



THE COURTROOM DEPUTY: Thank you.

THE COURT: Mr. Ryan?

MR. RYAN: Thank you, your Honor.

DIRECT EXAMINATION

BY MR. RYAN:

Q. Good morning.

A. Good morning.

Q. Agent Brown, where are you employed?

A. I'm employed with the FBI.

Q. And how long have you been an agent of the FBI?

A. Approximately eight years.

Q. Where are you assigned at this time?

A. Wichita, Kansas office, which is part of the Kansas City division.

Q. Were you assigned to that same office in April, May, 1995?

A. Yes, I was.

Q. Did you participate in the investigation of the Oklahoma City bombing?

A. Yes, sir.

Q. Was one of your tasks that you were asked to participate in to conduct a search at the home of Terry Nichols?

A. Yes, sir.

Q. And do you recall when that occurred?

A. The first search that I conducted was April 29, 1995.

Thomas Brown - Direct

Q. And under what authority were you -- you and the other agents of the FBI entitled to conduct that search?

A. A search warrant authorized by the district court.

Q. Now, who accompanied you on the search?

A. It was myself, Special Agent Fred Hillman with the FBI; Special Agent Leslie Earl, also with the FBI, and Special Agent Fred Hillman (sic), also with the FBI.

Q. What items were you authorized to seize in accordance with the search warrant?

A. Various explosives and men's clothing.

Q. Did you search the home thoroughly for these items?

A. Yes, we did.

Q. Did you look in small places?

A. Yes, we did.

Q. Did you open boxes and look as carefully as you could for these items?

A. Yes, we did.

Q. In the course of looking for the items outlined in the search warrant, did you come across some tools?

A. Yes.

Q. And would you describe what you came across.

A. There were numerous tools throughout the house, various hand tools. There were some drills. There was saws, a number of various hand tools.

Q. Let me show you what has been marked for identification as

Thomas Brown - Direct

Exhibit 2010. It will appear on your screen right under your counter.

Were photographs taken during the search on April 29?

A. Yes, they were.

Q. Do you recall who the photographer was?

A. Special Agent Fred Hillman.

Q. Now, looking at Exhibit 2010, can you identify that for us?

A. That is a blue box with the word "Makita" on it.

THE COURT: Well, you can't go into the details.

It's  
not evidence.

THE WITNESS: Oh.

BY MR. RYAN:

Q. Just can you identify the photograph?

A. Yes, sir. It was a photograph taken on April 29 by Fred Hillman during that search.

Q. Were you present?

A. Yes, I was.

MR. RYAN: Your Honor, we move to -- well, before I ask that.

BY MR. RYAN:

Q. What -- where in the home of Terry Nichols was Exhibit 2010 located?

A. In the basement.

MR. RYAN: Your Honor, we'd move the admission of Exhibit -- Government's Exhibit 2010.

Thomas Brown - Direct

MR. TIGAR: No objection.

THE COURT: 2010 received.

BY MR. RYAN:

Q. Now, let me show you what's been marked as 2011 -- before we do that, explain to the jury what they're looking at here on the Exhibit 2010.

A. This photograph was taken in the basement. It is a blue box with the word "Makita" on it. It's a metal box.

Q. Did you open the box?

A. Yes, we did.

Q. Now, let me show you what's been marked for identification purposes as Exhibit 2011 and ask you if you can identify that.

A. This is a photograph of contents of the blue box earlier depicted.

Q. Did you go through the box at that time?

A. Yes, sir.

Q. Does Exhibit 2011 accurately depict the contents of the blue Makita box in Exhibit 2011 -- 2010, I mean?

A. Yes, it does.

MR. RYAN: Your Honor, we'd move the admission of Exhibit 2011.

MR. TIGAR: No objection your Honor.

THE COURT: Received, 2011.

BY MR. RYAN:

Q. The exhibit is now being displayed to the jury. Would you

x. The exhibit is now being displayed to the jury. Would you

Thomas Brown - Direct

tell them what they're seeing in this exhibit.

A. This is a Makita cordless drill. To the left of the photograph is a yellow box that contains drill bits; and there is an extra battery that you can see laying there, and there is a battery charger and other miscellaneous items.

Q. Now, let me show you what's been marked as Exhibit 2012 for identification, ask you if you can identify this.

A. Yes. This is also a photograph taken on the same day, April 29, 1995.

Q. And is this the same box with the contents displayed that you located in the home of Terry Nichols?

A. That's correct.

MR. RYAN: Your Honor, we'd move admission of Exhibit 2012.

MR. TIGAR: No objection, your Honor.

THE COURT: 2012 received.

BY MR. RYAN:

Q. If you would, Agent Brown, would you explain to the jury what they're seeing in this exhibit?

A. This is a photograph of the interior of the same box. The only difference is the yellow box is now opened. You can see the contents of that yellow box and that being drill bits.

Q. Now, following the search on April 29 -- well, before I go to that question, let me ask you: Did you seize these exhibits that we've been looking at, the Makita drill box and the

Thomas Brown - Direct

contents, during the search of April 29?

A. No, sir.

Q. Why not?

A. It was outside of the scope of the warrant.

Q. Did you following leaving the home of Terry Nichols on the 29th -- did you report the findings of this -- of your search to your superiors?

A. Yes, we did.

Q. As a result, was a search warrant requested and obtained on May 3?

A. Yes, sir. It was actually obtained on May 2 and was executed on May 3.

Q. Did you participate in that search as well?

A. Yes, I did.

Q. Now, when you rushed to the home of Terry Nichols on May 3, did you seek to locate this Makita drill box?

A. Yes, we did.

Q. And where did you find it?

A. It was in the same place we left it, in the basement of the residence.

Q. Was there -- had there been any change or alteration at all with respect to the box or its contents?

A. No, sir.

Q. The photographs that we've admitted into evidence as 2010, 2011, 2012: Would they accurately depict what you saw in the

Thomas Brown - Direct

Makita tool box on the search of May 3?

A. Yes, sir.

Q. Now, you have before you what has been marked as -- as Exhibit 151 and 151A, the box being 151 and the drill inside is 151A. Would you take a moment and look at those items.

A. I notice on the outside of the box, it indicates the box is 151A.

Q. Yes. I'd like for you to look at them and see if you can determine whether or not those are the same exhibits that you seized in the home of Terry Nichols on May 3.

A. Yes. These are the -- this is the same item that we took on May 3, 1995.

Q. Would you look at the serial number on the drill?

A. Yes.

Q. And does that serial number correspond with your evidence log?

A. Yes, it does.

MR. RYAN: Your Honor, we would move the admission of Exhibits 151 and 151A.

MR. TIGAR: May I approach the bench briefly, your Honor?

THE COURT: Yes.

(At the bench:)

(Bench Conference 68B1 is not herein transcribed by court order. It is transcribed as a separate sealed transcript.)

Thomas Brown - Direct

(In open court:)

MR. TIGAR: Subject to the conference at the bench, your Honor, no objection.

THE COURT: All right. It's 151 and 151A?

MR. RYAN: Yes, your Honor.

THE COURT: Received.

BY MR. RYAN:

Q. Now, after you seized the Exhibit 151 and 151A, what did you do with it?

A. A sticker was affixed to the front of the box, and it was taped with evidence tape.

Q. Was it taped in such a way that the box could not be opened without breaking the tape?

A. That's correct.

Q. And then what was -- after you taped up the box, what did you do with it next?

A. It was transported back to Junction City, Kansas, and we put it in an FBI storage facility.

Q. And when was the last time that you saw this Exhibit 151 and 151A?

A. May 4, 1995.

MR. RYAN: That's all I have, your Honor.

THE COURT: Is the box that you're referring to the case?

THE WITNESS: Yes, sir, the case. I'm sorry.

Thomas Brown - Direct

THE COURT: All right. Mr. Tigar?

CROSS-EXAMINATION

BY MR. TIGAR:

Q. Good morning, Agent.

A. Good morning.

Q. My name is Michael Tigar. I'm one of the lawyers appointed to help out Terry Nichols.

A. Yes, sir.

Q. On the 29th of April, was that the first search that you had participated in?

A. Yes, sir.

Q. As a member of the team?

A. Yes, sir, that's correct.

Q. And you were there with Mr. Earl; correct?

A. I was.

Q. All right. Now, when you went -- and that warrant, the first time you went, that authorized you to seize clothing; is that correct?

A. Clothing and explosives.

Q. And explosives. And did you get some clothing that day?

A. Yes, we did.

Q. Okay. And, of course, you handled that properly and returned it to the -- took it wherever it was supposed to go. Correct?

A. Yes, sir.

Thomas Brown - Cross

Q. Now, you testified that you were searching there under a warrant issued by a court; is that correct?

A. That's correct.

Q. Did you have a briefing before you went on the search?

A. We read the warrant and what it authorized us to take -- to take. I'm not sure that we had a briefing necessarily. We discussed it informally.

Q. Who told you to do it, to make the search on the 29th?

A. Supervisor, Mike Shannahan.

Q. Did anybody else tell that you Mr. and Mrs. Nichols had both signed consents to search their home?

A. Not that I'm aware of. I don't recall it, if they did.

Q. At any rate, you never saw a signed consent to search by either Mr. or Mrs. Nichols; is that correct?

A. That's correct.

Q. Did anyone ever show you a diagram of the house that had been prepared by Mr. Nichols and given to the FBI?

A. No, sir.

Q. At the time that you went to the home on the 29th, was Mrs. Nichols home?

MS. NICHOLS HOME:

A. No, sir.

Q. Do you know where she was?

A. Not specifically. I don't, no, sir.

Q. Now, you say that you went back there on the 3rd and you found the Makita drill; correct?

Thomas Brown - Cross

A. That's correct.

Q. Now, were you wearing gloves when you handled it on the 29th?

A. Yes, sir.

Q. And the latex gloves, or cotton?

A. Latex.

Q. Latex gloves?

A. Yes, sir.

Q. Do you know if those had talc in them, or on them, or they were just plain?

A. As I recall, they had talc.

Q. And that's for ease of getting them on and off?

A. Yes, sir.

Q. And the reason you wore the latex gloves was that you wanted to preserve any fingerprints that might be on the item. Correct?

A. Yes, sir.

Q. And you had seen Makita drills before that date; correct?

A. Yes, sir.

Q. In fact, you can buy a Makita drill at any hardware store?

A. Yes, sir.

Q. And would you open up the box for us -- for me, please, and take out the yellow item that contains the drill bits. That was on the picture?

A. Yes, sir.

Thomas Brown - Cross

Q. Now, that is a Makita item, or is that a -- something that was bought in the after market?

A. As far as I know, it would be bought in the aftermarket.

Q. Okay. And when you go to the hardware store, have you seen collections of drills (sic) like that, packaged in a little plastic box like that?

A. Yes, sir, I have.

Q. There is nothing about those drills (sic) to your inspection that looked different from what you saw in an ordinary hardware store; is that correct?

A. That's correct.

Q. Now, the box that you're holding in your hand, sir, has some black smudges on it. That wasn't on there when you found it; correct?

A. That's correct.

Q. And you understand that's from the fingerprinting process?

A. That would be my understanding.

Q. Now, do you know what happened to the drill after you found

it? You said you took it to the locker. Correct?

