Halsey, Byron

Testimony of

Christopher Fielder, FBI

next desk. Is that right?

A Yes.

Q So that's why Detective Pfeiffer sits there and clacks away at the typewriter while the statement is being taken. Is that right?

A That's part of rapport.

MS. VAN PELT: No further questions.

THE COURT: You may step down.

Please watch your step.

MR. TUCKER: State would call Agent Fiedler.

C H R I S T O P H E R F I E D L E R, sworn.

DIRECT EXAMINATION BY MR. TUCKER:

Q By whom are you employed?

A Currently employed by Federal Bureau of Investigation, Washington D.C.

Q What capacity are you so employed?

A Forensic geologist assigned to the laboratory division.

Q Where are your official headquarters.

A In Washington D.C.

Q Can you tell us where you received your college education?

A I received a bachelor degree in earth science from Millersville State University in Pennsylvania, 1973.

Q Following your college degree can you tell us

what special training you received in regard to earth sciences?

A I after 1973 became employed by the F.B.I. and was transferred to the laboratory division in 1975.

From 1975 to 1978 I was employed and worked as a technician in the laboratory. Essentially for three years learning how to handle evidence, how to examine it, what it means, what it doesn't mean. And I did this for approximately three years while on-the-job training.

Q And following this apprenticeship that you refer to as on-the-job training, did you assume another position with the F.B.I. regarding your specialty forensic geology?

A Yes, I did.

Q What is that?

A In 1978 I was elevated to the rank of laboratory examiner which enabled me to receive evidence, examine evidence, issue a report and testify to it if so called.

Q Since 1978 have you devoted your duties to the field of forensic geology within the F.B.I. laboratory?

A It takes up approximately 80 percent of my time yes.

Q And as a result of that at the F.B.I. laboratories are you familiar with the technical equipment

available in conducting examinations in the field of forensic geology?

A Very much so, yes.

Q Can you describe to us what equipment is utilized?

A Well, there's numerous types of equipment, all being the latest technology and state of the art instruments and equipment.

Q Are scaning microscopes available to you?

A Yes, they are.

Q Are you familiar with those?

A Yes, I am.

Q You have utilized them in the past?

A I have been in the presence while they were being used, yes.

Q Now, are there any scientific publications available to you in regard to this field, forensic geology, as a result of your duty as an F.B.I. technician?

A Yes, the forensic publications and journals throughout the world are available able to us through our library.

Q Do you read them?

MS. VAN PELT: I stipulate Special Agent Fiedler is an expert in forensic geology.

MR. TUCKER: I accept the stipulation, your

Honor.

Q Agent Fiedler, in the course of your work, as a forensic geologist, did you have occasion to receive from Robert Spaulding certain items, a brick residue for examination in relation to this case?

A Yes, I did.

Q Mr. Fiedler, I show you S-33 for identification and ask if you can look at it and if you recognize it?

A Yes, I do. It's a portion of a brick which bears my initials and another container which --

Q Hold on.

MR. TUCKER: May we have this marked?

THE COURT: Does that go with S-33?

MR. TUCKER: No, it's not. It's residue from S-33.

THE COURT: S-33A.

(Brick residue is marked S-33A for identification.)

Q Agent Fiedler, I show you what's previously marked S-136, 137, 138, 139 and 140.

I ask you to look at those envelopes and the material contained in the envelopes and I ask you if you recognize that material?

A Yes, these envelopes bear my initials and these

contain a nail.

Q Now, the material, S-33, that's contained -- that's marked S-33 and the material contained in the envelopes S-136 through S-140, did you receive those from Agent Spaulding?

A Yes, I did.

Q And as a result of receiving these materials did you conduct an examination, comparison examination between the materials, the nails in the envelopes 136 through 140 in relation to the brick which is labeled S-33?

A Yes, I did.

Q And can you tell us how you conducted that examination?

A The first examination consisted of examining the nails under a microscope to see if there was any material imbedded or crushed onto the head of the nails which would be suitable for comparisons to any source of a brick. I noted such material.

At that point the brick itself was examined under microscope to see if there was any fresh breaks, or any abrasions on the brick. In other words, make sure the brick was not in clean, pristine condition and could not have been caused for any material which may be on the nails.

After this residue on the heads of the nails was noted and the color of the residue also, the nails and the brick particles were removed, very small microscopic particles that you can barely see with the naked eye and composition of these particles were determined. These composition were then compared to the composition of the brick.

Q Now, following the comparison of the material on the nails to the material of the brick, was that done under ordinary microscope?

A No, there was done what is referred to as scanning electron microscope.

Q And can you tell us what's the purpose of putting those materials under the scanning electron microscope?

A Well, the scanning electron microscope magnifies materials thousands of times, which a light like scope cannot. At the same time you're magnifying and looking at these particles you can determine their elemental composition.

Q Now, I show you what's been marked S-33A for identification and I ask if you recognize that?

A Yes, it bears my lab number.

Q And can you tell us what that is, sir?

A This is a -- it contains a scanning electron

nails.

Q Now, as a result of your comparison, were you able to reach an opinion as to whether the material that was removed from the heads of these nails was consistent with the material from which the brick is composed?

A Yes. It had basically the same color and elemental composition.

Q Would you say that the material that was removed from the heads of the nails is consistent and contained the same materials that the brick is composed of?

A Yes, sir.

Q Now, can you tell us further what you mean consistent with?

A I cannot eliminate that brick as the source of the residue on the head of the nails.

Q Well, could you say whether it was a yellow brick or orange brick or a cement block that the debris on the head of the nails came from?

A It certainly did not come from any other color of brick or any other brick made of a different composition.

MR. TUCKER: No further questions.

THE COURT: We'll take our lunch recess.

MS. VAN PELT: Judge, I'm going to be two minutes.

THE COURT: Okay. We won't take our lunch recess.

CROSS-EXAMINATION BY MS. VAN PELT:

Q Agent, were you asked to do any other comparisons as part of the submittal that came to you from, I believe, Agent Spaulding?

A Yes, I was.

Q Did you do any other comparisons?

A No, I did not.

Q Why not?

A Of the material I was asked to look for or to compare any substance to was in containers that had been punctured and latent with known material and, therefore, because of the possibility of contamination to any other garment or item existed, I did not do the examination.

Q What you're saying, you received them at the laboratory having been improperly packaged?

A I received them in a leaking condition and the bags and envelopes were punctured, yes.

MS. VAN PELT: No further questions.

THE COURT: You may step down.

MR. TUCKER: Excuse me. I have one question on redirect.

REDIRECT EXAMINATION BY MR. TUCKER:

Q Can you tell us if there's any way which you

can tell whether the items were improperly packaged at its inception?

A No, no.

MR. TUCKER: No further questions.

THE COURT: You may step down.

Ladies and gentlemen, we'll take our luncheon recess. Come back 1:30.

Don't discuss the case.

(Luncheon recess.)

A F T E R N O O N S E S S I O N

THE COURT: Anything before we bring out the jury?

MRS. CLARK: No.

THE COURT: Bring out the jury.

(The following tables place in the presence of the jury.)

THE COURT: Good afternoon.

I don't like to keep you in the dark if I can help it. I just want you to know in my opinion we're moving along at a brisk pace. It's a possibility this case will get to you early next week, Tuesday, Wednesday next week. No guarantees, possibility.

Who is your next witness?

MRS. CLARK: Wayne Card.

Halsey, Byron

Testimony of

Robert Spalding, FBI
Glenn Owens, Union County Prosecutors Office (Fingerprint Expert)

than the the fact that you received it?

MS. CLARK: Judge, it makes a difference. I'm just saying to you that today is what, March 10th.

THE COURT: 11th.

MS. CLARK: Thank you.

It was dated February 24, 1988, and the date of the report and the date of the interview. It's still March 10th.

THE COURT: Okay.

Anything else?

MS. CLARK: No, sir.

THE COURT: Call out the jury.

MR. TUCKER: Your Honor, I inadvertently during Agt. Tobin's testimony forgot to call upon the Court Reporter to mark the diagram. And when the jury comes out I'd just like to have that marked.

THE COURT: Okay.

(Whereupon the jury was brought out.)

THE COURT: Good morning.

THE JURY: Good morning.

MR. TUCKER: Your Honor, may I have Agent Tobin's diagram --

THE COURT: S-275.

MR. TUCKER: -- marked?

(Whereupon diagram was marked S-275 for identification.)

MR. TUCKER: Thank you, your Honor.

THE COURT: Call your next witness.

MS. CLARK: The State calls Robert Spalding.

R O B E R T S P A L D I N G, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY MS. CLARK:

Q Mr. Spalding, are you employed by the Federal Bureau of Investigation?

A Yes, I am.

Q And could you tell me how long you've been so employed?

A Since 1971.

Q And could you tell me what your present duties are?

A My current duties include that of an examiner in the serology unit of the FBI

Laboratory in Washington, D.C. Included in those duties are the examination, processing, and analysis of physical evidence for stains of body fluids, evidence of value in matters of criminal justice.

In addition I have responsibilities with regard to training, training new personnel coming into the serology unit, as well as the conduct of a training course of two weeks duration which is available through the University of Virginia for three hours of graduate level credit taught at the FBI Academy, too.

THE COURT: The defense will stipulate to Mr. Spalding's qualifications.

MS. VAN PELT: I just didn't want to interrupt him, your Honor.

THE COURT: All right.

Q Could you tell us what the field of serology involves?

A Yes. Basically the field of forensic serology involves the identification and subsequent characterization of blood and body fluids as these substances pertain to matters of criminal justice.

Q Now, when you say "bodily fluids,"

besides blood what other fluids are you talking about?

A We're talking about mainly semen and saliva.

Q Now Agent Spalding, in connection with a case referred to as State V Byron Halsey did you have the responsibility of coordinating the investigation activities on the part of the Federal Bureau of Investigation involved in this case?

A With respect to laboratory activity, yes.

Q And as a result of that responsibility did you pass on certain pieces of evidence to be examined by other agents in other specialties?

A Yes. I was the primary examiner in the laboratory and received a major quantity of evidence in December of 1985. As primary examiner it was my responsibility to determine what other examiners in the laboratory would need evidence for their examinations, see that that evidence got to them, receive that evidence back from them, and see that their results were included in outgoing reports.

Q And, did Agents Poavac, Feebler,

Corby, Tobin, and several other agents participate in the investigation for the FBI in this case?

A That's correct.

Q Now as coordinator of the Federal Bureau of Investigation's activities involved in the examinations of this evidence did you upon request forward notes of all the examinations performed by the examiners in this case?

A I did forward notes which reflect, to the best of my knowledge, all of the background and examinations, yes.

Q Now Agent Spalding, in connection with this case involving your responsibility did you receive numerous items to examine for blood semen or saliva?

A Yes.

Q And, are those numerous items -- would it be fair it say that many of the items as a result of your examinations resulted in nondetection of any blood, semen, or saliva?

A That's correct.

Q Could you come down off the witness stand for a second?

A (complies).

Q Special Agent Spalding, I show you

what has been marked S-14 for identification, Court's number, and ask you whether you received that item?

A Item S-14 is also -- or is a brown paper bag, and it contains a plastic vial of blood. It was labeled K-9. It bears my initials. And it was received at the FBI Laboratory for examination.

MS. VAN PELT: You said S-14?

THE COURT: S-13 -- S-14.

MS. CLARK: Oh, S-114.

I'm sorry.

Q And this --

THE WITNESS: That's right, it was S-114.

Q -- purports to be a blood sample from the victim, Tina Urquhart; correct?

A Yes.

Q And showing you what's been marked S-141, tell me whether you received that item and whether you examined it.

A S-141 is a similar envelope similarly marked with my initials, but the K number 12 for laboratory identification. It's a blood sample -- or purported to be a blood sample from Tyrone

Urquhart, and it was received with the rest of the evidence.

Q Showing you what has been marked S-165 I ask you whether you received that particular specific specimen and examined it?

A S-165, is a similar envelope containing a test tube of blood labeled K-13 under the same identifying characteristics. And with the rest of the samples it was received for the examination.

Q And that purports to be the blood sample from the defendant in this case, Byron Halsey?

