182

that correct?
A. that's right.
Q. And because you have this sear block which also jams up the firing pin, jams up into the firing pin, when you drop that gun, you don't have to worry about that gun going off and the jar off situation, is that the function?
A. Yes. I could show an example of a trigger block if you want me to draw a sketch of the difference between a trigger block and a sear block safety mechanism would be.
Q. That would be helpful to the jury I think. We've got an easel here or we could use --

(Witness drawing diagram, after which:)

Q. Now you were going to explain the function of a trigger block safety?
A. Yeah. I'll just simplify it so I can draw parts that you're familiar with. I'll just draw a trigger block safety for the 700. It's basically the same for any assembly. Bear with me, I haven't been a designer for a few years.

(Witness drawing diagram, after which:)

A. If you had a trigger block safety and I'm going to call this a trigger block safety right here. Here's the sear, here's the firing pin, here's the firing pin spring trying to drive the firing pin forward, here's my engagement. Here's my block. I pull the trigger and it can only go just a little ways ahead. I have to allow a slight amount of clearance there

SEE 2183

because if I wedge it tight then I can't activate my block back and forth. Do you see what I'm saying? I'm talking about a cylinder like would go in and work back and forth perpendicular to the trigger. The block I'm talking about would pass in and out of the assembly like this.

Q. It would be like a plunger?

A. Yes. So if I have a plunger that goes in there and blocks the trigger, I need just a tiny bit of clearance. Now if you think about it, the engagement that we're talking about here to get a good trigger pull we're talking 15 to 20/1000, so let's say that I need just 2/1000 clearance, I'll make a real small amount. Let's say I got a diameter on that because it's fitting in a hole and I've also got to have a diametric clearance, you know, I drill a hole and I've got to have some steel piece that fits in that hole so I've got to have a little clearance there for the part to actually slide back and forth. See, that's another thing thousandths. So that's like 3/1000. Now I know that the corners on my sear because they're such high stress are going to rouind off just ever so slightly, so if each one of them rounds off like say 2/1000, there I've kept reducing it and now I've reduced my engagement from 15 to 20/1000, I've taken out, what, 2/1000 here, 3/1000, 4/1000, 5/1000, just at a minimum and that says that my amount of steel that I have holding that rifle in on safe position could be down to 10/1000 of an inch. So that safety is depending on a

SEE 2184

block trigger type safety, it's depending on 10/1000 of an inch of steel to hold that on an on safe position. Now if the shooter for whatever reason should make any kind of adjustments to his engagement or something else, then that safety system is going to be impacted. You know, for example if you try to decrease your amount of engagement then you run the trigger right into your plunger and it will block your safety from working.

Q. Let me ask you this, Mr. Linde, in terms of the way this functions and if I'm understanding what you're saying here. You have this plunger here and you have these tolerances here. Let's say this plunger was not placed correctly when the part was manufactured so it's out here a little bit further. Let's say your engagement -- let's say that your engagement has changed a bit through this wear so that when you pull this trigger it can move a bit forward. Now is that something that could happen in the way this trigger functions?

A. Oh yes.

Q. And let me ask you this then, when that happens and you can move this trigger further forward, when this plunger is released which is how you take the safety off, the trigger may go forward, is that correct?

A. Yes, it would.

Q. And when this trigger goes forward, the gun will fire, is that correct?

SEE 2185

A. That's right.
Q. And is that what you would call a fire when the safety is released?
A. Yes, that would set off that condition.
Q. So the functioning of this trigger block safety is such that if you don't get this plunger placed right or you get some wear in perhaps this engagement figure or some movement down in here, then when this plunger is removed, taking the safety off, the gun will fire when the safety is released, is that right?
A. That's right. The other fact on it is that if the rifle is impacted, for example if you should drop your rifle and it took a big impact righ there, then that small amount of engagement is what's holding your whole firing mechanism from firing.
Q. And with this trigger block safety the way that it functions you don't have anything blocking the sear here, is that correct, you just have --
A. That's your whole safety.
Q. Is right here?
A. Your engagement is your safety.
Q. So you have combined an element of trigger pull in the functioning of this rifle with an element of the safety, is that correct?
A. That's exactly right.
Q. Now the model 700 also has what's called the two position safety and what's the function of the two position safety?