A. Yes, sir.

Q. Now, when you were looking at it, did you notice any metal shavings or chips in the chuck of the drill?

A. No, sir.

Q. All right. And would you take out the drill that you have there and hold it up for the jury. And I'm just doing this for

Thomas Brown - Cross

the record because everybody has seen a drill, but could you point to the chuck of the drill?

A. It would be this area here towards the front.

Q. And that's a part that has -- that's where the drill bit goes in and then there is a way to tighten the drill bit; correct?

A. Correct.

Q. And there is a sort of a gear-type assembly there; right?

A. Yes, sir.

Q. Okay. You can put that back in there. That's all the questions I had.

Now, when you were with Agent Earl on that date, was he doing something else other than looking for a drill, on the 3rd of May?

A. Well, we all were together in the house.

Q. Uh-huh.

A. And went through the house together, so . . .

Q. Right. Was he looking for books?

A. On May 3?

Q. Yes, sir.

A. Not particularly. We recovered a book.

Q. Oh, you got -- and some other literature and stuff?

A. Yes, uh-huh.

Q. Okay. Now, had you noticed some books there on the 29th when you went in?

Thomas Brown - Cross

A. Yes, sir.

Q. And had you noticed a book in a Quaker State cardboard box?

A. I don't recall a Quaker State box, but --

Q. Now, when you went in on the 29th, did you see a number of books?

A. Yes, sir.

Q. About how many did you see?

A. I have no idea. I just don't recall.

Q. Did you have a discussion on the 29th with the other agents about whether you wanted to take some of the books that you had seen?

A. Well, we could not take them under that warrant.

Q. Uh-huh.

A. Because it was outside the scope of the warrant.

Q. I understand that.

A. We thought that they could be important, and so we reported



it back to the supervisor.

Q. Now, did you report back to the supervisor the name of just one book, or did you report the name of many books?

A. I don't know the answer to that.

Q. Okay. You weren't on book detail. Is that fair to say?

A. I was not specifically looking at the books.

Q. Okay.

A. I was keeping the evidence recovery log.

Q. All right. Now, on the 3rd, you did -- did you keep the

Thomas Brown - Cross

evidence recovery log that reflected the recovery of books and pamphlets and things like that?

A. Yes, I did.

Q. Okay. Now, at that time, did you have a discussion with Agent Earl about which books you should take?

A. We discussed each item that we -- we looked at. We discussed each item amongst ourselves.

Q. Well, what I'm asking you is did you see in Mr. and Mrs. Nichols' house a large number of books on many different subjects? Do you remember noticing that?

A. There were books on different subjects in the house. That would be correct.

Q. Okay. And by number, would you say more than 15 or 20?

A. I would think so. I'm just not certain of that, sir. I just don't recall.

Q. Right.

MR. TIGAR: Thank you very much, Agent.

I have no further questions, your Honor.

MR. RYAN: May I have just a moment, your Honor?

THE COURT: Yes.

MR. RYAN: We have no redirect, your Honor.

We may recall this witness at later time.

THE COURT: All right. You may step down now, Agent. Next, please.

MR. MACKEY: Thank you, Judge.

Brett Mills.

THE COURTROOM DEPUTY: Raise your right hand, please.

(Brett Mills affirmed.)

THE COURTROOM DEPUTY: Would you have a seat, please.

Would you state your full name for the record and spell your last name.

THE WITNESS: My name is Brett, B-R-E-T-T, Ashley, A-S-H-L-E-Y, Mills, M-I-L-L-S.

THE COURTROOM DEPUTY: Thank you.

THE COURT: Ms. Wilkinson.

MS. WILKINSON: Thank you, your Honor.

DIRECT EXAMINATION

BY MS. WILKINSON:

Q. Good morning, Mr. Mills.

A. Good morning.

Q. Could you tell the ladies and gentlemen of the jury where you work.

A. I work for the FBI in the FBI Laboratory.

Q. How long have you been with the FBI?

Q. How long have you been with the FBI?  
A. Approximately eight-and-a-half years.  
Q. When you started, did you start in the FBI Laboratory?  
A. No, ma'am.  
Q. Where did you start?  
A. I started in the mail room.  
Q. How long did you stay in the mail room?

Brett Mills - Direct

A. Approximately nine months.  
Q. Then did you go on to the lab?  
A. Yes, ma'am.  
Q. First assignment there?  
A. I was a physical science technician in the Firearms/Tool Marks Unit.  
Q. Tell us what the Firearms/Tool Marks Unit is generally?  
A. We do cases that have firearms, bullets, cartridge cases, comparisons of; and then with tool marks we'll compare tools to known tool marks on a certain item.  
Q. Tell us again what your position was when you were in that unit the first time.  
A. I was a physical science technician.  
Q. And did you have any training, general training, to prepare you for that?  
A. You mean school?  
Q. School. I'm sorry. Can you tell the jury about your undergraduate degree.  
A. My undergraduate degree is in biology. I have a B.S. from Towson State University, Towson, Maryland.  
Q. How long were you in the Firearms and Tool Marks Unit?  
A. Approximately a year and a half.  
Q. Where did you go then?  
A. I went to the Explosives Unit.  
Q. What was your position in the Explosives Unit?

Brett Mills - Direct

A. I was still a physical science technician.  
Q. Tell the jury what the Explosives Unit does at the FBI.  
A. The Explosives Unit will receive evidence from bombing cases, from a exploded device, or from just what is a suspicious bomb or a hoax bomb; and then we'll try and reconstruct it and find out the component parts of it and trace it back to manufacturers and everything.  
Q. Were you a physical science technician in the Explosives Unit in April of 1995?  
A. Yes, I was.  
Q. At that time, what were your duties and responsibilities?  
A. I would receive evidence, and I would inventory it. I would check it in, assign it a work sheet, and then assign an identifier number that we use in the laboratory which we refer to as a Q or a K.  
Q. Okay. Let's break that down a little bit.  
A. Okav.

--- ----.

Q. First you get evidence into the laboratory. Is that right?

A. Yes, ma'am.

Q. And how do you receive evidence?

A. I receive evidence that has already been assigned what we refer to as a laboratory number, specific strictly for the lab. And it is on the original communication, which is a communication from the contributor who is submitting the evidence.

Brett Mills - Direct

The letter will detail, you know, who it's from, who is the officer; and then it will give us a listing of the evidence that's being submitted and the exams that are requested of it.

Q. Okay. So if someone sent you evidence from Herington, Kansas, it would have a list of that evidence that was supposed to be in that container or submission or whatever you call it?

A. Yes, ma'am.

Q. All right. And once you receive it, what do you do with it?

A. I would open up the container and read the incoming, and then I would see how many items I have; and then I would start comparing the items in the container to the items listed on the piece of paper to make sure that all the items did come in.

Q. Okay. So you inventory the items; is that right?

A. Yes, ma'am.

Q. Do you prepare your work space in any way before you do that?

A. Yes, ma'am. I have a workbench. It's probably about 10 feet by 4 feet.

I'll clean it down with a cleaning solution, dry it off. And then we go across the hall where we have a wrapping room, where we send packages back; and I tear off brown wrapping paper called "craft paper," and I'll bring that out and lay it out onto the countertop. And then I'll set my box

Brett Mills - Direct

up. And then I'll put my latex gloves on, open the box up and then start checking in the evidence.

Q. And the purpose of that paper -- is it disposable paper?

A. Yes, ma'am.

Q. So do you use that with that submission or the box you're talking about and get rid of it after that?

A. Yes, ma'am.

Q. All right. Now, once you open up the box and you see the evidence, what do you do?

A. As I pull it out of the box, I'll compare it to the items that are on the list itself; and then once I've seen it's all there, I'll start generating what I refer to as a worksheet. It's an internal document in the laboratory.

And as I am checking it in, I will assign it a Q or K number and then write out a brief description on it.

Q. Let's go back to those terms.

A. Sorry.

Q. Your worksheet: Is that just a way of keeping track of the evidence in the lab?

A. Yes, it's a short description.

Q. What is a Q number or K number -- or what are Q numbers and K numbers?

A. A Q number we use in the laboratory refers to a questioned item. We don't know what it is. And a K number is what we refer to as a known item, like a firearm or a tool.

Brett Mills - Direct

Q. And do you assign a Q or K number to each item as it comes into the laboratory?

A. Yes, ma'am.

Q. Let's turn to April of 1995. After the bombing in Oklahoma City, did you receive an assignment related to the investigation?

A. Yes, ma'am.

Q. What was your assignment?

A. I would be the technician in charge of the evidence as it was coming in. I would be handling it and doing my duties with it.

Q. And did you receive evidence or check in evidence on May 18 of 1995?

A. Yes, ma'am.

Q. Do you recall doing it that day?

A. Yes, ma'am.

Q. And do you see Government's Exhibit 151, 151A -B, and -C in front of you?

A. May I open it?

Q. Sure.

A. Yes, ma'am.

Q. Did you receive those items on May 18, 1995?

A. Yes, ma'am.

Q. When you received them, what did you do?

A. I was checking the case in, and we were generating our work

Brett Mills - Direct

sheet; and I opened up the box and -- to see what the items were, gave a brief description for the work sheet, and assigned it a Q number.

Q. Did you examine all the items in the box when you did that?

A. Yes, ma'am.

Q. Government's Exhibit 151, the drill, is already in evidence. So could you take that out for a moment.

And can you tell the jury what kind of drill that is.

A. This is a Makita cordless driver drill.

Q. Is there a battery in the drill?

A. Yes, ma'am.

Q. And was there a battery in the drill when you examined it back in May --

- .. .

A. Yes, ma'am.

Q. -- of 1995?

Now, can you put that back in.

Can you look at Government's Exhibit 151C.

Now, when you looked in that box on May 18, 1995,

what

did you see in there?

A. I saw a series of drill bits ranging in size from 1/16 to 11/64.

Q. Were there any missing at that time?

A. No, ma'am.

Q. Is there one missing from there now?

A. Yes, ma'am.

Brett Mills - Direct

Q. Can you look at Government's Exhibit 151B.

Do you recognize that?

A. Yes, ma'am.

Q. Now, is that -- can you -- can you recognize what's in the bag?

A. It is a drill bit.

Q. Okay. Now, is there a marking on that bag, Q number on that bag?

A. Yes, ma'am. It's "From 2898."

Q. Tell the jury how you marked this whole Exhibit, Government's Exhibit 151, 151A, -B and -C, with a Q number.

A. This entire box with all the contents were given one Q, Q2898. And when this was removed out, the designation of "From Q2898" was assigned to it.

MS. WILKINSON: Your Honor, we offer Government's Exhibit 151B, which is the drill bit.

MR. TIGAR: No objection, your Honor.

THE COURT: Received, 151B.

BY MS. WILKINSON:

Q. After you examined all the items, did you place them back in the box?

A. Yes, ma'am.

Q. How did you seal the box after you had examined the items?

A. I placed it in this Ziploc bag here.

Q. Did you mark the bag in any way?

Brett Mills - Direct

A. Yes, ma'am.

Q. How did you mark the bag?

A. I put the laboratory number and the Q number, Q2898, on it.

Q. Now, you have Government's Exhibit 151B in your hand.

A. Yes, ma'am.

Q. That's the drill bit?

A. Yes, ma'am.

Q. Was that sent on to Agent Cadigan for examination by the Tool Marks and Firearms Unit?

A. Yes, ma'am.

MR. TIGAR: Objection

MR. TIGAR: OBJECTION.