A That's correct.

Q Showing you what has been marked S-26, I ask you whether you have received and examined that item?

A S-126 was received with the remainder of the evidence in the case. It is a piece of plaster and some debris in an envelope similar to those previously described.

THE COURT: That's S-26; right?

MS. CLARK: Yes, sir.

THE WITNESS: I'm sorry.

Q Agent Spalding, I show you what's been

marked S-1 for identification and ask you whether you've received and examined that particular item?

A Yes, it was received and examined. It is identified by, as the other items, my markings in this case, Q-5 and RPS.

Q I show you what has been marked S-33 for identification, and I ask whether you have received and examined that item?

A The item was received by me at the laboratory, yes, and it bears the identifying characteristics, Q-27, and my initials, as well as items -- or markings that were placed by various stains on there.

Q Showing you what has been marked S-113 I ask you if you received this item and whether you examined it?

A S-113 consists of two white sheets, each of which bear my markings, and, again, were received with the evidence in this case, yes.

Q And those are Q-137 number; is that correct?

A That is number Q-137 for laboratory markings, yes.

Q It purports to be the sheets underneath Tina Urquhart?

A Her name is on the outside of the bag, yes.

Q Showing you what has been marked S-4 for identification I ask you whether you received and examined that item?

A S-4 is a paper bag containing fragments of glass. It was labeled as Q-7. And it bears my initials. It was received with the remainder of the evidence.

Q Showing you what has been marked S-14 I ask you whether you received and examined that evidence?

A S-14 is a similar bag to the one I just discussed. It's labeled Q-16 with my initials. It contains a piece of cotton gauze. And it was received along with the remainder of the evidence.

Q And the paper alleges that it came from the floor under Tina's body; correct?

A That's correct.

Q Now, I show you what's been marked S-46 and ask you whether you received and examined that particular item?

A S-46 is a paper bag labeled with the similar labeling stamped as on the rest of the

items examined so far -- or discussed so far. It also bears Q-41, my initials. And it contains a piece of blue cloth which appears to be the shirt from -- or shirt sleeve, I mean, from a garment. It bears my markings, Q-41, and various other markings placed on there near stains for identification purposes.

Q I show you what has been marked S-49 for identification and ask you whether you received that and examined it?

A S-49 is a paper bag similar to the others discussed so far, it's labeled Q-81. In it contains -- or in it is contained some debris, and in addition to the debris some pieces of plastic which bear identification markings placed on by the FBI Laboratory.

A JUROR: I couldn't hear his answer.

THE WITNESS: The markings were placed on it at the FBI Laboratory.

THE COURT: Okay.

Q Showing you what has been marked S-50 for identification I ask you whether you received and examined that item?

A 50 is a similar bag to the others. The label Q-82, my initials. It contains blue

fabric, several pieces. They bear my markings for identification. These materials were identified or examined at the laboratory with the remainder of the evidence.

Q Showing you what has been marked S-127 I ask you whether you received and examined that item?

A S-127, again, is a bag like the rest. It's labeled Q-138. It contains a piece of velour or fabric with a knap. It appears to be a cushion cover for a piece of upholstry probably. It bears the markings that were placed on it during examinations for blood and body fluids at the FBI Laboratory.

Q Showing you what has been marked S-128 for identification I ask you whether you received and examined that item?

A S-128 is a bag like the rest labeled Q-139 with my initials. It contains a similar piece of fabric. It looks like a cushion cover. Also bears my initials and markings, and was examined with the remainder of the evidence in the matter.

Q Excuse me.

Agt. Spalding, showing you what has

been marked S-32 for identification I ask you have you received and examined that item?

A S-132, again, a bag similar to the rest, labeled 153 with my initials. It contains a white sheet which is similarly labeled and was examined at the FBI Laboratory in this matter.

Q And this bag with the markings purports to be the sheet of Tyrone Urquhart; correct?

A Yes.

Q Showing you what has been marked S-88 I ask you whether you've received and examined that at the lab?

A S-88 is an envelope similar to those that the original known blood samples were in at the beginning of our discussion. It is labeled Q-85 with my initials and contains some debris. It's labeled wood with blood from south side of bottom platform of east side fire escape. It was examined at the FBI Laboratory, yes.

Q Showing you what has been marked S-150 for identification I ask you whether you've received and examined that item?

MS. VAN PELT: What exhibit?

MS. CLARK: 150.

A S-150 is a similar bag to the rest we've seen. It is labeled Q-91 with my initials. In it is contained a down-filled jacket, nylon shell. It bears the markings placed on it during examination, Q-91, my initials. And was examined at the FBI Laboratory during the examinations of all these in this matter.

MS. CLARK: Your Honor, could I have a moment, please?

THE COURT: Certainly.

Q Showing you what has been marked S-130 for identification I ask you whether you received that item and examined it?

A S-130 is another bag of similar nature to the ones we've seen. It's marked as Q-141 with my initials. It contains a pair of pants, pajama-type pants and is -- which are also labeled Q-141 and the initials. It was examined and received with the remainder of the evidence in this matter.

Q Showing you what has been marked S-38 for identification I ask you whether you've received and examined that item?

A S-38, is a smaller paper bag bearing the Q number 36, and my initials, contains a light

bulb which was received and examined in connection with this matter, yes.

Q Showing you what has been marked S-56 for identification, did you receive and examine that item?

A S-56 is a paper bag similar to the large ones that we've looked at already. It contains a Converse jogging shoe. It's labeled Q-48 as is the bag itself. This was also received with the remainder of the evidence and examined.

Q Showing you what has been marked S-131 for identification I ask you whether you recognize that item?

A S-131 is another large bag similar to those we've seen so far. It bears the initials RPS and Q-142. It contains a pair of white Fruit of the Loom, size ten, jockey shorts. These are also labeled Q-142 with my initials.

Q I show you what has been marked S-129 and ask you whether you received that item?

A S-129 is a similar paper bag to the large ones we've seen so far. It is labeled Q-140, and bears my initials. And it contains a blue, yellow, white, and red shirt, Haven brand, size small, which has similar markings in terms of

Q-140 on it. And was received and examined in connection with this matter.

Q I show you what has been marked S-100 for identification and ask whether you received and examined that item?

A S-100 is a small envelope similar to those contained in the blood samples we have discussed initially. It's labeled Q-109 with my initials. It contains a swab which is similarly labeled. And was examined after receipt at the FBI Lab in this matter.

Q And that purports to be a vaginal swab from Tina Urquhart?

A Yes.

Q Showing you a folder that has slides that have been marked S-90 through S-99 I ask you whether you received and examined those items?

A S-90 through S-99 are microscope slides in a cardboard holder. They are all labeled with my initials and the Q numbers which range from Q-110 through 123. I should list those specifically in as much as the Q numbers are not consecutive with the S numbers.

S number 90 is Q-110.

S number 91, Q-111.

S-92, Q-113.

S-93, Q-114.

S-94, Q-116.

S-95, Q-117.

S-96, Q-119.

S-97, Q-120.

S-98, Q-122.

And S-99, Q-123.

These items were received and examined in connection with this matter at the FBI Laboratory.

Q Showing you what has been marked S-108C, could you tell me whether you received that item and examined it?

A S-108C is a small manilla envelope. It is identified as a fingernail scraping or cutting from Tina Urquhart. It is also labeled as Q-128.

Q Showing you --

A And was received in this matter.

Q Showing you what has been marked S-142A through E, I ask you whether you've received and examined those items?

A That was S-142A through E?

Q Yes.

A Were examined. They are purported to be fingernail scrapings from Tyrone Urquhart. They are labeled with Q-161 through 165 and my initials.

Q Showing you what is marked 143A through E, tell me, did you receive that item -- those items and examine them?

A S-143A through E are similar envelopes to those I just had in my hands. They are labeled Q numbers 166 through 170, bear my initials, and were received for examination with the rest.

Q Showing you what has been marked 109B I ask whether you received that item and examined it?

A This would have been part of the fingernail scrapings from Tina Urquhart which would have been received, yes.

Q Showing you --

MS. VAN PELT: Can we have the Q number for that?

THE WITNESS: I'm sorry.

That's 132.

MS. CLARK: Q-132.

Q Showing you what has been marked S-87 for identification will you tell us whether you

received and examined that item?

A S-87 is an envelope similar to those, again, that the known bloods are in that we've discussed initially. It contains debris. It is labeled as Q-84 with my initials. It is listed as containing wood with blood from south side of bottom platform of east side fire escape. It was received with the remainder of the evidence for examination.

Q Showing you what has been marked S-111 for identification I ask you whether you've received and examined that item?

A S-111 is a large paper bag like some of the previous ones we've looked at. It is labeled with Q-118 and my initials. It also contains a pair of panties similarly labeled and was examined -- received and examined in connection with this matter at the laboratory.

Q Showing you what's been marked S-119 I ask whether you've received this item and examined it?

A S-119 is a plastic screw cap vial containing a swab. It is labeled as Q-152, and bears my initials.

Q I show you what has been marked S-89

for identification and ask you whether you have received and examined that item?

A S-89 is another envelope similar to some of the rest we've seen, about five inches by seven inches. It bears the Q number 107 and my initials. And it contains a gauze pad similar to any first aid gauze pad similarly labeled that was received at the laboratory for examination.

Q Showing you what has been marked S-166 for identification I ask you whether you've received and examined that item?

A S-166 is another envelope similar to the one I just looked at, it's labeled K-14 and my initials. It also contains a gauze pad similar to a first aid gauze pad. It's label K-14 again with my initials. This is purported to be a saliva sample on gauze pad from defendant, Byron Halsey. It was examined also at the laboratory in this matter.

Q Showing you what has been marked S-77 for identification I ask you whether you've received that and whether you examined it?

A S-77 is a plastic bag bearing the State's Exhibit sticker as well as Q-63, and my initials. It contains a brown fitted sheet which

is similarly labeled and was received in this matter for examination.

Q Showing you what has been marked S-118 for identification could you tell me whether you received and examined that item?

A Yes. S-118 is an another plastic screw cap vial containing a swab. It has been given the Q number 146 and my initials. Those markings are also on tape attached to the swab inside the tube.

Q Okay.

Agent Spalding, will you retake the witness stand, please?

A (complies).

MS. CLARK: Your Honor, could we have the blackboard brought over here?

MS. VAN PELT: I'm just concerned because I have a lot of papers and can't -- I'll move.

THE COURT: No place for you to sit back there.

Move your chair out here.

MS. VAN PELT: I'm going to sit on Mr. Tucker's lap for the duration.

THE COURT: Whatever.

Q Special Agent Spalding, starting with the examinations you performed to see if you could detect the presence of blood, will you tell us what examinations you performed and how you go about it?

A Yes. In order to insure the elimination of any errors, eliminate human error as much as possible in any scientific procedure it's routine to follow a relatively well-established protocol, and that's what I'll describe for you now.

Excuse me.

In examining evidence in the FBI serology unit the first step for the identification of blood would be a rather obvious one, and that is to look for stains that one would suspect of being blood.

However, it's important to note that just looking is not all that's done, it's both microscopic with the unaided eye -- it may be microscopic with stereo microscopes or what have you; but it would be a thorough inspection to identify any material, or stains, or crusts, or substance that is, based on its physical appearance, worthy of suspect in terms of blood.

Once such a material is found the first -- or next step would involve the application of a highly sensitive chemical screening test which is perhaps of greater value if it's negative than if it's positive, for if it is negative it tells us that blood is not present in any sufficient quantity for further examination; and, therefore, we go on to something else and not spend any more time working with the item we've got.

On the other hand, if the test is positive it is -- it represents a very strong indication that blood is present in the stain, or crust, or whatever it is we've selected for examination.

When this positive result is obtained, however, it is always recognized that there are substances in nature, some vegetable matters and so forth which can give false positive results or may give misleading results, at least; and, therefore, we feel it necessary to conduct a confirmatory test with respect to any positive test that we get with regard to chemical screening.

This confirmatory test is one which

employs a -- well, involves taking a small quantity of the stain, placing it on a microscope slide, and adding a chemical reagent, heating it for a moment or two, and then examining the result under the microscope for the presence of specific crystals.