SEE 2186

A. The function of a two position safety is it's either on safe or it's off safe.
Q. And it has a bolt lock, is that correct?
A. Yes, this rifle has a bolt lock.
Q. And what are the functions of a bolt lock?
A. The bolt lock retains a bolt latching rifle in a ready to fire position. On a bolt action you have a bolt that's protruding and just by the nature of that, if that bolt catches on something and opens partially and you want to fire the rifle, the rifle will not fire. The firing pin comes down, catches on the back of a cam and never impacts the primer on the cartridge.
Q. Now is one function of a bolt lock such that if someone comes up to a rifle as Mike Lewy has testified he did in the basement of the Lewy home on the first floor of the Lewy home and forgets whether that rifle is loaded or not and armed, when he pulls that bolt and it's locked, does it dawn on him, does it dawn on the user that the gun is armed?
A. Yes, if you could use it that way. That's especially handy if for example at night or in a condition when you can't readily see the safety.
Q. So the bolt lock served as a function to let you know whether the gun is on safe or off safe, lets you know that the gun is on safe even if it's dark, it's early and you're in a duck blind or a deer blind rather.

SEE 2187

A. I hope you're not in a duck blind.
Q. That's right. I hope Mr. Headley's in the duck blind. And that's one of the functions of a bolt lock, is that correct?
A. That's right.
Q. Now we've heard a lot about design changes, design change requests or DCRs. Would you tell us briefly what is a DCR?
A. Yes, a design change request is a piece of paper that's initiated with a design change that states what's actually going to be changed and some of the features about the change. It's initiated by the people in research. Normally it's done by a research engineer.
Q. Okay. You have a research group or a research department within Remington Arms, is that correct?
A. Yes, we do.
Q. Could you tell the jury and the Court a bit about the research group or department within Remington Arms?
A. Well, I could go back to when I was in the research department and that would be 1977. At that time we had about 55 to 57 people. We had about 35 what they call exempt people, that's management engineering types, and we had about 20 people who were technicians or model makers. We had a design area and we had two groups of design area, one group working on manually operated rifles and shotguns which I was a manager of and --
Q. Now manually operated, that would include bolt action rifles?

SEE 2188

A. Yes.
Q. Okay.
A. Yes, and the other group was the auto loaders. We make of course 1100 and a 742 at that time, both a center fire and a shotgun auto loading guns. And another individual was the manager of that group. We have a test lab as I alluded to earlier where we do our strain measurements, where we do our work on pressure testing, where we do a special hand loading, dry cycling function, endurance functioning of shotguns and rifles.
Q. Let me ask you a moment about the test lab. Let's say you've been making this model 700 since 1962 but say in 1969 you brought out a new version of it like a left-hand version or maybe you changed the styling some or whatever. Would that gun still go through the test lab even though it had been manufactured in general since 1962?
A. Yes, every change would go through the test lab and in fact if it was a new model or a major design change, it would go through the test lab as the initial models that are made in the model shop in the research area and then it would go through the test lab when the initial pre pilot production run was completed and then it would go through the test lab when you sample what production is doing at some kind of intervals.
Q. And let's explain a little bit further. I think you mentioned a dry cycle machine that you worked on. With regard

SEE 2189

to dry cycling a rifle, that in essence is like dry firing it, putting it through all the functions but without a live round in the chamber, is that correct?

A. That's correct.

Q. And typically how many times would you dry cycle a product that you were testing such as maybe just a new model of the model 700?

A. It would depend on what mechanism we were dry cycling.

Q. Okay. Like if you were testing on the fire control, the safety mechanism, how much would it be dry cycled?

A. Well, I can give you an actual example there on a safety mechanism. We go 50,000 safe off-safe on cycles.

Q. Okay. So you dry cycle the safety 50,000 times, is that correct?

A. That's right.

Q. To see that as designed it will function properly, is that correct?

A. That's right.

Q. And if you were testing the fire control in terms of the trigger pull, can you dry fire it in this dry cycling machine in the test lab?

A. We have done some of that where we've put transducers on and then run what we call strip chart recorders where as a thing is functioning you can measure what your stress levels are.

Q. Okay.
A. And to see if there's a change over time.
Q. Now I take it that this research department that you've described to us is constantly making design changes, is that correct?
A. Yes, that's their job is to develop new products and to make product improvements and also they work with any kind of alterations, you know, in the real world while there is continually changing in materials, people discontinue one type of plastic material, bring in another kind of plastic material, there's continual changes in the capability of different vendors so you continually have to be, you know, being alert to what's happening and to test as changes happen.
Q. And these design change requests, these DCRs go all across the board on all the products, is that right?
A. Yes, I guess from our experience is that Remington is always much more aggressive on the research and we felt that the research was kind of a key to our future and we've probably introduced more new models than any other manufacturer as evidence of our research effort and we early on felt that there was a real threat from the Japanese and from other American competitors and we've continued to push to improve our product. So there's been a real number of improvements that we keep making that extra little improvement to make our product better and maintain our competitive position so we don't get steam-