If he knows, your Honor.

BY MS. WILKINSON:

Q. If you know. Do you know that it was sent?

A. Yes, ma'am.

Q. And did you receive it back from him after he conducted his examination?

A. Did I personally? No, ma'am.

Q. Are you aware whether the Explosives Unit received it back?

A. Yes, ma'am.

MR. TIGAR: Your Honor, object. Lack of foundation.

MS. WILKINSON: That's fine, your Honor. We'll withdraw the question.

THE COURT: All right. We'll strike the answer.

MS. WILKINSON: All right. No further questions.

THE COURT: Mr. Tigar.

MR. TIGAR: Yes, your Honor, move to strike the answer.

I'm sorry. She's done. I'm about half a step behind, your Honor.

#### CROSS-EXAMINATION

BY MR. TIGAR:

Q. Good morning, Mr. Mills.

A. Hi.

Q. I'm Michael Tigar. I'm one of the lawyers appointed to help Terry Nichols in this case, sir.

You have a degree in biology?

A. Yes, sir.

Q. In 1991, you were transferred to the Explosives Unit; is that correct?

A. Yes, sir.

Q. And in the Explosives Unit, you were trained by Mr. Davitch and Mr. Rogers?

A. Yes, sir.

Q. Is that correct? And also by Special Agent David Williams. Is that right?

A. Yes, sir.

Q. And that was an informal training program that lasted about six months. Is that correct?

A. No, sir.

#### Brett Mills - Cross

Q. How long did it last?

A. With Mr. Davitch, it was about six or eight months. He was going to agents class. Mr. Rogers stayed, and I still learned under him; and it kept on basically being an ongoing process with Mr. Williams.

Q. Is that right? So your training period lasted longer than six months?

A. Yes, sir.

Q. Do you remember giving a deposition in this case?

A. Yes, sir.

Q. Do you remember asking -- being asked the question: "How long did you train with Williams? Did you have a training

period?"

Question (sic): "Uh-huh."

"Let's see. Approximately six months."

Is that what you're referring to, the Williams training period, six months?

A. Are you referring to my deposition?

Q. Yes.

A. When I said that it was six months, that was like my initial trial period.

Q. Okay.

A. And then as time progressed, Mr. Williams would still review my work and I would still learn new things in this new school, so it was still an ongoing process.

Brett Mills - Cross

Q. All right. Now, you have a -- you testified to a procedure for maintaining cleanliness in your laboratory. Correct, sir?

A. Yes, sir.

Q. Do you have a written protocol for maintaining cleanliness in your laboratory?

A. In the laboratory itself?

Q. Yes, sir.

A. Not that I'm aware of at the moment, sir.

Q. Yes. You've never seen one, in fact. Is that right, sir?

A. Not for the lab.

Q. Okay. Now, the area of the laboratory we're talking about here where you receive the evidence: Does that have a name or a designation?

A. Which area? Are you talking about the Evidence Control Center?

Q. Yes, sir.

A. It's the Evidence Control Center.

Q. I see. And is there something called a 1B area?

A. Yes, sir.

Q. What is that?

A. That was a part of the Explosives Unit area.

Q. Okay. Now, does the 1B area have anything to do with the evidence that you're testifying about today?

A. Yes, sir.

Q. All right. What does it have to do with it?

Brett Mills - Cross

A. This evidence was stored down there at one time.

Q. All right. Now, prior to its being used to store evidence in this case, what had the area been used for?

A. For a long period of time, or right before it, or --

Q. Right before.

A. Right before? We had parked our crime scene vehicle and a box fan in there.

Q. A box fan. Now, was there a time when it was used to store a case -- evidence from another bombing?

A. Yes, sir.

Q. And the evidence that was stored there from the other bombing: What kind -- was that a pipe-bomb case?

A. To my knowledge, yes, sir.

Q. All right. Now, after -- prior to getting the evidence in this case, you did wash the floor and paint it; correct?

A. Yes, sir.

Q. Now, you testified that when the evidence that you're looking at came in, there was something about Q numbers and K numbers. Right?

A. Yes, sir.

Q. Okay. Now, a K number -- that means a "known"; correct?

A. That's what we refer to it as, yes, sir.

Q. And a Q number means "questioned"; that is, we don't know.

A. Correct.

Q. And one of the things that people in your business try to

Brett Mills - Cross

do is to figure out if a Q matches a K; right?

A. Yes, sir.

Q. Okay. If we could take a simple illustration of that: If I touched a piece of paper and left a latent fingerprint and that were recovered somewhere and processed to bring up the latent fingerprint, that might get a Q number; correct?

A. Are you talking about the piece of paper?

Q. Yes. The piece of paper might get a Q number.

A. Yes, sir.

Q. Right?

A. Yes, sir.

Q. And then they would go to their records and find out if I had ever been fingerprinted?

A. True.

Q. So they'd know that somebody named Michael Tigar has got a set of prints, and that might be the K that they would try to compare to the Q. Is that right? Is that how it works?

A. I'm not sure about how Latents does. I don't know --

Q. Okay.

A. I don't know if they K their fingerprint cards.

Q. Okay. You don't.

Can you give me an example from your experience of the comparison so that I can understand how this Q and K business works?

A. An example would be a bullet. You pull a bullet out of a

Brett Mills - Cross

victim's body.

Q. Okay.

A. And then we get a suspect weapon in.

Q. Ah. And you test-fire it.

A. Test-fire it.

Q. And we know that a -- the bullet out of the suspect's body is then put under a microscope and somebody looks at the

little --



110016 --

A. Striations.

Q. -- striations on it?

A. Yes, sir.

Q. And then we test-fire and we compare the striations. Correct?

A. Yes, sir.

Q. And that's because a bullet spins as it goes out the front of the firearm. Correct?

A. Yes, sir.

Q. And do you have any idea -- well, we'll ask somebody else about the details. This is just an example. Okay.

So do you have a written protocol for determining whether a specimen gets a Q or a K number?

A. It wasn't a protocol. We had papers from our units. If we received evidence and they would wind up doing their examinations, we would -- they would like it written up a specific way. Firearms, for example: They had a specific way

Brett Mills - Cross

of writing up a weapon or a cartridge case or etc. So we did have paper on that, yes, sir.

Q. Now, you said on your direct examination that the number Q2898 was assigned. Right?

A. Yes, sir.

Q. Who assigned it?

A. I did.

Q. Okay. So you decided that Q2898 was the whole package, the box with the drill bits, and so forth.

A. Yes, sir.

Q. Now, there came a time when you took out the quarter-inch drill; right?

A. Yes, sir.

Q. When was that?

A. I believe July 11. I did not do it personally.

Q. Oh, you didn't do it personally?

A. No, sir.

Q. Who gave the drill bit that separate Q number?

A. The alphanumeric?

Q. Yes, sir.

A. Q2898A or B?

Q. Yes.

A. That would be by Mr. Cadigan.

Q. And Mr. Cadigan is?

A. Is a firearms/tool marks examiner.

Brett Mills - Cross

Q. Special Agent Cadigan, firearms/tool mark examiner: He's the one that put the number on there. Is that right?

A. Not the number. We do have an alphanumeric. If further exams are going to be done on a large item like this, then someone might want to put either an alpha or numeric character

behind it. In this case, Mr. Cadigan put A and B on two drill bits.

Q. Then that was done by him?

A. Yes, sir.

Q. Now, did -- at that point, did -- were you responsible for getting the drill bit over to Mr. Cadigan so he could do his work?

A. Did I personally deliver it to him?

Q. Yes, sir.

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

Q. Okay. Now, with respect to the drill itself, were you aware of any metallurgical examinations that were conducted on the drill or things that were attached to it?

A. I was aware that metallurgy had been assigned to this one submission, yes, sir.

Q. Now, would you tell the jury, please, what is metallurgy.

MS. WILKINSON: Objection, your Honor.

MR. TIGAR: For these purposes.

MS. WILKINSON: Beyond his expertise and beyond the scope.

Brett Mills - Cross

THE COURT: Well, you're not asking for a dictionary definition.

MR. TIGAR: No, I'm just asking what he understood that was in his office, your Honor. I'm not asking for a metallurgical opinion. I just want to know what it is.

THE WITNESS: From my understanding is -- is when we have a metallurgical exam is they're comparing basically, I guess, like a Q and a K. I'm not sure if they do, but to see if the metals match.

BY MR. TIGAR:

Q. Okay. Now, was it your understanding that they were going to find out what kind of metal the drill was made of, or the particles that adhered they wanted looked at?

MS. WILKINSON: Objection, your Honor.

THE COURT: Overruled.

THE WITNESS: That, I'm not sure of. I didn't take it over.

BY MR. TIGAR:

Q. Okay. When did the -- this item leave your custody to be taken over, as you say, for this metallurgical work, whatever it was?

A. I believe that was June 2.

Q. And did you ever have a conversation with Agent Cadigan about his work on the drill bit? Just yes or no?

A. Yes.

Brett Mills - Cross

Q. Whether you did -- you did. Okay.

A. Yes.

Q. When was that conversation?

A. After I transferred back over to the Firearms/Tool Marks Unit. He was my training instructor.

Q. Oh, all right. And did you ever have a conversation with Special Agent Williams about the metallurgy?

A. About the metallurgy? No, sir.

Q. Okay. Did you ever have a conversation with anyone about the metallurgy?

A. Not the metallurgy, no, sir.

Q. Did there -- did there ever come a time when the drill was sent to the Oak Ridge Laboratory, to your knowledge?

A. Not to my knowledge.

Q. You don't know one way or the other. Is that right?

A. I had heard later on, but I don't think we sent it.

Q. Okay. No -- not -- in other words, of your personal knowledge, you were not responsible for sending it to the Oak Ridge Laboratory if indeed that happened. Is that right?

A. No, sir.

MR. TIGAR: All right. Your Honor, I have no further questions with respect to the scope of this witness' appearance.

THE COURT: All right.

MR. TIGAR: On this subject.

MS. WILKINSON: He will be recalled, your Honor, for other purposes.

THE COURT: Okay. You may step down for now.

THE WITNESS: Thank you.

THE COURT: Next witness.

MR. MACKEY: Your Honor, we would call James Cadigan.

THE COURT: All right.

THE COURTROOM DEPUTY: Raise your right hand, please.

(James Cadigan affirmed.)

THE COURTROOM DEPUTY: Would you have a seat, please.

Would you state your full name for the record and spell your last name.

THE WITNESS: James J. Cadigan, C-A-D-I-G-A-N.

THE COURTROOM DEPUTY: Thank you.

MR. ORENSTEIN: May I proceed, your Honor?

THE COURT: Yes.

MR. ORENSTEIN: Thanks.

DIRECT EXAMINATION

BY MR. ORENSTEIN:

Q. Good morning, Mr. Cadigan.

A. Good morning, sir.

Q. Where are you employed, please.

A. I am a special agent of the Federal Bureau of Investigation, and I'm assigned to the Firearms and Tool Marks Unit of the FBI Laboratory in Washington, D.C.

James Cadigan - Direct

Q. What are your responsibilities there?

A. As a member of that unit, I have three areas of responsibility. I do serial number restoration examinations, I do firearms identifications, and I also do tool mark

examinations.