These crystals which are based on the presence of hemoglobin in blood are very conclusive evidence of the presence of blood and allow us to say then with scientific certainty that blood is present.

If, on the other hand, we obtain a positive preliminary screening test, the chemical test, and then are not able to identify the crystals with a confirmatory test we do not report the presence of blood on an item.

The sensitivity difference between the two tests is such that it is possible to have a positive chemical screening test and not get a positive chemical test.

Q Agent Spalding, let me stop you right there.

Did that happen with some of the items in this particular case?

A It did, I believe, happen with one

item, yes.

Q Okay.

Will you go on?

A Following the identification of blood it's important to recognize two things; number one, we need to further characterize that blood before we can even start thinking about blood typing; and, number two, a need to recognize, at least for our own appreciation for the situation, that we are, as we move along through the testing procedures, using up fragments or quantities of this material, so that as we go along it may result in us not being able to identify blood, or not having any left to work with any further, or we may be able to go a few steps further and not be able to identify anything any further than that because we've used it up.

So the next step would be the identification of animal origin, is it human or animal. And if it's animal what kind of animal it might have come from, cat, dog, sheep, horse, cow, deer. We have the capability, and many laboratories do, of identifying most of the domestic -- common domestic animals and a large number of wild animals that are indiginious to

this country.

We are in contact with the National Park Service and the Park Rangers in various national parks who help us to obtain the necessary substances, the necessary reagents and materials to identify animal bloods for cougar, for instance, or bear, or alligator, or what have you, so that a number of animals are possible to identify in terms of the origin of the blood.

If, on the other hand, we're dealing with human blood -- I'm sorry.

Q I'm sorry.

Now, in this particular case, Agent Spalding, did you examine the known blood samples?

A Yes.

Q Okay.

And what was -- what examination did you perform when you examined the known blood samples?

A Basically in terms of what I've discussed so far there is no application of these tests to known blood samples in as much as they are received as liquid samples taken directly from a body or individual by a medical individual, medical doctor, or medical technician, and are

recorded as such. And, they are submitted to the laboratory as known standards, as material for us to use in identifying the genetic characteristics of the individual that it originated from.

So that when a blood sample in a test tube is sent into the laboratory we feel no real need to ascertain that the individual it came from is human. We are we kind of assuming that based on the doctor's word.

However, a series of tests is applied which, in principle, is much like the same testing procedures that we use in dried stains, so that from here on we could probably discuss both the dried stains and liquid blood samples synonymously, in general principle any which way, and that is that we are first going to be looking at the ABO blood group system.

And at this point it would be helpful, at least, if we were to recognize that the blood does contain many, many different blood group systems.

And for simplicity let's define a blood group system as a set of chemical characteristics which are present in the blood which are genetically controlled; and, therefore,

going to be the same throughout an individual's lifetime barring things like transfusions and which will be useful in discriminating between two different blood samples or two different individuals.

So, if we recognize that then there are a number of different blood group systems that can be used for this purpose, one of them we know is the ABO blood group system. Many of us are very familiar with it.

And an individual might be Type A, Type B, Type O, Type AB.

And an individual in this particular system -- the chemical characteristics we're looking at, too, we're looking at antigens, and we're looking at antibodies.

And we try to identify antigens and antibodies present in the stain or in the liquid blood sample which will give us a conclusive description of the person's blood type.

If we are not able -- if we are able to identify antigens then we might report just the antigen if that identification is sufficiently conclusive.

But if we are not able to identify

both then it is not a policy to report any kind of blood group with regard to that individual in the ABO system.

Moving on to some of the other blood group systems that we have, there are many enzymes and proteins which occur in blood which have slight molecular differences, and these enzymes and proteins represent blood group systems because different people have slightly different forms with regard to these molecular differences.

So that if I were to talk about the PGM system, PGM stands for the name of an enzyme known as ptospougoucomutose. P-t-o-s-p-o-u-g-o-u-c-o-m-u-t-o-s-e.

Ptospougoucomutose or PGM is a commonly examined enzyme in crime laboratories.

Depending upon the methology employed, either three types, Type 1, Type 2, or Type 2-1, or ten possible types with some of the more sophisticated and more recently developed technology can be identified.

And in the case of ten different types we're dealing -- I won't try to name them all -- but we're dealing with 1 pluses, and 2 pluses, and 1 minuses, and 2 minuses, and so forth.

But these have the same value as saying that if you're Type A, and you're Type B in the ABO system, in that sense you're different and can be shown to be different than with PGM.

If one of us is 1 plus and the other one is a 2 plus, then you are just as different in the PGM system as you are in the ABO system.

And in looking at a stain then, if that stain is a 1 plus then it could not have come from the person who is a 2 plus; but it could have come from the person who is a 1 plus.

So this is where the value of this begins to come into play.

We analyze a variety of different enzymes depending upon the nature of the situation, and the condition of the evidence, the availability of the stain, the quantity of the stain, and a variety of factors. We may be able to analyze as many as a dozen different characteristics in the blood group systems in this manner.

This is not always done, as I say, for reasons that I've just outlined.

Q Agent Spalding, is what you're telling us here today that despite what we unknowledgable

people thought that there are many other characteristics in blood besides what we refer to as A and B characteristics that can identify someone?

A That is correct.

Q All right.

Now in this particular case did you take what's referred to as the K samples and examine them?

A Yes, they were examined.

Q And did you perform the tests that you've just described to us to be able to determine characteristics on these samples?

A They were examined to determine as much as we could from them, yes.

Q Okay.

Agent Spalding, will you come down here and show us on this board --

A (complies).

Q Would you depict for us the K samples and what you found?

THE WITNESS: Is that visible?

THE JURY: Yes.

Q Is there a pointer there for you?

A I'm sorry.

Q Is there a pointer there for you?

A Yes, there is.

I have just constructed a table on the chart paper.

Across the table is divided into two sections.

And across the top half we have the vertical columns headed ABO, PGM, EsD -- that's a small S -- GLO, EAP, ADA, AK.

Horizontally at the extreme left K-9, K-12, and K-13.

K-9 I understand to be from Tina Urquhart.

K-12 from Tyrone Urquhart.

And K-13 from Byron Halsey.

Across the bottom half of the table the same horizontal arrangement.

The vertical columns are headed by Hp, GcTf, CAII, G6PD, and Pep A.

Q Now am I correct that what you refer to as the ABO and the PMG's are the different characteristics than you would be looking for to be able to classify the blood samples?

A Yes. The vertical headings that I just outlined are abbreviations.

The ABO, of course, is well-known to us; but, the PGM, and so forth all the way along are abbreviations for the names like the ptospougoucomutose which I outlined and other names which reflect the names of enzymes or proteins which occur in blood and exhibit characteristics or minor differences in molecules which enable us to distinguish between different individuals because of their genetic control or genetic makeup.

Q Agent Spalding, K-9, would you put Tina's name next to that?

A (complies).

Q K-12 would be Tyrone.

And the remaining K number the defendant in this case.

A (complies).

Q And would you note on that as you go along the results of your examination when you did -- let's say on K-9 performed the tests that you've told us about.

What results did you get on K-9?

A I will fill in the chart and then list the complete results as soon as I'm finished writing for convenience, if it's all right.

With respect to K-9, I've listed the ABO blood type as Type AB; the PGM as 1 plus; the esterase D blood type as Type 1; the GLO testing was inconclusive.

Basically what this means is that when the tests were run the result was not sufficiently clear cut, in my opinion, to warrant my concluding a particular type for that particular test.

In this case we have normally a 1-A-2 or a 2-1. And I felt comfortable calling none of those results with regard to the result we got for that sample.

EAP Type B. ADA Type 1. AK Type 1. HP type 2-2-1-B. GC Type 1. TF Type C. And inconclusive results for the remaining headings CAII, G6PD, and Pep D -- or PEP A.

Q Now, Agent Spalding, for what's referred to as K-12, did you perform the same test and note the results on that particular item that was submitted to you for examination?

A Yes, the results I've set forth for K-12. The ABO testing was inconclusive.

Q Now, could you tell us in your opinion why it was inconclusive or why you came to a decision as to inconclusive?

A Well, basically, as I said, with the GLO, the results that I obtained were not sufficiently clear cut to warrant my deciding whether it was Type A, or Type B, or whatever.

There were indications of the type, but not sufficient for me to conclude that this sample was of a particular blood type.

Q Would you continue with K-12, please?

A K-12 then inconclusive for the ABO. The PGM Type 1 plus. ESD Type 1. GLO 2-1, EAP B. ADA 1. AK 1. HP inconclusive again, GC 1, TF 1, CAII 1. And inconclusive for G6PD and Pep A.

Tyrone

Q Now Agent Spalding, you did the same thing for K-13?

A That's correct.

Q Would you note the results you found on those tests?

MS. VAN PELT: Excuse me, your Honor, I believe the agent when he was stating the results of TF said 12 and on the chart it's 1 C.

THE COURT: He said --

MS. VAN PELT: On TF.

THE WITNESS; The GC type on K-12 is Type 1. The TF type on K-12 is Type C.

A For K-13 I'll list the observed

types.

With these results we see that K-13 is Type O. PGM 1 plus 2 plus. ESD Type 1. GLO Type 2. EAP Type B. ADA Type 1. HP Type 2-1, and that I would distinguish from the 2-1 M that is listed for K-9. These are different. GC Type 1, TF Type C. CAII Type 1. And G6PD Type A. Pep A inconclusive.

Q Okay.

Agent Spalding, want to retake your seat?

A (complies.)

MS. CLARK: Your Honor, could I have this marked?

THE COURT: S-276.

(Whereupon a chart was marked S-276 for identification.)

Q Agent Spalding, do I understand you correctly that you perform all these tests when you get a blood sample such as in the tubes that's been held up before the jury today?

A That's correct.

Q And, when you see something that appears to you to be a stain that might be blood you test it for the existence of it?

A I'm sorry.

Q You test it to see if it is blood?

A That's correct.

Q Do you perform these kind of tests then if it shows it's human blood?

A If it's human blood we would attempt to identify the characteristics in that stain that we have seen in the known blood samples. We simply -- it's simply a matter of testing the stains to see what types are in the stains and then a list like you have in front of you would enable you to say, well, it is consistent with having come from one of these samples, but not consistent with having come from the other, or having come from the source represented by the samples or what have you.

Q All right.

Agent Spalding, directing your attention to what is your Q-4 number which is the Court's S-26 number, you testified you received and examined that particular item?

A Yes.

Q Could you tell us after you received and examined that item which purports to be a piece of plaster and scrapings, what, if anything,

you concluded?

A The material in the envelope was identified as containing human blood. Testing procedures disclosed the ABO Type AB, PGM 1 plus, EAP B, ADA 1, AK 1. And TF C.

Now as I indicated earlier, the choice of tests may result -- or may mean -- may be a result of sample quantity, and it may be a result of looking at the knowns to see where differences are, so that, for instance, in some cases it might be more advantageous to test in a system -- in a blood group system where there are known differences rather than to test in a system where there are no differences.

So that this represents the -- some of the complete results, some of the conclusive results on Q-4.

Or S-26 was it?

Q Yes.

A There may have been, and I would say was probably more testing done. Some of it was inconclusive. And there may have been some tests not done for the purpose -- because of insufficient sample or something of that nature.

Q Now as a result of what you observed

did you -- were you able to make a conclusion as to whose blood was on Q-4?

A The blood there is consistent with having originated from a source represented by K-9, Tina, but not consistent with K-13, or K-12, or K-13.

Q Now directing your attention to Q-5 which is the light bulb purported to be found next to Tyrone Urquhart, S-1 of the Court markings, did you examine and observe the results of your examination for that particular --

A That was Q-5?

Q Yes, sir.

A Yes. Again, the result was Type AB, and PGM 1 plus.

Q And did you reach a conclusion as to whose blood that was consistent with?

A Yes, a conclusion similar to Q-4, consistent with K-9.

Q Tina's blood?

A Yes.

Q Now directing your attention to what was your Q-27, the Court's Exhibit S-33, a brick, could you tell us when you examined that what, if anything, you found?