SEE 2191

rollered by the Japanese or somebody else.
Q. All right. Let's talk a bit about the manufacturing process, manufacturing of Remington products. Now are all Remington products firearms products? I'm talking about the rifles or the shotguns, not the ammunition. Are all Remington firearms made in one place?
A. Yes, all the Remington firearms are made at Ilion, New York. We do have vendors make certain parts for us. In fact it's ironic that right now we're getting some stocks and this is the first time we've ever had wood made outside our plant, actually being made in Lexington, Missouri.
Q. No are all these rifles put together in Ilion --
A. Yes.
Q. -- and as I understand it that's the same place where Eliphalet Remington made his first rifle in 1816.
A. That's Eliphalet.
Q. Eliphalet.
A. Yes, it is.
Q. It's up there in the Mohawk Valley, 30 miles from the baseball hall of fame, is that right.
A. Yes, it is.
Q. Okay. And there's been some reference to mass manufacturing or assembly line as we've heard as the plaintiffs have put on their case. Is the Remington model 700 mass manufactured?
A. No, all the Remington models they're assembled by one indi-

vidual. The individual has a bench and on that bench he usually has a vice and a support piece and then all the parts for that rifle or shotgun are right ahead of him and then he takes the parts and he assembles a complete rifle or shotgun himself and then when he's all done he stamps it with his stamp which is a symbol for his signature.

Q. So as I understand it you've got subassemblers who might make something such as the fire control.

A. That's correct.

Q. And then you've got final assemblers and they would put the fire control and the receiver and the wood and put the iron in the wood and put the whole rifle together, is that right?

A. Yes, that's correct.

Q. And that individual stamps that rifle which is his signature that he put that rifle together, is that right?

A. That's exactly correct.

Q. And you can look right here on the Mike Lewy rifle, you can look right here on this other 700 and you can see by code who made that rifle, is that correct?

A. You can see that it was proofed, that it was magnafluxed, who assembled it, who final inspected it, who targeted it and what month the rifle was produced and what year.

Q. We'll touch on that later. In addition to being final assembled and stamped, it's final inspected and the person that does that also puts his signature right here on the rifle, is

SEE 2193

that correct?
A. That's correct.
Q. Now there's been some reference during the plaintiff's case to piecework or piece rate, is the Remington model 700 made on a piece work rate?
A. We have at the Remington plant what we call a modified incentive system and the modified incentive system is that on a lot of the jobs we have them timed out on how many parts you can make in an hour. Now if the individual as he gains experience and competence and really understands what he's doing and if he wants to work harder, if he does 105%, we'll pay him 105%. If he'll do 110%, we'll pay him 110%. We'll pay him up to 130%. We won't pay for anything more than 130%.
Q. So it's not piece rate then in terms of you're not saying as many as you can make you're going to get paid for them?
A. No, no, it's an incentive so that if the individual wants to sit right there, he wants to work diligently all day, then we'll give him incentive to do more.
Q. All right.
A. And it works for him and it works for us.
Q. Now you can tell through these stampings, as I understand it, who put together particular things, is that correct?
A. That's very much so.
Q. And if you discover that someone is moving too fast, going for the 130%, can you trace back who that person is?

SEE 2194

A. Yes, you can trace back and then he can be moved back on his wage.

Q. Okay. So he or she could be docked if they were making too many parts too fast and they were not functioning properly as they were inspected through the manufacturing process.

A. That's correct.

Q. Now you mentioned that you were in process engineering and control and in fact I believe you told us that you were head of process engineering and control commencing in 1978, is that correct?

A. That's correct.

Q. And could you describe for the jury and the Court what process engineering and control is in terms of its function?

A. Yes, there's a number of different departments. Each of them had a supervisor. The control stands for quality control and we had a quality control group. This group has our incoming parts inspection, our incoming material inspection, our auditors who audit and walk throughout the factory and audit the various jobs, the gallery was also under quality control where we shoot every rifle and shotgun ane the final inspection is quality control. So quality control had everything from in line inspectors to final inspectors to gallery people and also all your incoming inspection. Also the quality control would be concerned with incoming inspection of fixtures because you want to make sure that your fixtures are correct that go on

SEE 2195

your machines and they would be the ones on incoming new machines to run the tests to make sure that the machines will perform the way they're supposed to. Another part of that is the cutter grind. We had two people who worked in quality control who did nothing but inspect cutters because one of the things we do is we machine a lot of steel.

Q. Now what is a cutter?

A. A cutter is, you know, it's a sharp cutting instrument that goes in a milling machine that rotates and cuts the steel to form the parts.