Q. How long have you been doing tool mark examinations?

A. For 20 years.

Q. Now, can you tell the ladies and gentlemen of the jury basically speaking what a tool mark examination is.

A. Tool mark examination deals with the comparison of marks that are left at the scene of a crime with a particular tool in order to determine whether or not that particular tool made that mark.

For instance, in a burglary in which a screwdriver is used to pry open the window of a residence, tool mark identification or tool mark examination would look at the marks on the window sill and compare them to marks made by the screwdriver to determine whether or not that screwdriver made the marks on that window sill.

Q. Now, when you do that kind of examination, are there different types of marks that can be examined?

A. Yes, sir.

Q. Can you describe the different types of marks?

A. Well, basically, there are two different types of marks. One would be called a compression or impression, where the

James Cadigan - Direct

screwdriver blade would be pushed in and then pressed down. That would leave a depression or impression on the window sill.

The second type or general type of tool mark would be called a striation or scratch, and that would be from the blade of the screwdriver dragging across the window sill and leaving scratches on the surface.

Q. Now, did you conduct any tool mark comparison in this case?

A. Yes, I did.

Q. And did it involve a padlock and a drill bit?

A. Yes, it did.

Q. Before I ask you about that examination, let me ask you: Could you describe your educational background?

A. Yes, sir. I have a bachelor of science degree in chemistry from the University of Maryland in College Park.

Q. What year did you graduate?

A. 1971.

Q. How long after your graduation did you join the FBI?

A. Five months.

Q. And can you describe for the jury what you've done with the FBI since joining?

A. Well, after I was -- after training school, I was assigned to the Savannah, Georgia field division for a year, where I did general criminal work; and then I was assigned to the Newark, New Jersey field division for approximately three-and-a-half to four years, and I did stolen-car investigations in Newark. And

James Cadigan - Direct

then I was assigned to the FBI Laboratory in 1977.

Q. When you were first assigned -- is 1977 when you became an examiner. or when you were assigned to the laboratory?

examiner, or when you were assigned to the laboratory.

A. Yes. I was assigned to the laboratory in 1976 and then became a qualified examiner in 1977.

Q. In that interim, did you receive some training?

A. Yes, sir.

Q. Can you describe the training that you received during that year?

A. Upon my assignment to the Firearms Unit, I underwent a training program that included reading of literature available in the field of firearms and tool marks identification, instruction in the types of equipment used by the laboratory for these kinds of examinations. Also, I went to manufacturing plants to observe firsthand the marks -- the machining processes that go into the production of tools; and I also received on-the-job training, which included thousands of examinations.

Q. Now, in this on-the-job training, did you have just one person who was training you, or is there more than one?

A. No, there was more than one.

Q. And did that on-the-job training involve the examination of evidence from actual cases?

A. Yes, sir, it did.

Q. When you did that, were you actually making reports or

James Cadigan - Direct

testifying in court?

A. No. I was just examining the evidence.

Q. Just so you could learn?

A. Yes.

Q. Now, during any period of your training, were you testifying in court?

A. During my training? No, sir.

Q. Now, at the end of that training, did you become qualified within the FBI and allowed to conduct examinations on your own?

A. Yes, sir.

Q. And since then, have you become involved yourself in training others to become firearms and tool marks examiners?

A. Yes, sir, I have.

Q. We just met someone named Brett Mills a few minutes ago. Is he one of the people you trained?

A. Yes, sir.

Q. Doing the same thing now that you did 20 years ago?

A. Yes.

Q. Now, in addition to helping to train new examiners, have you done any teaching or lecturing in your field?

A. Yes. In the field of tool mark identification, I've given hundreds of lectures on various aspects of tool mark identification to federal, state, and local law enforcement agencies as part of courses of study that involve the identification of automobiles and the identification of stolen

James Cadigan - Direct

automobiles and other aspects.

Q. Have you also lectured at training seminars at the FBI training academy?

A. Yes. I conduct one in-service training class at Quantico a year for our agents in stolen-car investigations, a significant portion of which involves tool mark identification.

Q. Now, earlier you mentioned that you have several areas of responsibility in your current work, tool mark examination, firearms, and serial number restoration?

A. Yes, sir.

Q. When you first completed your training back in 1977, did you have any area in particular that you specialized in?

A. Yes. For the first approximately 11 years of my stay in the laboratory, I did nothing but tool-mark-identification-type examinations.

Q. And in the course of those 20 years since you first became an examiner with the FBI, approximately how many tool mark comparisons have you done?

A. Thousands.

Q. Have any of those involved the comparison of marks left by a spinning drill bit?

A. Yes.

Q. On more than one occasion?

A. Yes.

Q. So this is not the first case in which you've done that

James Cadigan - Direct

kind of examination?

A. No, sir, it's not.

Q. Now, you were explaining earlier that there are two types of marks that a tool can leave. You mentioned impressions and striations. Is that right?

A. Yes, sir.

Q. "Striations" is just a fancy word for scratches?

A. They can be.

Q. Are there -- what kind of marks does a spinning drill bit leave?

A. It would leave striations or scratches from the cutting of the blade of the screwdriver -- I'm sorry -- did you say screwdriver?

Q. I'm sorry. I may have. If I did, I meant to say drill bits. What kind of marks does a drill bit leave?

A. A drill bit would leave striations left by the cutting of the blade and the tip of the drill bit.

Q. Now, you mentioned striations when I asked the wrong question about screwdrivers and other tools. Are there other tools that leave striations?

A. Certainly. There would be screwdrivers, a crowbar, if a crowbar was used, among others.

Q. Is there anything particularly different or difficult about examining the mark left by a spinning drill bit?

A. No. It's just another one of the kinds of examinations

James Cadigan - Direct

that fit in under the umbrella of tool mark identification.

Q. You apply the same practices and ideas in doing your examination?

A. Yes, sir.

Q. Now, you've testified in court before today. Is that correct?

A. Yes, sir.

Q. About how many times have you testified in court as a tool marks examiner?

A. Approximately 250 times.

Q. When I say "tool marks," I should say including tool marks and the other areas of specialization.

A. Yes, sir.

Q. Now, earlier in your testimony, you gave an example of a tool mark examination involving a window sill that had been pried open or a window that had been pried open by a screwdriver. Using that example, could you explain a little more about how you would go about doing your analysis?

A. Yes. In the case in which a window sill was pried open by a screwdriver tip or screwdriver itself, I -- the best way to examine that particular case would be if you could remove the portion of the window sill that had the impression on it and then taking the particular screwdriver in question, make test impressions, normally in lead, because lead is very soft, but scraping test impressions of the screwdriver to see what kinds

James Cadigan - Direct

of striations and marks the screwdriver blade would leave and then compare, using a comparison microscope, the tool marks left by the screwdriver blade with the marks left on the window sill.

Q. Let me ask you a couple of questions about that. You mentioned that you look at the marks left by the blade in this test impression. First of all, why do you make a test impression, rather than just look at the blade itself and compare it to the mark left on the window sill?

A. Well, as part of your examination, of course, you would look at the blade to see if there was any trace evidence and other considerations. And then you would make the test impressions so that you could compare like items, the impression of the screwdriver blade with the impression on the window sill.

Q. Sort of like looking at a photograph with a photograph, rather than a negative?

A. Yes.

Q. Now, you also mentioned that -- you mentioned a few times already these striations or scratches that are left behind that you look at. What produces those scratches?

A. Well, there can be two sources for the scratches for the -- or actually one source for the scratches. That would be left by the screwdriver blade as it scraped across the surface, the tip of the blade going across the top of the window sill.

James Cadigan - Direct

Q. Are you talking about just if the blade has a chip in it?

A. Right. In order to know whether or not a particular screwdriver blade was individual, as opposed to a class characteristic, class characteristic being the same size -- for instance, a screwdriver bit (sic) that was 1/4 of an inch wide. That would be a class characteristic, because a whole class of screwdriver blades would have that same width.

Then there are individual tool marks that the examiner looks at, and that usually comes from the manufacturing processes that go into the production of the screwdriver blade and also the subsequent use and abuse of the tool. For instance, a chip in the blade would make it very unique.

Q. Now, are all of these things that can happen to a blade -- you mentioned the manufacturing process, subsequent use and perhaps a chip coming out -- are all of those things visible to the naked eye?

A. No, not always.

Q. So in the course of your work, do you use a microscope?

A. Yes, sir.

Q. Does that help you see the tiny scratches that can also be left behind by a blade?

A. Yes, sir.

Q. Now, you told us earlier that you did tool mark analysis in this case. Can you in general terms first explain to the jury what it is that you did?

James Cadigan - Direct

A. Yes. I received a padlock that had some drill-bit impressions in it, and I was given two drill bits; and the request was to determine whether or not either one of the two drill bits made the impressions contained on the padlock.

MR. TIGAR: Your Honor, may I approach the bench?

THE COURT: Yes.

Members of the jury, feel free to stand and stretch when we're up here at the bench.

(At the bench:)

(Bench Conference 68B2 is not herein transcribed by court order. It is transcribed as a separate sealed transcript.)



James Cadigan - Direct

(In open court:)

THE COURT: I will give you these chances to stretch when we have these little conferences, which won't be very often. But please don't talk while you're doing that.

Proceed.

MR. ORENSTEIN: Thank you, sir.

BY MR. ORENSTEIN:

Q. Now, when you received the padlock, did you measure any parts of it?

A. Yes. There were two drill-bit impressions in the padlock, and I measured the diameter of them to determine what class of drill bits might have produced the marks on the padlock.

Q. When you refer to "class," what are you referring to?

A. As I mentioned before, in a -- examining a case in which drill bits are used, one of the first class characteristics, if you can determine it, that you would be interested in would be the diameter of the drill bit, because if you had -- for instance, if the impression was 1/4 of an inch and you had drill bits that were 1/2 inch in diameter, you would immediately know they couldn't have done it, and then you would move on to your next case.

Q. What did you find when you measured the holes in the padlock?

A. They were 1/4-inch in diameter.

Q. So you knew you didn't have to bother with drill bits of

James Cadigan - Direct

other sizes; is that correct?

A. Yes, sir.

Q. Now, what -- what, if anything, did you observe about the holes in the padlock?

A. Well, there were two of them. There was one that was a very shallow in depth, and then there was a second one that was much further and deeper into the lock cylinder of the padlock itself.

Q. And from those observations, did you see anything that you would characterize as a tool mark worth examining?

A. Yes. In both impressions.

Q. Mr. Cadigan, I'd like you to look on the table in front of you and see if you can find Government's Exhibit 126 in evidence, which is a padlock.

Do you have it, sir?

A. Yes, sir, I do.

Q. Do you recognize what that is?

A. Yes, I do. This is the padlock that I was given to examine in this case.

Q. Now, did you do anything to the padlock upon receiving it to facilitate your examination?

A. Yes. I did two things to the lock. There was a hasp portion that was attached. I had that removed to facilitate my examinations; in other words, to allow me to put it under a

comparison microscope. And then I also cut off six portions or

James Cadigan - Direct

several portions of the lock to allow me to look at and remove the lock cylinder.

Q. Now, why were you interested in looking at the lock cylinder?

A. Because the lock cylinder, which is the portion of the lock that I am indicating here with my pen, where the key goes into the lock that turns the -- to open the padlock -- that is where the two impressions that I saw from the drill bit were contained. And I needed to look at those very closely under the microscope.