A Q-27's result was similar to that for Q-5, namely Type AB, and Type 1 plus in the PGM system.

Q And as a result did you conclude that was consistent with Tina's blood?

A Yes.

Q Now directing your attention to Q-137, Court Exhibit S-114, could you tell us as a result of your examination what you found?

A 137 -- Q-137, that is, was shown to have blood on it which was of ABO Type AB, PGM 1 plus, ESD 1, EAP --

THE JUROR: Excuse me, your Honor, could we know what the item was?

THE COURT: It's a sheet.

THE WITNESS: I'm sorry.

MS. CLARK: That purports to be Tina Urquhart's sheet.

THE COURT: When Tina Urquhart's body was removed from the basement.

A I'll start again. ABO Type AB, PGM 1 plus, ESD 1, EAP B, ADA 1, AK 1, TF C, and Pep A 1.

Q Now directing your attention --

THE COURT: What does all that mean?

MS. CLARK: Oh, sorry.

Q Did you reach a conclusion as to whose blood that was consistent with?

A Again of the three we have listed it would be consistent with having originated from the same source as K-9, namely that of Tina Urquhart.

Q Agent Spalding, could you tell me -- directing your attention to your Q-7 number, the Court's S-4 number, identified as broken glass beneath Tyrone --

A Yes. The analytical result there was PGM 1 plus.

Q Now as a result of observing what you say is PGM 1 plus, what, if any, conclusions were you able to reach as to whose blood that was consistent with?

A If we're considering K-9, 12, and 13 then it could have come from either K-9, or K-12, or the sources represented by those samples, namely Tina or Tyrone.

Q Now, directing your attention to what is your Q-16 number, the Court Exhibit S-14 number and identified as a gauze pad beneath Tyrone, did you examine that item?

A Yes.

Q And what, if anything, did you observe and conclude?

A The analytical result on human blood identified -- and all of the Q numbers that we have discussed so far here since I retook the stand did have human blood present on them.

On Q-16 PGM 1 plus, EAP B, ADA 1, AK 1, TF C.

Q And as a result of those observations what were you able to conclude?

A As with Q-7 those results are consistent with that sample having originated from the sources represented by K-9 and K-12, namely Tina or Tyrone.

Q So what you're telling us is you can't conclude either Tina or Tyrone as being the source of that blood?

A Based on my -- based on the results I have, yes, that's correct.

Q Now directing your attention to what was your Q-41 number, the Court's S-46 number, a piece of blue material purported to be found at 209 East 7th Street, could you tell me what you found there?

A Again, human blood was identified. The analytical results of that material PGM 1 plus, ADA 1, AK 1, and TF C.

Q And what conclusion did you reach as far as the source of that blood?

A A similar result to Q-7 and Q-16 in that the analytical results are such that it is consistent with that material having originated, again, from the sources represented by K-9 or K-12, Tina or Tyrone.

Q Now directing your attention to your Q-81 number, the Court Exhibit 89 number, purported sheeting to be found outside the window, could you tell me what you observed there?

A That was 81?

Q Yes, I believe.

MS. VAN PELT: Was the 81 the --

Q I'm sorry.

Q-81, S-49.

THE COURT: Right.

A Again, human blood was identified.

And I might say for all of the samples that we're talking about where we're talking about sensitive or blood grouping results, a blood grouping wouldn't be attempted until human blood

had been identified. So I'll make that statement and then not have to remake it every time I talk about an item.

With respect to the item we've just mentioned which is my Q number 81, we're talking about a PGM 1 plus, an ADA 1, AK 1, TF C, and CA 1.

Q And what conclusion did you reach as a result of making those observations?

A With regard to that I would consider it consistent with having originated from K-9 or the same sources as K-9 or K-12.

The question might arise that since the CAII result was inconclusive for K-9, but was a Type 1 for K-12, that it would be more consistent with having originated from K-12 or the source represented by K-12.

That doesn't really upset me very much because a vast majority of the population, considerably better than 75 to 80 percent of the population are CA Type 1 anyway, so that -- I don't have the exact the statistics with me at the moment, they're in my briefcase, but I'm not too -- that doesn't upset me too much. And I would say it's probably it's consistent with the

originating from both sources.

Q Now directing your attention to what was your Q number 82, and Court Exhibit S-50, blue smock pieces found in what you've already talked about which was S-49, could you tell us what, if anything, you observed when you examined that item?

A Yes. Grouping tests disclosed PGM Type 1 plus, AK Type 1, GC Type 1, TF Type C, and CA Type 1.

Q And as a result of making those observations could you tell us what conclusion you reached as to being able to identify the source of that particular blood sample?

A Again, the same comments I made with regard to the previous sample, my Q-81, that it would be consistent with having originated from Tina and Tyrone.

And I would say the same thing with respect to the CA 1 result or CAII Type 1 result.

Q Now directing your attention to what is Q-138, Court Exhibit S-127, and Q-139, Court Exhibit 128, it purports to be the first one, blue material cover found nailed to Tyrone's head, and the following one, S-128, blue material cover

under Tyrone. Could you tell me, did you make the examinations and observations of these two items?

A Yes.

Q And can you tell me what you found?

A Grouping tests disclosed 1-A PGM on the first of those items, my Q-138. That one, I believe, was the one found in connection with his head.

PGM 1 plus, EAP B, AK 1, GC 1, TF C.

In connection with the second item you mentioned 139, PGM 1 plus, EAP B, AK 1, and GC 1.

And based on the results with regard to these two items I would still have to say that they're consistent with having originated from either Tyrone or Tina.

Q Now, Agent Spalding, directing your attention to item your Q-153 number, Court Exhibit S-132, a white sheet purportedly under Tyrone to be removed to the Medical Examiner's Office, could you tell me the results of the examination of that item?

A Yes. ABO testing on that particular item disclosed the presence of the B antigen suggesting it's from a group B, although blood group B was not absolutely identified.

And in retrospect, while the absolute conclusion of a blood type for K-12 was inconclusive I did indicate when I introduced that item -- or spoke about the results on that item that indications were there as to a possible blood type. There were weak indications of the B antigen in that blood not sufficient to distinguish or say that the sample is of blood group B, but an indication.

The presence of the B antigen on Q number 153 --

Q S number 132.

A Thank you.

-- distinguishes it from having originated from either K-9 or K-13, and based on what I've said thus far indicates a possibility with regard to K-12. The following results, PGM 1 plus, EAP B, AK 1, and GC 1 are also consistent with the K-12 sample.

Q So that it's your belief that Q-151, S number S-132, the blood on that was from Tyrone?

A Of the three samples that are listed here I would consider that to be the likely source.

Q Now directing your attention to what

is referred to in your notes as Q-85, the Court's Exhibit S-88, wood fragments found -- purportedly found on the fire escape outside 209 East 7th Street, did you perform examinations on that?

A Yes.

Q And could you tell me what, if any, determinations you are able to make?

A The examinations disclosed the presence of human blood. Attempts to determine any blood type information were inconclusive.

Q Now Agent Spalding, directing your attention to what is your Q-91 and is the Court Exhibit S-150, purports to be the defendant's tan and rust jacket. Did you perform any tests on that?

A Yes. And human blood was identified on that on the inside of the back shoulder area of the jacket in the general area of the label at the back of the neck. The results there were inconclusive as well although human blood was identified.

Q Now, directing your attention to what is your Q-20A and what is Court Exhibit S-13A, did you examine that?

A Yes.

Q And what, if anything, did you find?

This purports to be fabrics from the couch in the basement.

A A stain of human blood was identified on that item. However, the stain once identified as human blood was consumed; and, therefore, no further examinations were possible.

Q And was your exhibit Q-36, the Court Exhibit S-38, a light bulb purported to be found on the floor in the furnace room, did you examine that and make any observations?

A Yes. The examinations were conducted and human blood, again insufficient in quantity to allow further examinations was identified.

Q Agent Spalding, I direct you to what's your Q-48, the Court Exhibit S-56, which purports to be a man's gray jogging shoe from the floor of the south closet of defendant's apartment. Could you tell me whether you examined that item?

A The item was examined with the same results as the two items I've just spoken about. Human blood insufficient in quantity for further examination was identified.

Q Now Agent Spalding, directing your attention to your Q Exhibit 118, Court Exhibit

S-111, purports to be panties found in Tina Urquhart's mouth. Could you tell me what examinations, what observations you made there?

A Yes. Human blood was identified although at this point based on the nature of the garment, a pair of panties, the nature of the location of those panties in the victim's mouth, and the fact that we -- when we identify the victim's blood on an item immediately associated with the victim when the victim was bleeding it very -- it means very, very little.

After human blood was identified no further characterizing tests were conducted.

Q Now directing your attention to what's your exhibit Q-140, Court Exhibit S-129, the pajama shirt purportedly worn by Tyrone Urquhart, could you tell me whether you examined that item?

A Yes. And human blood was identified. And, again, the same consideration was exercised in terms of no further examinations being conducted.

Q Now directing your attention to what is your exhibit Q-141 and Q-142, Court Exhibit S-130 and 131 purports to be the pajama bottom of Tyrone and the underwear of Tyrone. Can you tell

me the result of any examinations you performed there?

A Yes. On these two items also we had human blood and the option, if you will, was exercised not to examine further in as much as the association of the items with the victim was clear.

Q Now directing your attention to your exhibit Q-109, Court Exhibit S-100, purported to be a vaginal swab from Tina, could you tell us what, if any, observations you made on these tests?

A I'm sorry, that was Q-109?

Q Yes, sir.

A Thank you.

In this case blood was identified. And again because of the nature of the item and it's association with the victim's blood the blood was not further characterized.

Q And is that true for your Q-110 number, Q-111 number, S-90 and 91, two other vaginal slides purportedly from Tina Urquhart?

A That's correct.

Q Directing your attention to Q-152, Exhibit S-119, purported to be a swab of the right

cheek of Tyrone Urquhart, what, if anything, did you observe there?

A The same, basically, that blood was identified, but knowing the source of that blood, at least in terms of its collection, no further examinations were conducted.

Q Now directing your attention to Q-161 through 170, which is S-142A through E and 143A through E, which purports to be the fingernail scrapings, I believe, of Tyrone -- let me just triple check.

THE COURT: That's correct.

Q -- Tyrone Urquhart, can you tell me what, if any, observations you made there?

A Again in the same -- the same result, blood was identified, no further examinations were conducted. However, often, as is in the case of fingernail scrapings, we are often able to identify blood and then run out of samples. So it may be a combination of the decision not to make further examination or the fact that we ran out of material.

Q Now, directing your attention to what is your Q-128 number, and the State's Exhibit S-108C, purports to be fingernail clippings from

Tina's left middle finger, were you able to make any observations or detect anything on that?

A Yes. In fact, blood was identified. However, in here it was clear cut that there was not any more material to work with; and, therefore, it was -- that was the extent of it.

Q Agent Spalding, directing your attention to what is your Q-84 number, and what is the Court's Exhibit S-87, wood fragments that purportedly come from the fire escape at 209 East 7th Street, what, if anything, did you determine there?

A Again, blood was identified. However, in this case although enough material was present to try and further analyze or to further analyze attemtps to do that were not possible. In other words, we were not able to get any result from those further attempts. In other words, I wasn't able to say whether it was human blood or not human blood based on the results of my tests.

Q Now, Agent Spalding, you told us that you also examined many items for the presence of semen or saliva?

A That's correct.

Q Would you tell us here today what you

do when you make examinations for semen or saliva?

A All right.

With respect to semen I'll discuss that first.

Again, just as with blood, we're interested in establishing a routine protocol that is followed for the purpose of identifying and then characterizing the blood fluid that we're interested in.

Semen is the mail reproductive fluid. It consists in some ways of substances similar to those in blood. It has a fluid portion, it has a cellular portion just like blood does.

In blood cells we see red blood cells which color blood red. However, in semen the sperm cells, or spermatazoa, do not enpower any -- necessarily any color to semen.

Identifying semen and seminol stains is basically based on its contents just like identifying blood.

And the first step, as with blood, is to locate stains that are suspect, stains that look like semen. Ultraviolet light would be employed which doesn't always give wonderful results; but, nevertheless, sometimes helps

localize areas that might be tested.