Q. And you buy those cutters, is that right?

A. Very definitely I think the best example of what we're doing is if you take a model 1100 shotgun we start with a 12 ft. piece of steel, we cut it into receiver blanks, cut it into receiver blanks that are as long as the receiver, they weigh 7 to 8 lbs. and we completely cut all that steel out of that receiver and we end up with a one pound part. So cutters are very very much a real part of our operation. Now the model 700, as you can see, we don't remove as much steel on that but still there's a tremendous number of machine operations and cutters are very important to it.

Q. Now we've heard a bit, the alphabet soup that we're making, we've got PRCAs, process record change authorizations. Could you explain to the jury and to the Court what those are?

A. This is a change in the process and this is just a notice

SEE 2196

that there's going to be a change in the process and we circulate it though the various groups. It changes the process record, it changes whether there's a pay standard. It changes our internal accounting so we know how to account for the operation that we're adding.

Q. Is that a constant process, change?

A. I would say that there's probably over 1200 process record changes a year.

Q. In fact thousands upon thousands over the course of years, is that correct?

A. Oh yes.

Q. Not just on the model 700 but we're talking in terms of process engineering and control, you're making thousands and thousands of changes to improve the product, is that right?

A. Very definitely.

Q. And this is just natural.

A. That's right, that's a part of our job.

Q. Now you touched a little bit on quality control.

A. I didn't go through the other departments.

Q. Okay. Well, let's go to quality control briefly.

A. Well, we're in quality control.

Q. Well, let's stay in quality control then.

A. Okay.

Q. Some parts are made within Remington within this fire control and some parts are purchased parts as I understand, is

SEE 2197

that correct?
A. That's correct
Q. Let's take some of the parts that you make within Remington like this sear or this trigger.
A. Yes.
Q. Now what is the function of quality control with regard to for example the sear or the trigger?
A. On the sear and the trigger, as we were talking about, your tooling inspection, the quality control could be involved in this. These parts were made in our powdered metal operation which is a little different than our metal cutting operation. But the quality control there is involved with making sure that the tooling is correct and then auditing the job at some frequency to make sure that the parts are indeed being made correctly. At Remington a lot of the quality functions were actually given to the operator. The operator's gauge their own work and are responsible for their work and held responsible and then your auditors, what they do is they just randomly audit to make sure, yes, this is being done correctly.
Q. Do you take a statistical sample of the parts that are made?
A. Yes, in your manufacturing and your basic part when you're machining or forming your statistical sample. When you get to the end of your line where you're putting the parts together and what have you, you check them 100%.

SEE 2198

Q. Okay. Now with regard to the statistical sample earlier, is that done in accord with some standard means?

A. Yes, we just, you know, we follow a standard I think it's developed by Bell Labs, a standard sampling program.

Q. Is that a sampling program that's used throughout many manufacturing industries?

A. Yes.

Q. Okay. And I think the point you made in addition to statistically sampling them as batches are being made, each one is also 100% inspected before it becomes part of the fire control, is that correct?

A. That's right.

Q. In other words, you've got this hand assembly work that's sitting there putting this fire control together and he or she inspects each one of these parts, is that correct?

A. That's right.

Q. And the function of inspecting these parts, both with the statistical sample and having your subassemblers or your assemblers inspiect them is to insure that those tolerances are being held, is that correct?

A. That's right, to insure that the parts will be usable.

Q. Now there are also parts within this fire control that are not made within Remington, is that correct?

A. Very definitely. We don't make any pins, springs, stampings, screws, this sort of thing. Like the pins in the 700 we

SEE 2199

buy from a company called Torrington and Torrington makes roller bearings and they sell us all of our pins and they can make them on the equipment they use to make roller bearings and they give us a very accurate pin at a very reasonable price.

Q. All right Let's talk about something like the connector whcih we've heard a lot about in this case already. Now that is not made within Remington, is that correct?

A. No, it's not.

Q. It's a purchased part, is that correct?

A. That's correct.

Q. Now are all purchased parts inspected?

A. Yes, we have a purchased parts inspection area and they come in and we sample the purchase parts against our drawing.

Q. Okay. Again this same statistical sampling, this Bell standard which is used throughout the industry, is that correct?

A. Yes, I don't know, you know, you say used throughout the industry. There's many different sampling programs, there's a standard statistical sampling program. This is accepted and so when you put it on your drawings your vendor immediately recognizes what you're doing and he just goes to his book and he can pull it right out.

Q. Okay. And the purpose of this statistical sample is to see if you've got a problem in a particular batch so you can advise the vendor, the one that's making it, is that right?