Q. Did you prepare a series of photographs to illustrate your testimony about how you disassembled that lock to remove the lock cylinder?

A. Yes.

MR. ORENSTEIN: If I may ask Agent Tongate to assist, your Honor, I would like to show the witness Exhibit 246, Government's Exhibit 246.

THE COURT: Yes, you may assist.

MR. ORENSTEIN: If you could first show the witness the exhibit.

BY MR. ORENSTEIN:

Q. Agent Cadigan, do you recognize that?

A. Yes, I do.

Q. That is the chart that you prepared?

A. Yes, it is.

James Cadigan - Direct

MR. ORENSTEIN: Your Honor, we'd move the admission for demonstrative purposes of 246.

MR. TIGAR: No objection, your Honor.

THE COURT: All right. 246 is received and may be so used.

BY MR. ORENSTEIN:

Q. Now, Agent Cadigan, actually, it's not very large. Perhaps you could just hold it up -- Agent Cadigan, if you could hold it up and just explain to the jury what's depicted in these photographs and what it shows about your work here?

A. These are three photographs that I had made of the padlock and its various stages of disassembly as it was taken apart.

The first one to your far left is the lock in its unremoved condition.

The second one shows how many of the -- how much of the lock I had to remove in order to expose the lock cylinder, which again is that separate portion which accepts the key which turns and opens the lock itself. That's this area in here.

And then a much closer photograph of the lock cylinder itself showing the -- one of the impressions as you can see, the drill bit went all the way into the lock almost, breaking through but not quite -- at the bottom of the lock

through but not quite, at the bottom of the lock.

Q. So specifically in Photograph No. 3 on that chart, where is the tool mark that you're referring to?

James Cadigan - Direct

A. One of them was contained in the bottom here, the bottom of the lock cylinder, where the -- As the drill bit went through, it then, as I mentioned, almost broke through but not quite.

And there is a second one which is not immediately apparent in this particular photograph in the shallow portion up in the top of the lock cylinder.

Q. Now, the shallower mark is not apparent in that photograph. Is that correct?

A. Yes, sir, that is correct.

Q. You could just put that back on the easel for the time being.

Let me show you on your screen, Agent Cadigan -- I'd like to use the computer, please -- Exhibit 1841. Have you seen that before?

A. Yes, sir.

Q. What is that in that photograph?

A. Government's Exhibit 1841 is another photograph that I had taken of the lock cylinder, the top portion of it.

Q. Does that show the shallow mark that you referred to?

A. Yes, sir, it does.

MR. ORENSTEIN: Government offers 1841.

MR. TIGAR: May I examine, your Honor?

THE COURT: You may.

VOIR DIRE EXAMINATION

BY MR. TIGAR:

James Cadigan - Voir Dire

Q. Agent Cadigan, my name is Michael Tigar. I'm one of the lawyers appointed to help Terry Nichols.

You're showing us here -- you're looking at, the Government has offered, something that shows some marks on a lock. Is that correct?

A. Yes, sir.

Q. And is it your understanding that that lock was recovered at a quarry in Marion, Kansas?

A. I'm not exactly sure where it came from, but I know it was recovered.

Q. And do you know where it was kept in between the time it was recovered and the time it came to the FBI Laboratory?

A. No, sir.

Q. Do you know whether or not the sheriff who investigated put that lock onto a property report?

MR. ORENSTEIN: Objection, your Honor.

THE COURT: What's the objection?

MR. ORENSTEIN: Relevance to the voir dire.

THE COURT: Overruled.

THE WITNESS: No, I have no idea where it was before

-  
got it.

BY MR. TIGAR:

Q. Well, is it important to you as a tool marks examiner to know who has had the opportunity to change, tamper with, or alter material that you're looking at before you look at it?

James Cadigan - Voir Dire

A. The concern that I have when I receive evidence is whether or not I can identify or compare the marks that are contained on that evidence.

Questions as to where those -- how those marks could have gotten there are not my ability to resolve.

Q. I understand you can't resolve them, sir. I'm asking you as a man with this experience in the FBI, do you care whether somebody else has had the opportunity to change or alter the thing before you do your examination?

A. Care?

Q. Does it matter to you in your expertise, sir?

A. It wouldn't affect my examination.

Q. All right. Because in other words, what you're prepared to do -- what you do is you take it in whatever state it is when it arrives in your laboratory and then compare it with something else that's also arrived in your laboratory. Is that right?

A. Yes, sir, that's what I can do.

Q. And it's your testimony that it's somebody else's business what happened to it before it got to you. Is that right?

A. Certainly.

MR. TIGAR: With that understanding, I have no objection to this picture, your Honor.

THE COURT: All right. Then we may proceed. And the exhibit is?

James Cadigan - Voir Dire

MR. ORENSTEIN: 1841, your Honor.

THE COURT: 1841?

MR. ORENSTEIN: Yes, sir.

THE COURT: Received.

MR. ORENSTEIN: Perhaps we could move the easel out of the jury's way while this is up.

Thank you.

DIRECT EXAMINATION CONTINUED

BY MR. ORENSTEIN:

Q. You mentioned that this photograph shows the shallower -- well, actually, does it show both of the areas of tool marks that you saw?

A. Yes, sir, it does.

Q. Can you point out each of them?

A. Yes. This area here and this area here is the shallow portion. In the photograph you can see striations or lines that were left by a drill bit.

Then the second area of my concern is in this area down here, in which the drill bit almost went all the way through the lock cylinder, down in this fashion and then -- but did not go all the way through.

Q. Now, this particular photograph, the focus is on the shallower mark? Is that correct?

A. Yes, sir, the shallower mark, which is this area here.

Q. Did you also take photographs of the mark left in the

James Cadigan - Direct

deeper area?

A. Yes, sir, I did.

Q. Did you prepare a series of photographs to show how you can follow on where you're going?

A. Yes, sir.

MR. ORENSTEIN: I'd like with Agent Tongate's assistance, please, to show the witness Exhibit 152.

BY MR. ORENSTEIN:

Q. Agent Cadigan, do you recognize that?

A. Yes, sir, I do.

Q. You're turning it right side up?

A. Yes, sir.

Q. Is that a chart that you prepared showing photographs that you had taken of the deeper area in the drill -- in the drilled lock?

A. Yes, sir, it is.

MR. ORENSTEIN: Government offers Exhibit 152, please.

THE COURT: Do you want to approach?

MR. TIGAR: No. I can just see it from here, your

Honor.

No objection.

THE COURT: All right. 152 is received, may be displayed.

MR. ORENSTEIN: Thank you, sir.

Will you put that up on the easel, please.

James Cadigan - Direct

BY MR. ORENSTEIN:

Q. Now, for the record, Agent Cadigan, there are four photographs on that chart. Is that correct?

A. Yes, sir.

Q. Would you start with the photograph on the far left side of the chart and describe for the jury what it is that these photographs show.

A. These photographs show -- first photograph on the far left shows the lock as it's still in its assembled condition.

The second one to its right is a picture of the lock cylinder taken at 10 power.

The third picture, as it's labeled, is at 20 power.

And then the fourth picture is a picture -- is part of the lock cylinder taken at 40 power.

And what this does is that the second picture or the one labeled 10 power shows the shallow mark; and then as we travel further into the lock cylinder, we see the marks that were contained at the bottom of that lock cylinder.

Q. So this is a progression of photos that shows you how to get down to the bottom of that lock cylinder and see the deeper tool mark impressions?

A. Yes, sir.

Q. Let me show you on your screen, if I may, Government's Exhibit 1842. Do you recognize that?

A. Yes, sir.

James Cadigan - Direct

Q. Is that simply a single photo that is the same photo as on the chart on the far right?

A. Yes, sir.

MR. ORENSTEIN: Government offers Exhibit 1842 just for purposes of discussing that photo with the witness.

MR. TIGAR: No objection, your Honor.

THE COURT: All right. 1842 is received.

MR. ORENSTEIN: And, Agent Tongate, if I could ask you to move the easel once again.

Thank you.

BY MR. ORENSTEIN:

Q. Now, using the Photograph 1842, can you describe for us what the tool marks are that you looked at?

A. Yes. In examining the bottom part of this lock cylinder, I noticed that there were marks left in this area here and a portion of the lock cylinder here and also over here.

As you can see and as I mentioned before, when the drill bit went deep into the lock cylinder, it almost broke through but not quite; and that's why there is no continuity between this portion here and this portion here and this portion here. They're slightly fractured and pushed away from each other from the action of the drill bit going into the lock cylinder.

Q. Now, in addition to the fracturing or the discontinuity that you just described, did the pressure from the bit cause

James Cadigan - Direct

this not to be a flat surface?

A. Yes, that's correct.

Q. Now, you described before that you compared this mark to a drill bit. Is that correct?

A. Yes.

Q. And which drill -- do you have Exhibit 151B in front of you?

A. Yes, sir, I do.

Q. By the way, does that have a Q number on it, 151B?

A. Yes.

Q. Did you assign -- when you received the bit, did it already have a Q number as part of a larger group of evidence?

have a Q number as part of a larger group of evidence.

A. Yes, sir.

Q. And was that Q2898?

A. Yes, sir.

Q. Did you assign a sub-number to this particular bit?

A. Yes.

Q. Is that 2898B?

A. Yes, sir.

Q. Now, did you examine the tip of that drill bit, Exhibit 151B?

A. Yes, I did.

Q. And was -- let me show you, if I may, Exhibit 155 on your computer screen. Do you recognize that?

A. Yes, sir.

James Cadigan - Direct

Q. What is that?

A. This is a picture of the drill bit.

Q. And that is a picture of 151B?

A. Yes, sir.

MR. ORENSTEIN: Government offers Exhibit 155.

MR. TIGAR: May I inquire?

THE COURT: You may inquire.

VOIR DIRE EXAMINATION

BY MR. TIGAR:

Q. Once again, sir, do you know when the drill that is pictured in Government's Exhibit 155 was recovered?

A. No, sir. Exactly when it was recovered, no, I do not.

Q. Do you have some general idea?

A. Well, it would have had to have been before I received it, which was in July.

Q. Yes, it was. You got it in July?

A. Yes, sir.

Q. And did -- were you told that it had been recovered sometime in May?

A. I don't recall if I was told when it was recovered.

Q. Certainly recovered after April 19, 1995. Correct?

A. Yes, sir.

Q. All right. And when you -- when you first looked at the drill that's pictured there, was it in a box with other drills, other drill bits?

James Cadigan - Voir Dire

A. No, sir.

Q. It had been taken out and given to you; correct?

A. Yes, sir.

Q. To be sent to you. Now, do you know the date on which the lock, the pictures of which we're looking, was first recovered?

A. No, sir.

Q. Do you understand it to be the fall of 1994?

MR. ORENSTEIN: Objection to the relevance of the questions about the lock.

THE COURT: Sustained.

BY MR. TIGAR:

Q. When was this picture taken?

A. It would -- I'm not exactly sure the exact date that it was taken; but it was taken after I received the drill bit.

Q. All right. Now, when -- in a little while -- you're here today to show us some other comparison pictures; right?

A. Yes, sir.

Q. Now, when you do a comparison of pictures like you're going to do, is it important to you how much time elapsed between the time a tool mark was left and the time the tool that might have made the mark is recovered?