Visual observation -- careful visual observation of the item under good lighting conditions.

Tactile examination meaning running your fingers lightly over the surface of the fabric to determine differences in stiffness, differences in texture of the fabric.

A variety of things can help locate stains that would be useful or at least would be considered for testing.

Once such a stain is located it would be tested for several substances, one is a enzyme known as acid phosphatase, a-c-i-d-p-h-o-s-p-h-a-t-a-s-e. Acid phosphatase is present in semen and in concentration is higher than in any other fluid in the body. Concentrations that have been given in some texts range from 20 to 400 times more than any other body fluid.

Thus acid phosphatase is a good indicator of semen. However, since it is in other body fluids it is not a positive identifier. It does help us zero in on the stain that's worth further testing.

A second test that would be used would be one for a substance known as choline, C-h-o-l-i-n-e. Choline when present with acid phosphatase gives us a strong indication -- a stronger indication that we're dealing with a similar stain; but, again, choline exists in other areas too, and together with acid phosphatase its occurrence is rather limited. But we still consider this as qualified results in the sense that we haven't absolutely, but we've strongly indicated the presence of semen.

Following that we would attempt to identify one of two things that would conclusively identify the stain as semen. One of these would be sperm cells. And microscopic observations of material taken from the stain would be conducted to identify sperm cells.

Sperm cells are small cells approximately a 500th-of-an-inch long which means that if you put 500 of them together head to tail then they'd be about an inch long.

The microspocic observation of these cells is proof positive of the presence of semen, no question about it.

Q Agent Spalding, will you stop there a

second?

Do you know whether the presence of motile spermatoza is any reliable indicator of the recentcy or the timing of the deposit?

A I know that several articles have been published by some people.

I don't consider the presence of motile sperm an indicator or reliable if we're talking about 20 minutes versus an hour or versus three hours or four hours.

Sometimes these cells might be useful in determining one or two hours versus 24 hours, or 48 hours of a time interval; but, generally speaking, the presence of motile sperm is not as strongly relied upon phenomenon with regard to establishing time since intercourse or time since ejaculation with regard to the overall forensic community as far as I'm aware of.

Q What about the absence, does the absence tell you anything?

A No.

Q All right.

Will you continue with what you were talking about before I interrupted you?

A Okay.

The next step, of course, as I say, involves the identification of semen per se. And as I indicated, there are two possibilities for substances, or materials, or items that we'll be looking for. One was the sperm cells, microscopic observation. The second would be a protein known as P-30, P hyphen 30. P-30 is a protein that exists in the fluid portion of semen in relatively significant concentrations. The source of the protein is the prostate gland which males have and females don't. Therefore, it is a strong -- well, I don't want to say a strong indicator because we consider it proof positive just as good as the presence of sperm cells.

And its main value to us in recent years, of course, has been in situations where sexual assaults have occurred and subjects relative to those crimes have had vasectomies. The presence of P-30 in stains left has identified the semen as semen wherein there weren't any sperm cells anyway to begin with.

So, with the identification of sperm cells and/or the identification of this protein we are able to state the presence of semen.

If we were to not be able to identify

the cells, not able to identify P-30, but were able to identify the acid phosphatase on the choline, then it would be reasonable to report chemical substances characteristically present in semen, of course indicating a qualified identification, if you will, of the stains.

Following this identification, it's like I say, with blood we identify and then we characterize, and we need to do that with semen in as much as we can. Some of the substances in semen are common to blood, so that the enzymes -- for instance, PGM occurs in semen, and there's a phenomenon known as secretor status which affects some of the chemical substances in blood as well.

Secretor status begs a little bit of explanation in that approximately 80 percent of the general population belong to a class of individuals we would term secretors. This means that chemical characteristics consistent with there ABO blood type are secreted into body fluids other than blood.

Q Now would you tell us what body fluids you're talking about?

A And these body fluids would be such fluids as vaginal fluid, saliva, and semen, and

various other body fluids as well for that matter.

In as much as semen -- in as much as urine is a waste product it doesn't normally have large quantities of these substances, but occasionally it can be identified in urine.

Q Now, Agent Spalding, did you examine the saliva sample which is S-166 your Q number -- or K number, K-14, purports to be the saliva sample from the defendant in this case?

A Yes, I did.

Q And after examining that what did you determine?

A Well, examination of that was conducted in conjunction with the blood sample K-13, and in stating the results for the blood samples on the board I purposely omitted one of the tests that we conducted to save it for this particular time in discussion for purposes of clarity.

Q Do you want to come down here?

Want me to switch it or just talk about it?

A I can add it by coming down there or whatever is convenient for the Court.

Q Okay.

Add it, please.

THE COURT: I think what is most convenient for the Court now is a break.

THE WITNESS: Thank you, your Honor.

THE COURT: Let's take our mid morning recess.

Don't discuss the case.

We'll see you at eleven o'clock.

(Whereupon the witness was excused.)

(Whereupon the jury was excused.)

(Whereupon Court was recessed.)

(Whereupon Court was reconvened as follows:)

THE COURT: Anything before I bring out the jury?

MS. CLARK: No.

THE COURT: Bring out the jury.

(Whereupon the jury was brought out.)

THE COURT: All right.

Mrs. Clark.

MS. CLARK: Thank you, your Honor.

ROBERT P. SPALDING, having been previously sworn, resumed the stand, and testified as follows:

CONTINUED DIRECT EXAMINATION BY MS. CLARK:

Q Now, Agent Spalding, you were talking before we broke about secretor status.

A Yes.

Q And you said that some 80 percent of the population secrets substances, and that you can type much like we can type blood, right, in their bodily fluids?

A Yes.

Q Now can you determine secretor status from looking at blood?

A Yes. This particular situation is based on a blood group system, again, a system of chemical characteristics in the blood genetically controlled and useful for identification purposes.

This system is known as the Lewis System. Its named after the woman who the characteristics were first discovered in in 1946.

The system is based mainly on two

characteristics, a Lewis A characteristic and a Lewis B, or Lewis A antigen and B antigen or factor, if you prefer, whatever.

There are three major types that are commonly observed in the Lewis System, and I have already, during the break, placed Lewis testing results for specimen K-9 and specimen K-13 on our chart which I completed earlier.

Those are listed as Lewis A negative/B negative for K-9 from Tina Urquhart.

And Lewis A positive/B negative for K-13 from Byron Halsey.

These two designations represent two of the three common types in the Lewis System.

The third is one which would be designated as Lewis A negative/B positive.

Now how this relates to the individual who is a secretor and who is a nonsecretor is this, the nonsecretor is exemplified by the Lewis Type A plus B negative -- A positive/B negative.

Q So that?

A So that that is exemplified here from K-13 from Byron Halsey.

We mentioned K-14, a saliva sample from Byron Halsey, and that particular sample was

examined for characteristics that would indicate his ABO blood type which is the basis of secretor status.

The blood type system -- or the blood group substances, I should say, that were detected with regard to K-14 were none, confirming the Lewis test result of A positive/B negative identifying him as a nonsecretor.

The secretor which would be Lewis A positive/B negative -- I'm sorry. The secretor which would be A negative/B positive would be the person, as I said earlier, represented by approximately 80 percent of the general population.

And this person would secrete into body fluids other than blood such as blood -- I mean such as saliva, and semen, and vaginal fluid, and so forth, such things as the A substance, AB substance. And these A and B substances relate to the ABO system.

It was unfortunate in 1946 when A and B were chosen as part of the nomanclature for the Lewis System because it confuses things considerably sometimes.

Q Now did you examine K-9 which purports

to be Tina's blood sample for the Lewis factor?

A Yes. The results are shown there and neither Lewis A nor Lewis B was detected.

Now, as I said, there are three major types in the Lewis System. The A positive/B negative shown for 13 is characteristic of a nonsecretor.

The A positive -- it's been a long week.

The A negative/B positive is characteristic of a secretor.

And we have a third group in the Lewis System who are Lewis A negative/B negative.

Q Now what does the Lewis A negative/B negative say?

A This means that we can't say whether this -- based on the Lewis test whether this person is a secretor or a nonsecretor.

Now, again, the statistics of 80 percent of the population can come into play so that have these people who are A negative/B negative, approximately 80 percent of them are going to be secretors and approximately 20 percent are going to be nonsecretors, so that the chances are better than that that anybody who is A

negative/B negative is going to be a secretor.

Now in this case we, again, could not from the blood sample identify secretor status for Tina Urquhart.

Now with regard to K-12 on Tyrone the blood sample was in such condition the blood cells to some extent had been broken up.

Just environmental conditions, a variety of situations can result in the break up of these blood cells after the blood leaves the body.

So that the Lewis system is intimately associated with the blood cells.

And, therefore, we were not able to identify any Lewis blood type for Tyrone. Therefore, not able to identify a secretor status as well.

Q Now, Agent Spalding, you've told us that in addition to the Lewis factor for determining secretor status that people who are secretors secrete blood group substances in other bodily fluids such as saliva, perspiration, and semen. Did you examine any of the oral swabs, or slides, or anything of that nature that came in purportedly to be taken from Tina Urquhart?

A I did examine a number of items from Tina Urquhart, yes.

Q Were you able to determine secretor status based upon an examination of any of these swabs?

A May I consult some notes?

Q Sure.

A I have numbers listed here on my notes. Short notes anyway. Summary notes.

I'm sorry. We're talking about Tyrone?

Q Tina.

A Tina.

Okay.

On the swab from Tina an oral swab was -- I'm sorry, I don't have an oral swab from Tina.

Q Okay.

Did you determine why there wasn't an oral swab in this case?

A Not specifically, no. Sometimes they take them sometimes they do not.

Q Now wasn't an oral swab from Tina submitted to you?

A I have a vaginal swab.

I'm sorry, the oral swab was submitted, it was my Q-124.

Q And did you examine that?

A It was examined for the presence of saliva.

Q Were you able to determine secretor status as a result of examining the oral swab submitted purportedly to be Tina Urquhart's?

A No blood group substances were identified on that specimen. That's correct.

Okay.

Q Now would the absence of the blood group substance on the oral swab indicate to you conclusively that she was a nonsecretor?

A It would be one of two possibilities, either that she's a nonsecretor or that an insufficient quantity of saliva was collected on that swab to allow the detection of any blood group substances.

The blood group substances that would be detected if she were a secretor would be three, one known as the A blood group substance, the B blood group substance, and a third one which is in all secretors known as the H blood group substance.

A person who is an A secretor will secrete A and H.

A person who is a B secretor will secrete B and H.

A person who is an AB secretor would secrete all three.

A person who is an O secretor will secrete H.

And in this case on that particular swab no blood group substances were identified.

Q Now, Agent Spalding, what is the term amylase?

What does that refer to?

A Amlayse, a-m-y-l-a-s-e, is an enzyme, it's present in saliva in high concentrations and, again, like asic phosphatase it is present in higher concentrations in saliva than in any other parts of the body. It's one of the digestive enzymes that helps us begin to digest starches as we eat. And it is highly characteristic of saliva, and helps us, because of its quantity, because of its concentration, to establish, at least in a qualified sense, the presence of saliva on a stain.

Q Now, Agent Spalding, was item Q-118,

panties purported to be Tina Urquhart's, Court Exhibit S-111, examined by you?

A Yes, they were.

Q And was there an examination test perform for the presence of semen?

A Yes.

Q And could you tell me what, if anything, you found as a result of the tests you performed?

A Semen was identified on the panties Q-118. And the blood group substances identified in that seminol stain or that stain containing semen were A, B, and H.

Q Now could you tell me whether those panties were resubmitted to you for examination, Q-118 and Court Exhibit S-111, and whether you examined them again at the request of the Prosecutor's Office?

A Yes.

Q And could you tell me what you did at this examination?

A The next examination involved the detection of substances characteristically present in saliva, namely amylase. And amylase was identified in a number of stains. To be a little

bit more specific, when the panties were identified or examined for the presence of semen seven stains were examined and semen was found in one of those stains.