SEE 2200

A. That's correct.
Q. And each one of these parts such as the connector is also 100% inspected by the actual assembler that is putting that conductor on the trigger, is that correct?
A. Yes, it is.
Q. Now let's say you change vendors, let's say you have used one vendor as a supplier for a connector and you went to somebody else, would you test that vendor's products to make sure that he could make them properly?
A. In firearms you really don't deal that way. What you do, if you're going to another vendor your engineers go call on their engineers and you sit down with a part print and you go all through it and you sit there and mutually talk about what they can do and what they can't do and what they'll have to do to meet your specifications. And so you continue to work together if they're interested and then they'll give you a quote on what they think they can do and you review it and then you continue to work back and forth. If it's mutually beneficial to both then they'll buy the tooling and start making parts and they'll send your first samples in to you and then you take it and your purchase parts inspection has nothing to do with it, your engineers go through and check all their samples and figure their capability and from that you start establishing an inspection plan for this vendor and then from then on, as he starts sending in lots of parts, then you pick

SEE 2201

up in purchase parts inspection.

Q. So you take a lot of care with regard to these parts that you're buying from somebody else that are going to go into this fire control?

A. Oh very definitely.

Q. Now do you also have a gallery within Remington?

A. Yes, the gallery is an area where we proof every gun. Firearms they have to withstand, you know, fairly high pressures. A bolt action rifle operates normally between 50 and 54,000 per square inch so you know when you touch that primer off and it ignites the powder, that's the kind of pressure you're talking about. So we're very very concerned about high pressure and in the gallery we proof test and that's where you put in a high pressure overload. We proof test every gun we manufacture. We have a device, it's like a box really, enclosed box where we place the rifle, put the high pressure proof around it, enclose it, close up the container and fire the rifle remotely.

Q. And that's to test the strength of this bolt action rifle which you mentioned is one of the considerations for a bolt action rifle.

A. Very definitely. The gallery then, after it's proofed like in the case of the model 700, you'd move on to your test at target and we were talking about accuracy earlier. Well, we shoot every 700 at 100 yards and so we set the 700 up and we

target it and when we target it we also check for sight alignment to make sure that you know where it's pointing the sights will come right to that point, so that we know when we ship a 700 that it's going to shoot where you're pointing it and it's going to shoot a good groove.

Q. Okay. Let's go to the actual manufacturing process for the model 700. Let's put this model 700 fire control together and what I'd like for you to do is to describe for the jury and the Court how this fire control is put together at the Remington factory in 1975 when Mike Lewy's model 700 was manufactured. let's start with the subassembly process when the fire control is put together.

A. Okay. The first thing you would do if you were on a subassembly on the fire control is you would take the connector and you would pick it up and you would look at it and you would check to make sure it's straight and it's not warped from heat treat. You would take it and put it on a flat steel plate and you would crocus cloth the top surface and that's the surface where the sear, you know, engages the connector because that's critical because you want that to, you know, have a nice clean break. You would then take and select a trigger and you would put the connector on the trigger and you would just hold the trigger there and you would sight to make sure that the trigger is set square but you would make sure that this connector set square and you would sight and if there was a problem, that is,

if it would rock on there, you could see daylight through the -- between the connector and the trigger. You would then take this assembly, that's the trigger and the connector and so normally what the assemblers do is they just feel it with their hands to feel if there's any burrs along the sides from the forming operation and you slide it into the housing. You would then select the housing, you'd take a look and, of course, in all cases, and I won't go into this but in all cases firearms have a number of requirements. Not only does the thing have to function but it has to look beautiful. So when you're handling these parts you have to always check to make sure that the color is there, the polish is there, that you don't nick it, that you don't scratch it and how you handle it. So I'm not going to talk about that but all the assembly operations I wnat you to know there's elements in there for looking for appearance. So I'm just going to go through the straight, you know, what's pertinent to this case. So we got the trigger and the connector together and we checked the housing and then , we slide it in, we put the pin in and now we've got the trigger in the housing and we check and we slide -- we just move the trigger back and forth and what we're doing is we're checking to make sure that the trigger will work free within the housing.