MR. ORENSTEIN: Objection to the relevance to this exhibit.

THE COURT: Overruled.

THE WITNESS: Okay. I'm sorry. Could you repeat

James Cadigan - Voir Dire

that.

BY MR. TIGAR:

Q. Yes, sir. When you're going to look at some pictures, comparing the mark made by a tool and a tool that might have made the mark, it is -- is it important to you to know how much time has elapsed between the time the tool mark was made and the time the tool that might have made the mark was recovered?

A. Well, first of all, I don't do comparisons by pictures. I look at actual -- the actual marks. I take the pictures after I do the comparisons to refresh my recollection.

Q. Yes, sir. My question was asked deliberately because of the way you're going to do that. I understand what you do. My question is very simple: Is it important to you, the time?

A. Is it important to know what time? Not necessarily, no.

Q. Okay. When you say "not necessarily," is it ever important to you to know how much time has elapsed between the time a mark was left and the time that a tool that might have made the mark that you're going to look at was recovered? Is it ever important to you?

A. I can't think of a time when it would be.

Q. All right. Well, let me suggest: Is it important to you to know how much use the tool that might have made the mark has had between the time that a mark was left somewhere and the time you get the tool?

MR. ORENSTEIN: Your Honor, I object.

James Cadigan - Voir Dire

THE COURT: Your objection is overruled. This is foundational. I'm going beyond voir dire because we haven't gone through the foundational pattern for the witness to be able to do it. I thought you would understand that.

Proceed.

THE WITNESS: I'm sorry. The question is?

BY MR. TIGAR:

Q. Yes, sir. If -- this is an example. If a tool mark is



made on a window sill by a screwdriver in October of a certain year and somebody -- and you can preserve that window sill so it -- you know, so it can't be altered and then sometime six months later somebody finds a screwdriver that might have made that mark, is it important to you to know what use that screwdriver has had in between October and the time that you recover it?

A. No.

Q. You don't consider the fact that somebody might have used the screwdriver in the meantime and altered it in some way?

A. Well, the --

Q. Do you, or don't you?

A. If that was the case, then that would change the mark left by that tool, and then you couldn't make a conclusion one way or another.

Q. I understand. But you understand that over time, tools get used; right?

James Cadigan - Voir Dire

A. Certainly. That's what gives them their individuality and allows you to identify them, yes, sir.

Q. And in the time that tools get used, they get changed in different ways; right?

A. They can. Yes, sir.

Q. All right. Now -- and it's your testimony that other than knowing when -- it had to be sometime after April 19. You don't know when this particular drill that we're going to see a picture of was recovered; is that right?

A. That's correct.

Q. And you don't know what use it had between, let's say, the fall of '94 and the time that you took this picture. Correct?

A. That is correct.

Q. All right.

MR. TIGAR: Subject to that understanding, your Honor, no objection.

THE COURT: All right. The exhibit is received.

155.

MR. ORENSTEIN: Excuse me. Now that -- if we could display that to the jury, please.

DIRECT EXAMINATION CONTINUED

BY MR. ORENSTEIN:

Q. Now that Exhibit 155 is on the screen, can you point out to us what you were looking at in conducting your examination when you looked at that drill bit and the impressions it made?

A. Yes. In examining the tip of this drill bit, the cutting

James Cadigan - Direct

edges are found here and here. And as I looked at it, I noticed that there was wear on both blades.

Q. Is that the kind of wear that produces the striations you were talking about before?

A. Yes, sir.

Q. Now, you marked before you had just put them away -- you

Q. Now, you marked before you had just put them away -- you had marked two separate lines there?

A. Yes. Here and here. Those are the two cutting edges of the drill bit.

Q. And does each cutting edge produce a different pattern of striations?

A. Yes, it does.

Q. Now, did you do anything with this drill bit itself to conduct your examination?

A. Yes, sir, I did.

Q. What did you do?

A. Upon receiving the drill bit, I made impressions in lead to determine what kind of tool marks that this particular drill bit left and to enable me to compare those tool marks left by this drill bit, Government's Exhibit 151B, with the tool marks that were present on Government's Exhibit 126.

Q. And 126, you were just holding it up. That's the lock?

A. Yes, sir.

Q. Let me ask you if you have in front of you Exhibit 244?

MR. ORENSTEIN: May I approach to assist, your Honor?

James Cadigan - Direct

THE COURT: Yes.

MR. ORENSTEIN: I thought I could assist, your Honor.

Oh. Thank you.

BY MR. ORENSTEIN:

Q. Do you have 244 before you right now?

A. Yes, sir, I do.

Q. Do you recognize it?

A. Yes, I do.

Q. What is Exhibit 244?

A. 244 is one of the -- is an impression I made with Government's Exhibit 151B. It's the lead that I actually made the impression in and that I used in my comparisons.

Q. Do you recognize that in particular as the particular piece of lead in which you made an impression from Exhibit 151B?

A. Yes, sir.

Q. And how do you recognize it?

A. It bears my initials, and also on the -- the item itself, it has the designation "rusty bit."

Q. Is that because you had more than one bit and this one happened to have some rust on it?

A. Yes, sir.

MR. ORENSTEIN: Government offers Exhibit 244.

MR. TIGAR: I'm sorry, your Honor. May I just see it?

THE COURT: You may, yes.

MR. TIGAR: May I inquire?

James Cadigan - Direct

THE COURT: Yes.

VOIR DIRE EXAMINATION

BY MR. TIGAR:

Q. How many drill-bit impressions did you make with the tool 151B?  
A. I think it was approximately three or four.  
Q. All right. And is this the only one you brought with you?  
A. It's the only one that I have with me right now, yes, sir.  
Q. And in connection with making your comparison, did you make other impressions?  
A. Yes, did I.  
Q. In lead?  
A. Yes, I did.  
Q. And did you do that with 151B, or -- you did that with other drill bits. Is that right?  
A. Yes, sir.  
Q. How many other drill bits?  
A. One other drill bit.  
Q. All right. How many drill bits did you have for purposes of making impressions?  
A. Two.  
Q. Didn't you have 75 others?  
A. I was given two.  
Q. I understand you were given two. Did you have at the time you were working on this project 75 other drill bits?

James Cadigan - Voir Dire

A. No, sir.  
Q. It's your testimony you never had 75 drill bits that you had obtained for purposes of working on this matter that you're testifying about today? Is that your testimony?  
A. I obtained 75 drill bits later, after I conducted this examination.  
Q. You did.  
A. Yes, sir.  
Q. Well, did you make any impressions in lead with the 75 other drill bits?  
A. Not in lead. They were in brass and aluminum.  
Q. And did you bring those today?  
A. No, sir.  
Q. Why did you make them in brass -- well --  
THE COURT: This is voir dire.  
MR. TIGAR: This is voir dire.  
Your Honor, I just realized that I was about to get into my cross-examination. I'll save it.  
We consent to the admission of this with that understanding.  
THE COURT: All right.  
MR. TIGAR: Sorry.  
THE COURT: 244 is received.

DIRECT EXAMINATION CONTINUED

BY MR. ORENSTEIN:

James Cadigan - Direct

Q. Now, it's a small item. Could you just hold it up to the

jury to indicate what you're looking at?

A. Yes. This piece of lead.

Q. And that's right now encased in a Baggie that has the exhibit sticker?

A. Yes, sir, it is.

Q. Obviously it's too small for the jury to look at it up close. Did you take any photographs of that impression?

A. Yes, sir.

Q. And did you prepare a similar chart showing varying magnifications of that impression?

A. Yes, sir, I did.

Q. With Agent Tongate's assistance, I'd like to show you Exhibit 153. Is that the chart that you prepared?

A. Yes, sir.

Q. Does it show varying magnifications of the drill bit that's just been introduced into evidence?

A. Yes, sir.

Q. I'm sorry. The drill-bit impression?

A. Yes, sir.

MR. ORENSTEIN: Government offers Exhibit 153.

MR. TIGAR: No objection, your Honor.

THE COURT: Received. May be displayed.

BY MR. ORENSTEIN:

Q. Now, Mr. Cadigan, starting with the photograph -- and for

James Cadigan - Direct

the record, there are four of them on that chart -- starting with the one on the extreme right-hand side, would you describe for the jury what is displayed in this chart?

A. This is a photograph of the piece of lead that I used to make my drill-bit impression.

Second one at slightly higher magnification, then a third and then a fourth at the listed magnifications, showing you the drill-bit impression that I used to make my comparison in this case.

Q. So again, we're just getting a closer and closer view of the test impression?

A. Yes, sir.

Q. Are these the same magnifications that you used in the photographs of the padlock hole?

A. Yes, sir.

Q. Now, let me show you on your screen Exhibit 1843. Is that just a single copy of the photo at the far left side of the chart that we were just looking at?

A. Yes, sir.

Q. That's once again the 40-power magnification of the test impression?

A. Yes, sir.

MR. ORENSTEIN: Government offers Exhibit 1843.

MR. TIGAR: No objection, your Honor.

THE COURT: Received.

James Cadigan - Direct

James Cadigan - Direct

BY MR. ORENSTEIN:

Q. Now that the photograph is before the jury, can you describe the striations that you looked at on the test impression?

A. Yes. In that particular photograph which shows the drill-bit impression I made with Government's Exhibit 151B, the comparisons I did looked at these striations that are all along here that are going in a circular fashion and also the striation marks that are here that are also going in a circular fashion and comparing those with the ones that were found in the lock cylinder.

Q. Now, when you made Exhibit 244, which is the photograph in this item, was that on a flat surface?

A. This was, yes, sir.

Q. Now, once you had made these photographs -- and these are just for illustrative purposes -- did you compare the padlock and the test impression?

A. Yes, sir, I did.

Q. How did you go about comparing them?

A. I placed the lock cylinder under the comparison microscope and looked at the tool marks that were present in that lock cylinder and compared them to the marks that I had produced with Government's Exhibit 151B to determine whether or not that drill bit made the impressions contained on that lock cylinder.

MR. TIGAR: Your Honor, may that answer be stricken?

James Cadigan - Direct

THE COURT: Yes. It is stricken.

MR. ORENSTEIN: Your Honor, may I approach for a moment?

THE COURT: No.

BY MR. ORENSTEIN:

Q. Now, in conducting your comparison, did you use an instrument?

A. Yes, I did.

Q. What instrument did you use?

A. I utilized a comparison microscope.

Q. Can you describe what a comparison microscope does?

A. Simply a comparison microscope is just two microscopes joined optically by a series of lenses and mirrors. Also, it has a stereoscopic viewer, which means an examiner can use both of his items to look at two items that are side by side, and what he sees when he looks into the microscope is a circle -- circular area that has a dividing line in the middle of it. And on one side of that area is -- would be marks from the left side of the microscope, and the other side of the hairline would be the marks from the right side of the comparison microscope.

Q. Did you do that with the test impression on one side and the tool mark in the lock on the other side?

A. Yes, sir.

Q. Did you prepare a chart or photograph to illustrate what

James Cadigan - Direct

you saw when you looked through the comparison microscope?

A. Yes.

Q. Do you have before you Exhibit 157?

A. Yes, I do.

Q. And what is 157?

A. 157 is a photograph that I had prepared that showed what I saw under the microscope when I examined the impression on the lock cylinder and the test impression that I made with Government's Exhibit 151B.