When they were examined for saliva the same seven areas were identified -- were examined for amylase and for saliva and amylase was found in all seven of the areas indicating that at least where there was semen there was some saliva mixed with it because of the concentration of the amylase detected; but that saliva was present in other areas on the panties alone.

Q Now when you examined Court Exhibit S-111, Q-118, Tina's panties for amylase were you able to observe any blood group substances present in the resubmission in the amylase sample?

A Yes.

Q Could you tell me what they were?

A Those blood group substances identified in the stains containing saliva -- or containing amylase on the panties were the A, the B, and the H.

Q Now, Agent Spalding, did you examine samples -- or was fabric sent to you purported to come from a blue couch in the basement of 209 East

7th Street and did you examine those pieces of fabrics for the presence of semen?

A Yes, a number of pieces of that fabric was received.

Q And specifically directing your attention to what is Q-20A and Court Exhibit S-13A can you tell me what, if anything, you found?

A Yes. Semen was identified. And in the semen -- in the stains containing semen the A, B, and H blood group substances were identified.

Q Now could you tell me what the term mixture means?

A Basically a mixture would be taking two things and putting them together allowing an intermingling of two items, objects, solutions, fluids.

Q Now what significance does the term mixture have in the area of serology?

A Mixtures often occur particularly with body fluids other than blood in sexual assault cases and so forth wherein the one such mixture I've just indicated where the one stain containing semen contains significant amounts of amylase as well appear over those normally found in semen because amylase is also present in small amounts

in semen. So that we have there an indication of the presence of a mixture of saliva and semen.

Other types of mixtures that might be found are semen and blood, semen and vaginal fluid, that would be present in cases of sexual assault. These are typical mixtures that might be encountered in forensic work.

Q Now directing your attention to your exhibit Q-146, Court Exhibit S-118, it purports to be an oral swab taken from Tyrone Urquhart. Could you tell me the results of your examination there?

A Yes. On that swab semen was identified, however, no blood group substances were identified. It was also examined for the presence of amylase and intended subsequent grouping tests for that purpose, however, the amylase testing for saliva was positive, but the sample was insufficient in quantity for future -- for further testing, basically.

Q All right.

Agent Spalding, going back to S-13A and S-111 for identification, given the fact that the defendant in this case is a nonsecretor, and given that you found semen in the sample, but you also found what we refer to as blood group

substances, as a result of that can you tell us whether you can exclude the defendant as being the donor of those semen samples?

A Based on the fact that the defendant is a nonsecretor I wouldn't be able to exclude him, no.

Q Well, since you found blood group substances and he's a nonsecretor why can't you exclude him?

A Well, the fact that those blood group substances could have come as a result of mixture of body fluids that exclusion would not be -- would be -- would not be possible.

Q Now directing your attention to what is Court Exhibit S-118, your exhibit Q-146, the oral swab taken from Tyrone's mouth, could you tell us what if any conclusions you reached as to the defendant being able to be excluded or included in regard to that particular Court Exhibit?

A The fact that no blood group substances are present is consistent with the semen having resulted from a nonsecretor. It's also, of course, consistent that insufficient quantities were present to establish blood group

substances in the sample.

Q Now going to what is Q-63, Court Exhibit S-77 purports to be a brown sheet taken from the apartment of 209 East 7th Street. Could you tell me whether you examined that item and tell me what you found?

A That item was examined. And as I outlined during semen examination protocol the identification was a qualified one in that substances characteristically present in semen, namely the acid phosphatase and choline were found in stains on Q-63 or S-77. And these stains when grouping tests were attempted failed to disclose the presence of any blood group substances.

Q Now directing your attention to what's Court Exhibit S-89, Q-107 purports to be a gauze wipe taken from Tina Urquhart. Can you tell me the results of your examination with that particular item?

A Yes. This would indicate chemical substances present in semen again were found on this item indicating, as I say, the acid phosphatase was found, the choline was found, but not the sperm cells for the P-30. The PGM typing result was 1 plus. The remaining tests were

inconclusive or not possible due to limited sample.

Q Now, directing your attention to what is Court Exhibit S-100, your Q number 109 purports to be a vaginal swab taken from Tina Urquhart. Can you tell me the results of any examination you performed on that item?

A Yes. On that item again we have a similar result with respect to a qualified identification of semen. And the blood group substances identified were A, and B. No H was identified.

In addition the enzyme Pep A Type 1, as I indicated a common type in the population, was identified as well.

Q Going back to Q -- I believe it's 46, S number 118, the oral swab taken from Tyrone, could you tell us, are you able to determine -- make any kind of a finding or indicator when you -- since you told us that amylase is present in both semen and saliva, are there any indications to you during your examinations -- the results you find -- being able to determine whether because the amount you find, or whatever, whether what you're looking at is saliva or just the amylase

that might be present in semen?

A Sometimes we can determine this as a result of the test, at least get a qualified or a qualitative observation with regard to that. We do not run quantitative tests on many of these substances because the influences that are involved which evidence encounters often times complicate these things to the point where a specific quantitative determination is of questionable validity.

Q All right.

Directing your attention to what's marked S-118 your Q-46 number, the oral swab of Tyrone, you've indicated to us here in Court that there was insufficient quantity to be able to continue your examinations?

A That was after we had typed the -- well, we had identified semen on the swab, and then conducted grouping tests on that material, and then had identified amylase on the swab in sufficient quantities to believe saliva was present.

At that point after we had gone through the three procedures we had used up most of the -- or used up the swab to the extent that

we had -- I say three procedures, there's alot more tests involved than just three, but we had used up the swab to the extent where grouping tests were not possible on that swab.

Q Now, directing your attention to what is S-111, your Q-118 number, the panties that Tina Urquhart was allegedly -- or purportedly stuffed in Tina's mouth, was that particular item different for analysis than your Q-146, S-118, the oral swab?

I mean would more have to be looked at to be able to determine the presence of amylase or saliva or semen?

A In terms of stains and stain material, yes.

What we're dealing with as far as the swab is concerned is basically a Q-tip type swab where the cotton material is what is taken for examination.

But on the panties, of course, we had areas that were stained to the extent which we took cuttings from seven different locations for analysis so that in that sense there was more to work with, yes.

Q Now what did you find when you

examined Q-146 -- strike that.

Did Q-118, S-11, the panties have enough of the substance to be able to come up with an indicator as to whether what you were looking at was amylase present in saliva or just amylase from semen?

A Testing on Q-118 led me to believe that we were dealing with in the vast majority of stains --

THE COURT: 119.

THE WITNESS: I'm sorry.

MS. CLARK: 118.

THE COURT: 118, the --

THE WITNESS: The panties.

MS. CLARK: S-111.

THE WITNESS: Sorry.

THE COURT: Try to refer to the S numbers.

MS. CLARK: Oh, I'm sorry, your Honor.

Q S-111, Q-118.

A With respect to S-111, as I indicated, we had about -- we had, in fact, seven stains examined for -- initially for semen and then the same seven stains analyzed later for saliva. No semen was identified in six of those stains the

first time around.

Amylase in sufficient concentration to consider the presence of saliva was identified in all seven the second time through, so that a considerable portion of -- considerable amount of saliva was present on the panties.

MS. CLARK: I have no further questions of this witness, your Honor.

THE COURT: Cross-examine.

CROSS-EXAMINATION BY MS. VAN PELT:

Q Were there other items submitted to you for examination for the presence of amylase on which you found amylase?

A Yes, several items were examined for the presence of amylase. One of those items was -- in fact, two of those items were cigarette butts -- three of those items were cigarette butts, one of them was the swab that we've already referred to from Tina Urquhart.

MS. VAN PELT: Do you have the cigarette butts?

I'll do the rest, I'll go to some

other area.

At some point we may need a brief chance to look through some bottles, your Honor.

Q Now, you told us that you when you started out you had three three tubes of blood, that were from known sources; is that right?

A That's correct.

Q And you had difficulty or could not conclusively establish from analyzing the tube of blood the ABO or Lewis factor of Tyrone; is that right?

A Yes, that's correct, basically, the ABO type while not sufficiently determined in terms of data for an absolute conclusion. I did get indications of what I felt to be a Type B, but I did not report that B for I felt it was not a conclusive result.

Q Now, you got the indications of Type B when you did the whole blood analysis?

A That's correct.

Q Okay.

And in addition, I believe you told us when you analyzed the sheet that you found indications of Type B?

A That's correct. Slightly stronger

upon the indications on the sheet, if I may grade it that way.

Q Okay.

Now, ideally, if you draw some blood from my arm and I -- and its given to you, a whole tube of blood, shouldn't you be able to find an ABO type?

A Assuming it's given to me in a reasonable period of time and there's no unfavorable environmental influences, yes.

Q Now, in fact, when you say "no unfavorable environmental influences," can you find ABO typing on stains that are old or in whole blood samples that have been drawn some period of time earlier?

A Sometimes; yes.

Q And it really depends on whether it's properly stored, and handled, and due care is taken; isn't that right?

A And to some extent on the biochemical makeup of the individual.

Some of the research that actually has been taking place in the space program has shown that certain biological membranes are stronger if you have certain kinds of foods and all that sort

of thing. So that while I don't want to get into a health lecture, the fact remains that the cells -- the makeup of the blood would be more robust, if you will, in a healthy individual.

Q So if my diet is better than your diet my blood maybe healthier than your blood?

A There may be something to that.

Q Okay.

But, suffice it to say that you could not conclusively determine any of these factors for Tyrone?

A That's correct.

Q Now if we're dealing solely with the comparison of these three individuals, there are a lot of areas where you have different factors, whereas you said blood group systems which really are not going to help you at all make distinctions between these individuals; isn't that right?

A That's true.

Q And I know you told us that you weren't concerned, for example, when you gave us a result that could be either K-9 or K-12, which is Tina and Tyrone's blood -- and I'm sorry, I don't remember the S numbers -- but, that there was an inconclusive on your CAII factors; is that

correct?

A That's right.

Q And I don't know if you specifically told us, but on Pep A is that the very same thing that the vast majority of people in this country have, the same Pep A characteristics?

A Type 1, yes.

Q Okay.

So that the presence of Pep A on a stain -- and I believe you've reported some presence of Pep A on stains that you examined -- the fact that you don't have a characteristic here wouldn't cause you to rule out any of these three individuals; is that right?

A That's true. As a further explanation of that, the characteristics G6PD and Pep A, in as much as they are good blood group substances from the blood group system, and were analyzed during the examination of the evidence in this case.

We've done studies with regard to the survivability of these substances in stains and the relative frequency with which we have conclusive results on these particular tests with regard to stains of evidentiary nature, and so forth, and the number of times that we get a

conclusive result, for instance, in G6PD was so low that we had discontinued -- while we still have the technique available we've discontinued running it completely.

The same as far as my personal approach to examinations is concerned, the same is something I've done with Pep A so that I seldom run Pep A on anything myself anymore because of, number one, the high proportion of people in the population who are Type 1. And, number two, the high frequency of an inconclusive result.

Q Now you've told us that O secretor will show evidence of blood group substances that we have here in other body fluids; is that right?

A Yes, that's correct.

Q And a nonsecretor won't show them?

A That's correct.

Q So, for example, if Byron were a secretor you would expect to find H antigens in his saliva and in his semen; is that right?

A That's correct.

Q And as a nonsecretor will you find any antigens in his saliva?

A I would not expect to.

Q Okay.

Now as to all of the other things that are here, are they controlled by secretor/nonsecretor status?

A No, they're not.

Q So that although you could take a saliva sample from Mr. Halsey and would not expect to find any H antigens, you would expect to be able to find PGM 1 plus 2, plus EsD, GLO and down the line?

A Not exactly because what we have here is an array of genetic information relating to blood samples on the board in front of us.

I would not be able to take a saliva sample and identify these things because these characteristics relate to blood.

Q Okay.

A Now the one -- there are three characteristics on the board that are common to blood and semen -- I'm sorry -- four, the ABO, the PGM, the G6PD, and the Pep A.

All right?

A I've already commented on G6PD and Pep A and what I would -- my personal approach to the examination of stains containing semen would involve ABO and PGM. At least at this time -- I

mean at the time this case was examined I did run some Pep A examinations, I believe, on S-100.