Q. So you're making sure that this trigger is not binding within the housing, is that right?

SEE 2204

A. That's right.
Q. Right there the very first thing.
A. And if there's any bind you pick it right up because there's nothing there, there's nothing inside it. When you get that then you go ahead and you take and you put in your screws, your springs and your sear. Once you get these parts in then you take and you check for a trigger retraction again to make sure that your spring is retracting and you pull the trigger and push up and down on the sear to make sure that the sear is working free.
Q. Now let's explain for a moment. You're talking about trigger retraction and that is so that the trigger comes back all the way under here so that the sear can rest on top of it.
A. Yes, and then what you do -- you take and pull back on the trigger and then you just push it and make sure that the sear works free?
A. From that point you go on and --
Q. You want me to move it closer?
A. From that point you just go on and put the safety lever with -- there's a deeply involved spring and clip and you put this assembly on. Then you just slide that back and forth to make sure the safety works correctly, you know, that it's got two good detent positions. You take and you slide it up and then right through this hole, this inspection hole, you take -- they've got a little container and you squeeze lithium disul-

SEE 2205

fide, a dry powder lubricant. And then the trigger assembly --

Q. Then you -- excuse me.

A. Excuse me, I got ahead of myself. I'm rushing the job.

Q. What you do before you put the assembly --

A. Okay. Let's go right back to where we were where I checked the sear before I got back up on the chair. After you check the sear, you take this housing without the safety assembly and you take it over and you put it in a fixture on a 10 power optical comparator.

Q. What's that?

A. An optical comparator I guess could be best described like you know, if you had done shadowgraphs, if you've got a light and you hold your hand up there and it projects out a bigger image?

Q. Like you're making a rabbit?

A. Yes, yes.

Q. Okay.

A. We have what we call a 10 power optical comparator and it's a screen and it's got line on the screen that you can see nad you project a light right through this hole, that inspection hole and you can see your critical measurements of engagement and overtravel. We have this trigger assembly in this fixture and we're shining the light through it and now the operator can see that. Now these parts then are just the same size that you

SEE 2206

are seeing them here because this is a 10 power model or 10X model so what he is seeing is he's seeing these parts the size that you're seeing right here. If you had a one inch on that optical comparator, it's 10 inches. If it's 20/1000, then it's 10 times 20/1000, it's 200/1000. So that's -- the amount that you see is what he sees. He takes it and the first thing that he does is he comes back here and he adjusts the engagement. And he brings it up to a line on the comparator and he gets it between 15 and 20/1000. Then he takes and there's in this picture which I never mentioned, there's a load pushing down on here which duplicates the load due to the firing pin, so it's pushing down on here and then he takes a dead weight which is a deal that grabs on here, dead weight. It's got a pulley with a dead weight on it so you know exactly how many pounds are on it, hooks this up to the trigger and he just backs the spring back until the trigger goes and he's adjusted his trigger pull. Then what he does is he adjusts his overtravel by holding back on the trigger and turning this trigger engagement or trigger overtravel screw until that connector comes up onto the line on the comparator which allows about 5/1000 clearance for the release. So then he takes the trigger assembly out of the comparator and he puts the safety assembly on it as I described and then he shoots the litium disulfide in the inspection hole and the trigger assembly is built.

Q. Now you mentioned this dead weight that's hanging there.

What is the weight of pull when this rifle is made in the factory?

A. It's set at between 3 and 5 lbs. is the specifications for the 700 rifle.

Q. And why is it set between 3 and 5 lbs.?

A. Because that's what we have determined to be a safe limit for a hunting rifle.

Q. And this assembly, it's resting in a bench, it's fixed in a bench, is that right?

A. On the optical comparison it actually sits in, you know, a rigid fixture that holds it rigidly so that you can adjust that comparator to bring what we call up to zero, so you zero on the parts and you bring it into register and then you adjust it.

Q. Okay. I'm not sure that you mentioned it, also when these screws are placed in the proper adjustment by this subassembler who has put it all together and used the optical comparator, used the dead weight, are these screws -- something done with those screws?

A. The screws -- when the subassembler or assembler is all done, he seals the screws with a cement and when you see that the screws are seals with cement, you know, that's kind of a universal accepted principle that that's something that you don't tamper with, that that's been adjusted and that obviously is an adjustment screw and it's sealed. It's also an added advantage for us because if we get a rifle back and there's

something wrong with it, we can look and see if the cement has been taken off the screws and the screws have been adjusted.

Q. All right. Okay. Would you like to take the stand if you're done?

A. Yes.

Q. On this. Okay. Mr. Linde, we've made this fire control now and I don't want to do everything else that makes this rifle but I'd like to follow this fire control along a little bit. The fire control next becomes, after this subassembly process, it next becomes part of the final assembly process, is that right?

A. Yes, all the parts are then -- the trigger assembly, the stocks and barrel assemblies and what have you, they would go to a final assembler and do you want to go through the final assembly?