MR. ORENSTEIN: Your Honor the Government offers Exhibit 157.

MR. TIGAR: I don't see it on my screen, your Honor. If I could just look at it.

THE COURT: Yes, you may.

MR. TIGAR: Yes, your Honor, it's what I've seen. No objection.

THE COURT: 157 is received, may be used.

MR. ORENSTEIN: And may I retrieve it to display on the ELMO?

THE COURT: Yes.

MR. ORENSTEIN: Thank you.

BY MR. ORENSTEIN:

Q. Now, Agent Cadigan, this photo has two halves. Is that correct?

A. Yes, sir.

James Cadigan - Direct

Q. Let me first show you the half -- the right-side half. And I'll zoom out here.

What do we see on the right-hand side of this photograph?

A. On the right-hand -- on this particular portion of the photograph that's exposed is a portion of the tool marks made by the Government's Exhibit 151B, by the drill bit that I made in the test impression in lead.

Q. So that's the test impression; correct?

A. Yes, sir.

Q. All right. Now, if we open up the left side -- let me zoom in a little bit there. Does that show the -- what you saw on the other half of the comparison microscope?

A. Yes. This portion of the photograph shows tool marks that were -- that are at the bottom of the lock cylinder from the padlock.

Q. Now, if we open up both sides of this exhibit, do we see what you saw when you looked through the comparison microscope?

A. You see a portion of it, yes, sir.

Q. And is that -- does that illustrate what you saw when you looked through the comparison microscope?

A. Yes, sir.

Q. Now, do you see any areas of similarity from one side to the other?

A. Yes, sir, I do.

James Cadigan - Direct

Q. And can you point out the similarities that you saw?

A. Certainly. As we can see from the striations that are left by the drill bit -- continue over onto the lock cylinder in these areas. And those are tool marks that are contained on the lock cylinder again on the left side and the drill-bit impression on the right side.

Q. So these striations on one side from the test impression you see is also reflected on the other side in the impression in the lock; is that correct?

A. Yes, sir.

MR. ORENSTEIN: Thank you, Agent Cadigan.

Your Honor, I have nothing further on direct.

THE COURT: All right. Mr. Tigar?

MR. TIGAR: Your Honor, we would respectfully request -- I made a motion to strike most inartfully. Would the Court instruct the jury as to the significance of that?

THE COURT: Well, what the motion to strike was about was the witness giving an opinion with respect to comparison, and I struck that because what is permitted here is to show what he saw through the microscope and the comparison microscope and then with his experience and training the similarities that he pointed out.

MR. TIGAR: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. TIGAR:

James Cadigan - Cross

Q. Agent Cadigan, you have been a special agent for how many years, sir?

A. 26 years tomorrow.

Q. 26 years. I'm going to show you something that's been furnished to us in discovery, if I may.

Is that a biography of you, sir?

A. It is one of the CV or curriculum vitae that I prepared, yes, sir.

Q. Yes, sir. And in there you list the fact that you have a bachelor of science from the University of Maryland. Is that correct?

A. Yes, sir.

Q. And you list that you have testified in 250 court cases. Is that correct, sir?

A. Yes, sir.

Q. And you say that you're a member of the AFTE?

A. The Association of Firearms and Tool Marks Examiners, yes, sir.

Q. And the 250 court cases in which you've testified: Are those in the areas of -- all the areas of tool marks?

A. No, they are in tool mark identification, firearms identification, and serial number restoration only.

Q. Okay. In terms of spinning drill bits, how many cases have

you testified in?

A. None.

James Cadigan - Cross

Q. This is your first time out?

A. This is my first time testifying about the identification of a drill bit. It's not the first identification I've made with a drill bit.

Q. I understand that. You testified you made others. This case is your first testimony. Now, in that case you list that you did the firearms work in the Branch Davidian case; is that correct, sir?

A. That is correct.

Q. And that was -- that involved a great deal of very elaborate ballistics work on your part; correct?

A. It involved firearms identification work, yes, sir.

Q. Are there similarities between firearms identification and drill-bit identification?

A. Firearms identification is one subset of the general umbrella term "tool mark identification."

Q. So the answer to my question are there similarities: Is the answer yes, or is the answer no?

A. Certainly, it's part of it.

Q. Thank you. Now, in your biography there, you do not list your participation in the Ruby Ridge case. Is that correct?

A. That is correct, I guess.

Q. Will you look at it?

A. No, I don't.

Q. Why did you leave it off?

James Cadigan - Cross

MR. ORENSTEIN: Objection to relevance.

THE COURT: Sustained.

BY MR. TIGAR:

Q. When you first got this drill bit in, you said that you had examined other drill bits in the past. Is that right?

A. Yes, sir.

Q. Now, you told us earlier on the voir dire that you had gone out and gotten 75 other drill bits; is that correct?

A. It's more than 75, but 75 from one manufacturer, yes, sir.

Q. Oh, 75 from one manufacturer. And how many total drill bits did you get?

A. Approximately 150.

Q. Now, the purpose of that was to help you in your analysis; correct?

A. What was?

Q. To get all the 150 drill bits.

A. No, sir.

Q. What was the purpose of it?

A. The purpose was to -- it was part of initiating a study in the area of drill-bit manufacture and the tool marks left by a drill bit.

Q. And did you think it was necessary to initiate that study?



Q. And did you think it was necessary to initiate that study:

A. I thought in reading the literature that is available in the field of tool mark identification, I noticed that there were not many studies concerning tool mark identification

James Cadigan - Cross

utilizing drill bits, and I thought that this would be a good area to initiate a study.

Q. All right. So you -- and in fact, you made some notes that you thought that you were going to purchase a Microsoft program called Mathematica. Correct?

A. I didn't make, no, sir.

Q. Oh, didn't make that note? Did you make notes concerning the use of a Poisson figure, Poisson equation?

A. No, sir.

Q. Did you attempt to -- well, let me make -- let me ask you some about some differences here. A ballistics case involves looking at striations, doesn't it?

A. If you mean a firearms identification as opposed to ballistics, ballistics being the study of the motion of projectiles or projectiles in motion, firearms identification would be the study of striations left on a bullet from the barrel of a firearm.

Q. Exactly. And in order to make the striations -- in order to understand the striations, you have to understand how the striations get made in the firearm; correct?

A. Yes, sir.

Q. And in a 4-inch barrel, Smith & Wesson revolver, if you get a bullet that is a projectile that's fired from that and you put it under a microscope, you can see striations; correct?

A. Yes, sir.

James Cadigan - Cross

Q. And how many turns or twists does the projectile make as it -- as it travels the 4-inch length of the barrel of the Smith & Wesson?

A. Well, that would depend on the rate of twist of the barrel. Some barrels turn the -- the bullet would turn once every 8 inches, once every 12 inches, once every 16. It depends on the manufacturer.

Q. All right. But in any case, it would be very rare for a bullet coming out of a Smith & Wesson revolver to have made more than one complete revolution before it leaves the end -- the business end of the gun. Right?

A. I don't know, but --

Q. Well, you said if it turns once in 8 inches or once in 12 -- those are reasonable numbers, aren't they?

A. They are some of the rates of twist that are utilized by manufacturers, yes, sir.

Q. All right. And so that in those cases, at any rate, the bullet would not have made one complete revolution by the time it gets out the barrel. Correct?

A. That is correct.

Q. Now, how fast is the bullet being fired from a typical Smith & Wesson revolving? How many rpms?

A. I don't know.

Q. All right. And we could compute that, couldn't we, by asking ourselves what the speed was, if we knew the speed at

James Cadigan - Cross

which it left the barrel --

A. Correct.

Q. Yes, sir and then if we knew how many revolutions it would make in an 8-inch or 12-inch area, then we could compute that. Right?

A. I guess so.

Q. Okay. But you've never done it?

A. No, sir.

Q. Now, that Makita drill that's in front of you -- how fast does the drill rotate -- that is the right term? Is it "rotate" or "revolve"? I never know. But spin. How about that?

How fast does the drill bit spin on that drill when it's being used in the -- at the rated capacity?

A. I don't know.

Q. Well, would you agree with me, sir, that a drill-bit impression -- let's take these one at a time. When a screwdriver or crowbar is placed against a window to jimmy it, the usual thing is that you'll see a mark made by the application of the force of the crowbar or screwdriver to the window. Correct?

A. You would see one of either that -- the impression that was made as it pressed against the window or striations as it slid across the window sill.

Q. And the drill bit that you analyzed, here, however, the

James Cadigan - Cross

hypothesis is that it was applied -- that the lock you had, a drill was applied to it like a spinning tool. Correct?

A. Yes, sir.

Q. And the impressions that are left are not left by any single contact of the drill but rather by a process of spinning at the rated speed of the drill. Correct?

A. Well, the impressions that are left if -- depends -- it depends on what happens as the user utilizes the drill.

Q. Right.

A. If he goes all the way through, no marks are left.

Q. Of course. The end of the drill doesn't leave any marks?

A. But if in this case in which there was a shallow impression and a deeper impression, the impression that is left would be the last turn of that particular drill bit before it was pulled away.

Q. That's right. Before it was pulled away.

A. The last sweep.

Q. You use electric drills, don't you?

A. Yes, sir.

Q. And sometimes if you're drilling a hole in a little ways, do you run the drill bit back in to smooth out the partial hole that you've made and to have the process of the drill remove any chips?

A. Sometimes.

Q. Okay. And so you're familiar with that process; right?

James Cadigan - Cross

A. Yes, sir.

Q. Well now let's look at the two parts of the equation. Let's look first at a drill bit. All right? How is a drill bit manufactured?

A. Well, it's a several-step process that goes into the production of the drill bit, starting out with bar stock that can be of different diameters.

Q. Okay. Let's start with that. A quarter-inch drill bit starts out its life as a piece of bar stock a quarter inch in diameter. Correct?

A. Not necessarily. It can be wider than that, and then it's manufactured down to a particular diameter.

Q. Could be machined down; correct?

A. Yes, sir.

Q. So it starts out life as a piece of bar stock. Now, bar stock is not a casting, is it? It's an extrusion of some kind?

A. It usually is, yes, sir.

Q. Because a casting wouldn't have the strength that's necessary to do the work that a drill is supposed to do. Is that your understanding?

A. That's my understanding.

Q. Now, this piece of bar stock is then machined to make a pointed end -- that's the -- the pointy end of the drill. Right?

A. Yes, sir.

James Cadigan - Cross

Q. The pointed part. And then there are -- the little things you can see around those are called the flutes. Correct?

A. That's what they're called.

Q. Now, the drill as it's manufactured has two types of cutting edges, does it not? One is the cutting edge at the end of the drill, if you looked at it end on, like that picture you and I were looking at, and you see those two little edges there; correct?

A. Yes, sir.

Q. In addition to that, the flutes are sharp; is that correct?

A. The flutes are sharp, yes, sir.

Q. In order to get sharp, they have to be sharpened?

A. Yes, sir.

Q. You don't find them in nature sharpened.

A. No.

Q. That's what I'm saying.

Q. That's what I'm saying.

Now, the manufacturer makes drill bits, the quarter-inch drill bits according to specifications; correct?