Q Okay.

But as you told us, the Pep A really isn't going to help us much because almost anybody would have Pep A?

A That's my opinion.

Q Okay.

Now is there a distinction between a PGM 1 plus and 1 plus 2 plus?

A Yes, there is. This is a readily observed distinction in terms of the test results that are seen. And we've discussed mixtures of stains, and it would be reasonable to assume a mixture would show all of the characteristics, if we could assume that it was an exact half and half mixture, which, of course, we can't.

Q Okay.

A So that the characteristics of the body fluid that is present in the greatest amount is going to overshadow the situation so that if -- for instance, if I were to mix saliva -- or let's say semen and saliva from two individuals and the saliva were in a greater concentration or greater amount than the semen then the characteristics of

the saliva would be more in evidence, it would be more easily determined or identified.

The same might appear with blood and semen or something like that.

Q Well, since it doesn't affect secretor status we'll just use PGM. So, for example, if you mixed an equal part of Tina's saliva and Byron's saliva would you expect to see characteristics of PGM 1 plus and also 1 plus 2 plus?

A The 1 plus of Tina's would be additive to the 1 plus of Byron's, but we would still see the 2 plus if we had an exactly equal mixture.

Q Okay.

And are you saying that if you had very little of Byron's saliva combined with alot of Tina's saliva you might not see the two plus?

A I'm sorry.

Q All right.

A Your previous question, did it deal with saliva?

I assumed it meant semen because PGM is not in saliva.

Q So PGM is only in semen?

A That's correct.

Q I used saliva because I know that Tina doesn't have semen.

A That's a fair assumption.

Q There's certain things you don't need to be a forensic serologist to know; right?

A I think so.

Q Now I'm going to ask you to refer to S-89 which is your Q-107.

Are you with me now?

A Yep.

Q I don't know if I'm with you.

A Yes, I have it.

Q All right?

A I'm with you.

Q Now that purported to be a gauze wipe of the vaginal region of Tina?

A That's correct.

Q Okay.

Did you examine that for the presence of blood?

A Yes, that was examined for the -- wait a minute. I'm sorry.

Yes, it was examined for the presence of blood.

Q And was blood found on that?

A Blood specifically wasn't identified on that, although it's probably important to recognize one of my previous comments concerning the identification of blood, in that while we might have, as I described, a preliminary screening test and then a subsequent confirmatory test, if I were to see a positive preliminary screening test and not be able to obtain a confirmatory test by sampling the actual stain, then minute quantities of blood would be detected by the screening test; but I do need more in order to get the confirmatory tests, and if I didn't then it wouldn't purport blood.

Q Are you telling us that you found a stain there that you believed might be characteristic of blood, but there wasn't enough blood present to identify -- to actually conclusively identify that it was blood, let alone to establish any of the characteristics of blood that you've put on -- is it 76?

A S-276.

Yes. As a matter of fact, with regard to checking my notes of the actual examinations that is the case.

Q But you also told us that there was

the presence of semen; is that right?

A On that particular item?

Q On that particular item.

A The substance is characteristically present in semen, such as acid phosphatase and choline were identified enabling a positive identification of semen, yes.

Q And you told us that you also identified PGM sub 1 plus; is that correct?

A That's correct.

Q Now could you tell us are -- you able to tell us whether the sub 1 plus came from the semen or from the blood?

A I would not say where it came from.

But I would also have to add one point, that that was a wipe of, I assume, the external since it was a gauze and that is the normal mechanics of such an examination by a doctor. It was a wipe of the external vaginal area of the victim. As such that stain, while it has some blood in it probably based on the presumptive tests, it also has enough semen there so that at least a qualified identification was made. There is the -- the entire probability or the -- it must be at least considered that vaginal

fluid from Tina was there because of the nature of the sample and the nature of her injuries.

Q So that we have another factor, and I keep pointing because I see these three things here. You're telling me that in that stain you may have blood, semen, and vaginal fluid?

A That's correct. And, unfortunately, we have no idea or no way to ascertain specifically and conclusively the presence of the vaginal fluid, but it must be considered.

Q Now, perhaps I should have asked you this in the very beginning, but when you deal with these stains that you examine and you find semen to be present or blood to be present when there's a quantity sufficient to analyze further is there any way you can tell how long that stain has been there?

A No.

Q So for example, on S-150, which is -- I think it's your Q-91 --

A Yes.

Q -- you identify that there was a blood stain here?

A That's correct.

Q Could you show us where you found the

blood stain?

A Yes. This is the jacket, Q-91, and it bears my initials inside the back of the collar, right here (indicating).

And the cutting -- since this is a down-lined jacket or down-filled jacket it's common practice for us to tape over the cutting to prevent feathers from going everywhere. But we see our FBI evidence tape in an area here and next to it the labelling 1B. This would designate one blood cutting.

Q Okay.

A The second cutting for blood would be 2B and so forth.

Q So that someplace underneath all your evidence tape you took a cutting and you found blood, and then you found on the blood inside there?

A There was a second cutting taken from the right armpit area.

Q Did you find blood on the right armpit area?

A That was the purpose of the 2B cutting, yes.

Q Okay.

You indicated to us earlier that it was on the collar. Do you also mean to say there were two spots?

A Yes. In inspecting the items initially to establish that they had been received and examined at the laboratory I noted the 1B cutting, but didn't, obviously, note the second cutting under the armpit which is indicated there and marked.

Q When you say quantity not sufficient, I believe you told us for further analysis. If it were a big blood stain would you normally be able to expect to find something more?

A Well, I would certainly try, yes.

Q Okay.

And because we can't see how big the spot was, so you indicate it was relatively a small amount of stain?

A Well, in this particular sample, if I recall right, we're dealing with human blood which was inconclusive.

Q All right.

A In other words, we did attempt to identify characteristics beyond human, but the results were inconclusive.

Q And can you tell us how long that was there?

A No, I can't.

Q Would you agree with me that this jacket doesn't look like it was cleaned recently before it was stuffed in this bag?

A I would agree with that. And that may have something to do with why the results were inconclusive.

Q Because the substance itself was dirty, or because there was dirt that was put over the blood sample, or either?

A I wouldn't be able to say that.

Q Okay.

Is it possible for an identifiable blood stain to -- or a stain which you can subsequently identify as human blood to stay on an object for a long period of time?

A Yes, it is.

Q Is it always like -- is a blood stain always removed by washing?

A No.

Q So that if I got a blood stain on a garment that I have and I put it in the washing machine and take it out you might still be able to

examine it and say there was human blood there?

A Okay.

I took the term washing initially as a relative term and it must be considered that way.

To take a stain -- a blood stain and simply wash it under running water, which I guess maybe one might consider as a rinse, we can expect that it will not be easily removed or that it would not likely remove all of it unless we made a special effort.

A routine washing machine washing will remove a considerable portion of the blood and I would not expect to be able to do any genetic marker type test or extensive characteristics test of a blood stain that had been washed in a washing machine.

I would hope to be able to identify it as blood, but beyond that I wouldn't project any positive amounts.

Q You would probably be able to identify it as blood, but you would not be able to go any further; is that what you're saying?

A I would not be able to expect to go any further easily.

Q And the mere contact with water

also --

A Delutes out the blood and removes some, yes.

Q Well, if I had a blood stain on a garment and I walked outside in the rain and came back could that still be examined?

A Oh, it could still be examined. How much we'd find would be dependent upon how much rain had hit it, and the nature of the fabric it's on, and how well it had been absorbed, and a variety of things.

Q Okay.

So that, for example, the blood stain that you saw on your Q -- which is -- if I can get the right S number -- excuse me -- it's Q-48 and it's S-56. I'm talking about a shoe. There's no way of telling how long that blood stain had been there?

A No.

Q And it could be there through different weather conditions?

A Again, recognizing the weather conditions. Now it probably would help to recognize that when we're doing -- going through our blood identification protocol we're dealing,

number one, with the chemical characteristics of blood --

Q Uh huh.

A -- where we identify it. And this would represent the first two tests we would run.

When we move further into it and identify human blood we're dealing with proteins that are present in the blood which bear biological significance in terms of animal identification. And proteins are far more susceptible to break down.

We all know what happens when an egg goes into a frying pan and the white of the egg turns white. That is protein being destroyed basically.

So that the protein in the blood is more easily affected by adverse environmental conditions, or aging, and so it reduces -- aging or any of these adverse conditions would reduce the potential for identifying the human aspect. So that while human blood under -- or in stains maintained under optimum conditions might be identified for considerable periods of time later, the uncontrolled conditions could result in just blood being identified as opposed to human blood

being identified.

Q Have you found blood at crime scenes or evidence taken from crime scenes which are, quote, "uncontrolled conditions" for like more than 24 hours and be able to identify it as human blood?

A Yes.

Q More than 48 hours?

A Yes.

Q So when you're talking about periods of time, say, optimally, if police go and seize an item from a crime scene shortly after it happens and store it well you may be able to get to that years later and still find some characteristics?

A Years I'd be a little concerned with.

Q Months?

A But sometime later, yes.

Q But still you're not talking about it's going to destroy in a matter of 24 hours if it's not kept well?

A If we're talking reasonably good storage conditions and concerns that are applied to evidence, yes.

On the other hand, if it's -- prior to its collection it's under adverse conditions like

a rain storm, or whatever you mentioned, then there's a reduced potential.

Q Let me ask you this question. You've told us that these are genetic features and determine, basically, when we're born and go with us through the rest of our lives; is that what you --

A Yes, that's correct.

Q Okay.

Are they, in any way, controlled by who our parents are?

A Yes, they are.

Q Would you expect that I would have types that were similar to my parents?

A The types that you would have would be a reflection of the types that your parents would have.

For instance, with Tina we have a nice illustration of that in that she is a Type AB in the ABO system.

Q Uh huh.

A It is based on normal application of genetics. And the fact that there's no reason to believe any unusual circumstances took place during the genetic transfer of information it is

reasonable to say that one parent was an A and one parent was a B.

With regard to Byron it is reasonable to say that at least one of his parents had an O characteristic.

Q Uh huh.

A The other characteristic of that parent would have OA. The second chromosome would have been an A. So that he would have actually shown up as an A. The parent would have shown up as an A. But Byron received two doses, so to speak, of genetic material, one from each parent, and both of those were for the O characteristic.

Q So for example, we know that neither of Byron's parents had Type AB blood?

A That's correct.

Q Now is this true for all the other characteristics also, though?

A Generally speaking, although -- yeah, those kinds of principles would apply.

Q Is it also true in the Lewis factor?

A The Lewis factor gets very complicated biochemically and genetically so that I don't think we can easily say that.

Q Okay.

So that I notice there's -- wherever it's conclusive there's a one on one correlation in each case between Tina and Tyrone, and I was wondering if you could draw that conclusion that it might be true that Tyrone had the same Lewis factor as Tina, or you can't draw that conclusion?

A Oh, no, I wouldn't be able to conclude that.

Q Okay.

A As a means of helping to clarify what you just said, for instance, the Type 1 that we see in the esterase D sample or the EsD category there, type 1 is present in a large majority of the population. Type 1 in the ADA, and in the AK, and in the GC, all of these have large proportions of the population that are Type 1 as well as the CAII and the Pep A, so there's a frequency involved there as well as the genetic aspect.

Q Now I take it from what you said earlier that from your examination of Tina's blood and the examination of the oral swab you couldn't reach any definiet conclusion about whether she was a secretor or nonsecretor?

A That was the oral swab. I'm sorry, I don't have an S number for it. I think we're

dealing with Q-124.

Q I think it's Q-124. And it would be -- I don't have the S number written next to my Q number.

MS. CLARK: S-104.

MS. VAN PELT: That you.

Q There was no indication of blood group substances in the oral swab; is that correct?

A That's correct.

Q Subsequently when you examined the panties, though, there was an indication of blood group substance; is that right?

A That's correct.

Q If you assume that the panties -- the amylase on the panties came from them being placed in Tina's mouth would that -- would that lead you to conclude that Tina was a secretor?

A Yes, it would.

Q Okay.

Similarly, when you examined the substances on the oral swab from Tyrone, Q-146, S --

THE COURT: S-118.