Q. I would like to please.

A. The final assembler, he assembles, you know, everything from the front sight, the trigger guard, the wood, but I won't go into the other details, he also puts the bolt assembly together. I'll just go into the assembly of the trigger assembly to the rifle. The final assembler would obviously take the trigger assembly and he would fit it to the rifle. He checks to make sure the trigger assembly fits right into the rifle and there's no binding when the trigger assembly goes up into the rifle. He would drive the pins through, through the

SEE 2209

front first and then through the back and then he would assemble, there's a bolt release that goes up on the other side that's not shown on this model but down on the trigger there's a little release that releases the bolt when you take the gun in and out and that's also on the side of the trigger assembly. So he has to put that mechanism on the side when he puts the trigger assembly to the rifle. It's not significant so you don't have to remember that.

Q. All right.

A. We'll move on.

Q. Okay. I don't want to interrupt.

A. So he's got it in there and the first thing he does when he gets it in there is he pulls back on the trigger and then he would again take and push up and down on the sear to make sure that the sear is working free. Then he would take and assemble the bolt, then he would assemble the bolt to the rifle. Now what he really does is he goes through and duplicates what the other assembler did. He goes through and he'll visually -- he'll look into the hole and visually check to make sure that we have engagement, that we have 15 to 20/1000, and he can do this -- he can tell within that because he's looking at them every day. Then he goes and he puts the safety in the on safe position and he checks for the amount of clearance to make sure there's a clearance between the sear and the trigger connector so that the safety will function correctly. He then will take

SEE 2210

and raise the bolt handle to make sure that the bolt lock is working, then take and push the bolt lock off like that, fire the rifle, make sure that the rifle fires, he'll open it back up again and then he'll hold the trigger back and close the bolt with the trigger held back and what he's doing there is he's checking to make sure that the overtravel, that the sear and the connector have enough clearance for the sear to get by when you close your rifle, so what he's done there is he's really essentially went back and rechecked what we've just done in the previous operation. From there, let me think.

Q. Does he check trigger retraction at some point?

A. Yes, he does, yes he does. When he goes through and checks the sear he checks the trigger retraction but the next step he would do as I recall, he would go and he would check for a jar off.

Q. Okay.

A. And he's got the bolt in it so what he does there is he does two things. We were talking about how the block trigger safety works and how the 700 works where you're blocking the firing pin. One of his jar off tests, he puts the rifle on safe and then he takes the back of his hammer which is the wood part and he pushes against the firing pin with a high degree of force to make sure, you know that we have good abutment right here with the firing pin.

Q. He also take and he'll take and then put the rifle in the

SEE 2211

fire position and he'll take it and he'll very smartly, very focibly force the bolt back and forth three times to make sure that the rifle does not fall down or jar off.

Q. Okay. The jury has heard, I believe, about fall down, slam fire, jar off, to some extent. Now in testing for this, is a function of that test also to make sure that the connector has returned all of the way under the sear, that you have adequate engagement?

A. That's right. Probably the biggest problem if there's a jar off is where you have a minimum engagement, either having the engagement off by the engagement screw or the trigger return spring back down where it's not returning the trigger underneath the notch.

Q. Okay. There's been some discussion of hair trigger with regard to this engagement screw back here. Now is hair trigger also a function of this trigger spring screw up here?

A. No.

Q. You said hair trigger. Hair trigger is --

A. If you have just a tiny bit of engagement, just enough to hold it, like that, now that would be a hair trigger because if you just jar it or you do anything to the rifle, it's going to go. Now you can get that hair trigger by somebody cranking in on the engagement screw, right, adjusting it, you could get it by somebody cranking out the trigger return spring so that it's not returning the trigger under there, you could get it by

SEE 2212

somebody grinding away the sear or you could get it by somebody grinding away the connector. You know there's a number of ways to get a hair trigger but what really it sets up is you're just sitting right there like on a knife edge and if it's jarred or anything happens, it's going to go.

Q. I believe we had you at the fall down or jar off test in final assembly. Proceed. Go ahead.

A. After you've checked it to make sure, you know, that it will not fall down or jar off then you would go ahead and you would go through your safety checks and check your safety function. The first thing you do there is you pull back on the trigger and they're supposed to pull back, you know, they pull back with, I don't know, anywhere up to 30 lbs. force, but anyway you pull back very vigorously. You pull back, and this is with -- you pull the trigger back and this is with the safety on and you let up on the trigger and make sure that the gun does not fire. Then what you do is you take and you put the safety into the intermediate position, that's halfway between safe and fire, pull the trigger again, let up on it, make sure that the rifle doesn't fire and then you put the safety all the way to the fire position and make sure that the rifle doesn't fire. So you go through and you do that, you go through that sequence, you follow it through and each time when you're pulling the trigger and you let up on it, with the safety in the on safe position, you've taken the loads off of

SEE 2213

the -- the firing pin loads off of the mechanism. They have to clear. When I put the safety on the on safe position, remember when I said we've got a clearance here and we lifted up here and we're pulling the firing pin back? We're pulling that firing pin back spring force away so there's no -- you know, there's a minimum of friction on the trigger so when I pull the trigger in this case, I don't have that frictional component and if there's any drag or what have you in the trigger, then I can feel it.