A. Yes, sir.

Q. That is to say, if I go to the hardware store and buy something out of a bin that says a quarter-inch drill bit and I'm going to drill a hole in my boat to put lag bolts, I want to make sure that it's a quarter inch and not 17/32. Right?

A. That is correct.

Q. So they have tolerances in the manufacture that are

James Cadigan - Cross

designed to make the drills identical at least with respect to size. Is that correct?

A. That is correct.

Q. Now, in addition to making them identical with respect to size, the manufacture of drill bits in today's world is automated, isn't it?

A. Yes, sir.

Q. Did you visit any drill-bit plants in your preparation for your debut as a testifier about drill bits?

A. I visited drill-bit manufacturing facilities both during my training and before coming to testify here, yes, sir.

Q. Okay. So you've watched them make them. Right?

A. Yes, sir.

Q. Now, the automated process involves the use of a lathe of some kind -- is that fair to say -- to machine this bar stock into drill bits of the requisite size? Is that fair?

A. A lathe is used in part of the process. There is also a cutter that cuts the flutes, and there is also a grinder that sharpens the tips of the blades to allow them to cut.

Q. Okay. Now -- and again, these processes are designed to produce drill bits that meet the manufacturers' specifications; correct?

A. That is correct.

Q. Now, metal that is extruded as bar stock has certain strength characteristics that are along its longitude; that is,

James Cadigan - Cross

along the long way. Is that right?

A. Yes, sir.

Q. That is to say, if you cut -- if you cut through metal -- and I don't know the answer to this. Could you help me? If I cut through a piece of bar stock and looked at it very closely under a microscope, would I see things that looked fibrous?

A. I don't know.

Q. You don't know the answer to that.

A. No, sir.

Q. Okay. Now, in this machining process, is it your belief that every drill bit that comes off the line is unique when it leaves the factory?

A. In the production, once it's sharpened.

O. Yes, sir.

2- ---, ---

A. Yes, sir.

Q. All right. And the -- now, when you say that it's unique, you're taking account of the fact that, what, every time a cutting tool cuts something, it changes; right?

A. It's based on the fact that as the tool is sharpened, it is sharpened using a wheel that presents in a random-pattern grit that removes metal; and each time that wheel turns, grit falls off, pieces of metal fall off and leave a unique pattern on the tip of that screwdriver blade or drill bit.

Q. Talking about drill bits?

A. Drill bit. And those unique patterns on the tip of that

James Cadigan - Cross

screw -- drill bit are left when that drill bit is used on a surface.

Q. Now, we're talking about the manufacturing process, sir. We've gone a little bit beyond.

When the -- let's look at the place where the pointy end of the drill is being made. Right? That pointy end makes contact with a wheel. Correct?

A. Yes, sir.

Q. All right. And the wheel is spinning very fast. Right?

A. Yes, sir.

Q. Now -- and that's the same -- if I make -- if the manufacturer makes a thousand drill bits in one day, every single one of the ends of those drill bits is going to come in contact with that same wheel; correct?

A. Yes.

Q. All right. And if you were at the factory and you took that wheel, would you be able -- at the end of a day's run, would you be able to identify the 1,000 drill bits that were made that day using that wheel?

A. I don't understand that question.

Q. Well, you testified, sir, that in our hypothetical example a thousand drill bits are going to be made by a manufacturer. Correct? We understand that. That's our hypothetical?

A. Yes, sir.

Q. Let's assume they're a thousand quarter-inch drill bits.

James Cadigan - Cross

A. Yes, sir.

Q. And you told us that the way those drill bits get made is that the -- what's going to become the pointy end comes into contact with a grinding wheel sometime during the production process. Correct?

A. Yes, sir.

Q. All right. Now, if you were able at the end of the production day to take that grinding wheel and look at it under your microscope, would you be able to correlate that to the thousand drill bits that were manufactured that day?

A. Would I be able to match the grinding wheel?

Q. Yes.

A. With the drill bits?  
Q. Yes, with the drill bits.  
A. I don't think so.  
Q. All right. Well, a grinding wheel is a cutting tool, isn't it?  
A. Yes, sir.  
Q. And a drill bit is a thing that receives an impression from a cutting tool. Correct?  
A. Yes, sir.  
Q. And it's your testimony that in that instance you would not be able to make a match between the thing that cuts and the thing that's being cut. Right?  
A. Well, in the case --

James Cadigan - Cross

Q. You can explain in a minute, but I need you to answer my question. Is it your testimony that you would not in that case be able to make a match between the thing that cuts and the thing that's being cut? Yea, or nay?  
A. It's sharpened, as opposed to being cut, but there wouldn't be any pattern on the grinding wheel that you could compare to the drill bit.  
Q. Okay. And you say, "sharpened, as opposed to being cut." The -- a grinding wheel has little bits or flecks of diamond or emery or something like that. Right?  
A. Yes, sir.  
Q. So when we say "grind," all we mean is cut -- that's a series of little cuts rendered by the little pieces of grit that are on the wheel; right?  
A. "Sharpened" is a more accurate term for me.  
Q. All right. Now, in this manufacturing process that we're talking about, you said you collected, you know, 150 or so drills. Right? Now, is -- have you read any of the literature about drill-bit comparison?  
A. Yes, sir.  
Q. Okay. Have you read a book called Modern Scientific Evidence, The Law and Science of Expert Testimony?  
A. I don't know that I have.

MR. TIGAR: May I display it to the witness, your Honor?

James Cadigan - Cross

THE COURT: Yes.

BY MR. TIGAR:  
Q. Do you know this book?  
A. No, sir.  
Q. Have you read any work on firearms and tool marks by Alfred Biasotti and John Murdock?  
A. Yes, sir.  
Q. Do you recognize Alfred Biasotti and John Murdock as experts in the field of tool mark identification?  
A. They have written several articles in the field, yes, sir.

Q. I didn't ask that, sir. Do you recognize them as experts in the field of tool mark identification?

A. I recognize them as people that have expertise.

Q. Now, are they members of this AFTE? Do you know?

A. Mr. Biasotti was a member of it and Mr. Murdock is.

MR. TIGAR: Okay. Your Honor, I am about to change subjects. If I could have the Court's indulgence and leave five minutes early, I would appreciate it. If not, I'll continue.

THE COURT: How long do you expect to go?

MR. TIGAR: Your Honor, I have another hour and a half or so with this witness.

THE COURT: All right. We'll recess.

MR. TIGAR: Thank you, your Honor.

THE COURT: You may step down.

Members of the jury, we will recess now until Monday morning, at which time we expect to start at 8:45. And, of course, as I already told you, Tuesday we're going to recognize the holiday of Veterans Day.

So between now and Monday morning when you come back to the courthouse is a short time in one way you look at it, your way; it's a long time in the way I look at it, which is how much opportunity there is for you to come into contact with things that you ought not during that time.

And, you know, I just repeat what I said here when you were going through the jury selection process in assuring you or reassuring you that we do not anticipate having you kept separate and apart from other people -- "sequester," as we call it, the jury during the course of the trial. And I still, of course, adhere to that.

But that all depends on you and it depends upon your willingness to and your exercising the discipline to, first of all, keep open minds, remembering that, of course, you've heard a lot in this case but you're going to hear a lot more, remembering also that you must avoid discussing any impressions or even coming to impressions about what all this means. Let us go through the whole trial process, meaning all of the evidence, the arguments, and the instructions on the law, all of the phases of the trial that I discussed with you or mentioned to you when you were first selected.

So please wait for that with respect to your own views of the case.

But, you know, you have to be extremely careful about all things that you might come into contact with in newspapers, magazines, radio, television, books, whatever, because you're going to get a lot more evidence in this case; and it's the evidence in the case that you're going to have to rely on when you decide the case and only that.

I do want to mention one thing about exhibits. You hear these exhibits being referred to with numbers like 2000 and all that. I don't want you to leap to the conclusion that you're going to get thousands of exhibits. The numbering system we use here is not, as you've already learned, sequential. We don't go from 1 to X number or infinity. So bear with us on that.

And also, when it comes time to deliberate in the case, the exhibits will be there in a room for you to handle

case, the exhibits will be there in a room for you to handle and deal with. You don't have to remember each photograph that you see or each physical piece of evidence that you see. You'll have all of that at the time of deliberation. So don't be concerned with, Gee, I don't remember what that photograph was, or something. That will all be there for you.

But the important thing, of course, is that you must be extremely careful in talking with other people or letting other people talk to you or in your presence about anything connected with the case.

Obviously, as you can appreciate, there is some public comment about our trial and I'm sure will be. But, you know, your understanding of the case has to be based on what happens in this room and on nothing else. And I have to rely on you for that because, you know, to put it to you in just plain old terms, if somebody violates that, I'd have to change my approach in this case and then sequester you.

So I'm sure you don't want that to happen; and I don't, either. But it depends on every one of you following this instruction and being very careful about it.

Now, we -- you know, in all other respects, of course, you're free to go and do as you will this weekend. I can't guarantee you good weather all the time. I don't have any jurisdiction over that, so we'll see what happens. We kind of hope for good weather on Monday.

But with these cautions, then, I'm going to excuse you until the usual time when we'll gather you up on Monday and have you come to the courthouse.

So please continue to be very careful, as I am sure you will, recognizing what your responsibility is in the case. And I'm not going to be able to tell you now how long you can expect this trial to take because we still don't know. I mean, we're well under way here, but I'm not going to be able to give you a prediction about the length of the trial; so don't ask me. I can't answer it.

With these cautions, members of the jury -- and also we do, on a more positive side, hope for you to have a pleasant and restful weekend. You're now excused till Monday morning.

(Jury out at 1:02 p.m.)

MR. TIGAR: May we approach, your Honor?

THE COURT: Yes.

(At the bench:)

(Bench Conference 68B3 is not herein transcribed by court order. It is transcribed as a separate sealed transcript.)



(In open court:)

THE COURT: Well, we had a little discussion here at the bench concerning a couple of matters respecting the evidence and then also scheduling.

8:45 -- we'll be in recess until 8:45 Monday morning.  
(Recess at 1:08 p.m.)

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INDEX

Item  
Page

WITNESSES

Thomas Brown

Direct Examination by Mr. Ryan

Cross-examination by Mr. Tigar

Brett Mills

Direct Examination by Ms. Wilkinson

Cross-examination by Mr. Tigar

James Cadigan

Direct Examination by Mr. Orenstein

Voir Dire Examination by Mr. Tigar

Direct Examination Continued by Mr. Orenstein 7634

Voir Dire Examination by Mr. Tigar

Direct Examination Continued by Mr. Orenstein 7643

Voir Dire Examination by Mr. Tigar

Direct Examination Continued by Mr. Orenstein 7647

Cross-examination by Mr. Tigar

PLAINTIFF'S EXHIBITS

Exhibit	Offered	Received	Refused	Reserved	Withdrawn
151-151A	7581	7585			
151B	7600	7600			
152	7635	7635			
153	7648	7648			
155	7639	7643			
157	7652	7652			
244	7645	7647			
246	7630	7630			
1841	7631	7634			
1842	7637	7637			
1843	7649	7649			
2010	7577	7578			
2011	7578	7578			
2012	7579	7579			

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REPORTER'S CERTIFICATE

I certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter. Dated at Denver, Colorado, this 7th day of November, 1997.

Paul Zuckerman

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