Q. So you're checking trigger retraction.

A. When you checking for trigger retraction in the tests you can feel the trigger retract because you don't have the frictional component that's also acting against it.

Q. And the person that's doing this, this final assembler, he has to feel that retraction for the gun to pass?

A. Oh yes. He can feel it. I mean, you know, you've got to remember that he's not doing just one, he's doing a number every day and it's just like with your automobile, when you get in there and all of a sudden there's something different, you know there's something different even when it's a subtle difference. So when he goes through and does these tests he repeats that cycle three times. He goes through that sequence where he puts the rifle on safe, pulls the trigger, releases and tests for retraction, puts it in intermediate position, pulls the trigger releases and then goes to the full fire posi-

SEE 2214

tion and checks to make sure that the rifle doesn't fire.
Q. So in that test you're testing for the trick condition, is that correct?
A. Yes, you are.
Q. And you're testing for the FSR condition?
A. Yes, you are.
Q. And you do that how many times?
A. Three times.
Q. Three times.
A. Yes.
Q. So this is the final assembler has this rifle, this fire control has already been assembled, it's been checked for retraction, it's been checked for binding, it's been checked for all of thse factors but the final assembler checks each one individually for FSR and trick three times.
A. That's correct.
Q. Okay.
A. Then he would take his trigger pull gauge and he would check the trigger pull and he would check it three times making sure, you know, it's consistent from time to time and it's within the 3 to 5 lb. standard.
Q. And then what does he do?
A. When he gets all done with it --
Q. Does he stamp the rifle?
A. You bet he does. When he gets all done with it that's the

SEE 2215

last thing he does is he stamps it, he stamps his symbol on it.

Q. So he's signed that rifle?

A. Yes.

Q. He's put it through all the tests.

A. Yes.

Q. All the checks and then he sends it on.

A. Yes.

Q. And where does it go next?

A. Then it would go to the gallery and it would be proofed as I discussed previously where you put the high pressure load in it and then it would go from the proof testing to the function and target area where its functioned and the function part of it, what we're doing is we're checking to make sure that the rifle extracts, ejects, that it feeds out of the magazine and, of course, I discussed the accuracy to make sure, you know, that the rifle shoots where you're pointing it and shoots very accurately.

Q. Okay. And how many rounds do you usually put through it?

A. It depends upon the rifle and the number of seeders, what they call seeder rounds where you shoot a number of rounds, it's shot from a fixture and this fixture recoils back and forth with the rifle and when you put the rifle in, the first couple of shots are just what we call seeders that are setting it in the fixture and it could go anywhere from like four mini-

SEE 2216

mum up to 10 or 11 rounds.
Q. And then after you target shot it 4 to 7 lbs. and you've proof tested it with this high pressure round, then do you do some other tests in the gallery?
A. When the gallery tester is all done then he takes the rifle and checks it obviously for live ammunition and then he puts the safety on safe and he checks the bolt lock to make sure that the bolt lock works and then he takes and again he goes through and he pulls the trigger, releases the trigger, clicks the safety, in this case from the safe to the fire position, recocks the rifle, full stroking the bolt, puts the rifle again on safe, then he goes to the intermediate position and he pulls the trigger and then he goes from there to the fire position.
Q. Okay. Now you've described this situation here in the gallery after this gun has been test fired and proof fired with this high pressure round that the gallery tester will test it for FSR, is that correct?
A. Yes, and he also checks it for the jar off, he closes it very crisply and very forcefully three times checking for jar off and he also checks it with the hammer against the firing pin head to make sure it doesn't jar off.
Q. Okay. So let's back up. You've got the FSR test here in the gallery and that's done.
A. Yes, it is.
Q. And it's done how many times?

SEE 2217

A. Three times.
Q. And you've got the trick test here in the gallery and it's done how many times?
A. Three times.
Q. And you've got this jar off test where you're hitting it and that's done?
A. Three times.
Q. Three times. Okay. So you had a rifle that's been through subassembly and it's been checked. It's been through final assembly and it's been FSR tested three times. It's been trick tested three times. And you test fired that rifle, you put a proof round through it and then you test it for FSR again three times, you test it for trick three times and you check it for fall down three times, is that correct?
A. That's correct.
THE COURT: We'll recess until 9:30 tomorrow morning.
(COURT IN RECESS AT 4:55 P.M.)

SEE 2218