Q -- S-118 --

MS. VAN PELT: Thank you.

Q -- you determined no blood group substances in the semen characteristics -- the semen that you found present, and also were unable to characterize the amylase because it's only a little swab and by that time there wasn't any left; is that correct?

A That's correct, additional grouping tests were not possible.

It probably would be helpful to realize that in general principle the same grouping type analysis would have been run on the amylase --

Q Uh huh.

A -- that was run on the seminol stain.

Q All right.

And?

A So when we're dealing with that it may very reasonably have come up with the same result.

Q Now when you say -- on Tina's swab were you able to run a test for the blood group substances and it was inconclusive or there were none that were shown?

A The test was run on the oral swab from her and none were detected.

Q Okay.

And that was a similar type of test that was run on the semen on the swab that you found in Tyrone and none were detected?

A Yes.

Q Yet you have every reason to believe based on the other examination that you did that Tina probably was a secretor?

A That's reasonable.

Q And you really draw a definitive conclusion that if there was a sufficient quantity of semen to analyze for blood group substances on Q-146, S-118, they would have shown up?

A Well, as I indicated when we discussed that result we would have to have -- to either consider the seminol -- the source of the seminol material there to be from a nonsecretor or that there was insufficient quantity for the detection of any blood group substances. One of those to possibilities.

Q Okay.

So you can't rule out there being a secretor with blood group substances who was responsible for the semen that you identified on that swab; is that right?

A That's correct.

Q Okay.

Now as to the results of all the analyses that you gave in terms of the other seminol stains -- and when you said you couldn't rule out Mr. Halsey, I believe you said that they were stains that identified either A, B, or AB, H blood group substances?

A Those characteristics were identified in some stains, yes.

Q And that's -- you indicated they were mostly mixed stains also?

A I would suspect them of being mixed, at least some of them.

Q All right.

Based on what you observed and the characteristics of the stains can you rule out any man in this Courtroom as being the donor of the semen?

A In terms of.

Q ABH blood group typing?

A Well, where certain ones -- where certain stains exhibited certain characteristics there would be -- you'd have to consider them individually.

Q All right.

A What I'm saying is that any man in this Courtroom who was a nonsecretor could not be ruled out.

Q If you have a stain where you -- all right.

If we assume -- I mean you know that Tina is Type AB; right?

A Correct.

Q And she may very well be a secretor even though her Lewis status doesn't show it because of the fact that you have the secretion in the amylase on her panties; right?

A Yes.

Q So that if, in fact, any seminol stain was mixed with a blood stain, A blood, and Tina was the source of that blood, would you be able to rule out anyone on the basis of ABO typing as having deposited the seminol stain?

A My compliments on the question.

The answer, basically, is that the technique we use for the establishment of blood group substances in secretor stains, saliva, semen, so on, was researched for some years at the FBI Academy at the Research and Training Center located there prior to our employment of that

technique on case work.

One of the key features designed as a part of that technique is to not detect blood group antigens from blood mixed with blood group substances from body fluids; i.e., if we have a -- if we have Tina's blood, for instance --

Q Uh huh.

A -- and we have semen --

Q Right.

A -- we may expect our -- well, if we look at the item that we're concerned with, the panties, we're talking about blood on those panties, we're talking about -- because blood was identified on the panties. We're talking about saliva on the panties. We're talking about semen on the panties.

Q Uh huh.

A Excuse me. The blood would not have given any contribution to the result of the typing tests conducted on the stains of secretions, blood as being distinguished as not -- a nonsecretion in the examination of the panties.

Q Are you telling --

THE COURT: This reminds me of chemistry class, I didn't understand a word for a

year. I mean it, this takes me back to high school.

Q Well --

THE WITNESS: Maybe I can simplify that, I don't know.

THE COURT: Not for me you can't, believe me.

Q Let me ask you this question then because I'm going back to the panties that you talked about. You said you found human blood, and you found semen, and you also found amylase indicating saliva; is that right?

A That's true.

Q Now when you indicate in your report that you found semen, I believe you also indicated that ABH blood group substances were present?

A Yes.

Q Okay.

Now are you telling us that the ABH blood group substances that were present aren't the result of a mixed stain with Tina's blood?

A No. I'm saying they aren't the result -- I'm saying that they may be from a mixed stain --

Q Uh huh.

A -- but that mixed stain was not contributed to in terms of our grouping result by the blood. We have to allow that we have semen saliva and blood.

Q Okay.

A So that the result of the grouping test would have been due to saliva and semen.

Q All right.

And if Tina secrets her blood group substances in her saliva is it fair to assume she secrets the same blood group substances in any vaginal secretions that she has?

A Generally, although they're not always detected as uniformly.

Q Then in any seminol stain that was mixed with Tina's blood group substance and -- well, mixed with Tina's saliva or her vaginal secretions would you be able to rule out any male as the donor of the semen based on the AB characteristics which are secreted into them?

A No.

Q Okay.

I used the wrong substance when I started, that was my problem; right?

So that in terms of the panties, when

you say it's a mixed stain, if it's mixed with her saliva and her -- and she is a secretor then any male could have deposited that semen there based on ABO blood type?

A We can't rule out any secretor male. And, of course, we can't rule out the nonsecretors, so, yes.

Q That sort of takes in the whole population; doesn't it?

A That's exactly right.

Q Okay.

A Now, the one thing we have to recognize that I think is important, and that is, of course, that forensic evidence on its own does not end at all. I mean I'm not trying to give you a story here that is going to solve everybody's problems and so on.

Q I'm just trying to figure out whether it solves anybody's problem, is what I'm trying to figure out.

A Well, in conjunction with investigative information determined by the people, the contents of which I have no idea, hopefully it will assist the jury in making decisions.

Q Okay.

But, basically, what you're telling us is that they ship all this stuff down to Washington, D. C. and say compare everything and tell us what you've got; but beyond that they don't give you police reports, investigative reports, statements of witnesses, or anything like that unless you specifically request information; is that right?

A That's true. And it's not normally requested in serology cases although there are other areas that do require that kind of information.

Q You told us that there was a fabric sample that you tested, I believe, and you found evidence of semen on it. I guess we're looking at Q-20A, S-13 -- I'm not sure if it's A, B, or C.

MS. CLARK: A.

MS. VAN PELT: A.

Q Are you with me?

A That's correct. Yes.

Q Okay.

I keep going to this chart and it's not going to help me in the least because it doesn't have the information I want.

And that was a sample that you found on the -- a piece of upholstry that purports to come from a blue couch; is that right?

A That is true.

Q And you indicated that you found indications of human blood, quantity not sufficient for further analysis; is that right?

A That's also true.

Q Okay.

And you indicated you found ABH blood group substances in the semen; is that right?

A Yes.

Q Now even if we were to assume for the sake of argument that that blood came from Tina, what you've already told us is that the presence of Tina's blood in and of itself would not have led to you identifying ABH blood group substances in the semen sample; is that right?

A Okay.

Yes, but in this particular case with this item we have to recognize further that the stain containing blood and the stain containing semen were some 15 inches a part.

Q Oh.

So that the semen stain has nothing to

do with the blood stain?

A Correct.

Q Okay.

A Or at least not in physical contact.

Q It wasn't cut out of the same little square?

A Right.

Q Okay.

Now if, in fact, the seminol stain -- let's start this way, if you look at the seminol stain as just being a seminol stain would you tend to believe that the person who deposited that stain was an AB secretor?

A If I looked at it as purely a seminol stain not containing anything else?

Q As opposed to a mixed stain.

A I could consider that.

Q Could it be possible for it to be a stain -- a nonmixed stain and not be from an AB secretor having ABH blood group substances?

A It wouldn't be consistent with that situation, no.

Q Okay.

Now you've told us before whether some blood group substances show up would depend on the

percent of the mixture; is that right?

A To some -- that would be one influencing factor, yes.

Q So that if there is a small amount of, say, vaginal secretion from someone who has an AB blood type and is a secretor and it mixes with semen would you always be able to identify the ABH substance?

A I wouldn't dare say. There's going to be a variance not only in the relative amounts of the two fluids involved, but there can be a variance in the concentration of the A, the B, and the H blood group substances contributed by either body fluid, and these are not the same from individual to individual, generally speaking, nor are they going to be the same for the two different body fluids.

Q In order for this seminol stain that you identify on S-13A to be consistent with having been deposited by Mr. Halsey it would have necessarily had to have been mixed with a sufficient quantity of vaginal secretions or some other body substance of someone who was an AB secretor to mask -- to put those in there; is that right?

A That's correct.

Q And unless there were enough of it there then you would have to conclude that it couldn't be Mr. -- to do that it couldn't be Mr. Halsey's stain; is that right?

A I'm sorry, I'm not sure --

Q I'll try it again.

A -- I understand that.

Q When you say that the stain there is consistent with Mr. Halsey because he's an O nonsecretor --

A Well, I can't rule him out.

Q You can't rule him out?

A That's right.

Q You would -- that necessarily assumes that there was some other body stain present that would --

A Contribute.

Q -- contribute to the ABH?

A That's correct.

Q And it would have to be there in enough quantities that you could measure it?

A That's correct.

Q Otherwise it would have to be somebody that had the AB on their own and secreted it;

right?

A And deposited it.

Q Yes.

And deposited the semen?

A Right.

Q Mrs. Clark asked you some questions before about the presence or absence of spermatazoa in a sample.

A Yes.

Q Okay.

And you said that the absence of spermatazoa in a sample has absolutely no probative value, I believe?

A Are we referring to motile spermatoza or are we referring to spermatoza?

Q Well, I'll ask you first, does the absence of spermatoza in general have any probative value?

A Not necessarily.

There were stains that we examined here that did not have spermatoza or sperm cells, if you will; however, the identification of P-30 is also equal in its weight scientifically speaking to identification of semen.

Q Were there samples here that did have

sperm cells?

A Yes.

Q So it's equally possible for -- is it possible then for one individual to deposit two samples close in time and one would exhibit the characteristics of sperm cells and the other would not?

A Normally each ejaculat -- although there may be reduced level each ejaculat will contain sperm cells.

Q Uh huh.

So that if you have one semen characteristic that contains sperm cells on sample A and another sample that doesn't contain sperm cells are you saying that there's a possibility that they don't come from the same person?

A No.

Q When you say each ejaculat would normally contain sperm cells what do you mean?

A Just exactly that. They're each -- depending on the time interval in between the body is going to regenerate sperm cells. The testicles, that seminiferous tube walls and the testes are going to produce sperm cells and these sperm cells are going to be available for

ejaculation --

Q Uh huh.

A -- so that the entire volume of sperm cells produced is not used up in one ejaculat. And a subsequent ejaculat in a few minutes or hours later will still have sperm cells in it.

Yet if the second ejaculat took place 24 hours later then the volume of the number of sperm cells would probably be greater than if it took place an hour later.

Q But there would still -- you would still expect to find sperm cells in the second ejaculat even if it were an hour later?

A Unless the individual had a vasectomy and then we wouldn't find them either way.

Q When we're talking about the presence of sperm cells we're talking about someone who produces them.

Q Are there also men who never had a vasectomy who still don't produce sperm?

A That can happen, yes.

Q So that is the total absence of sperm in any semen samples then indicative that the suspect who deposited either had a vasectomy or doesn't produce sperm?

A It might be consistent, I would use that rather than indicative or anything along that line because sperm cells themselves are rather fragile entities.

In the FBI Laboratory we conservatively require the observation of at least 75 percent -- or even an entire sperm cell to be seen before the identification is made.

Q Uh huh.

A Sperm cells are a head and a long thin tail.

When I say the entire cell, we're looking for along thin tail. If we're looking for 75 percent of it that's still a considerable portion of tail which is a part of the cell that is destroyed first.

Sperm cells in moist stains can be attacked by a bacteria and a variety of other things that result in there degradation and breakdown, so that we have to consider these as possible reasons for a sperm stain as well.

Q So you're telling us you're more likely to find the presence of sperm in a dry suspense -- or a stain that dried right away than one that was kept in a moist condition?

A Given a sample of semen that had sperm in it to begin with --

Q Yes.

A -- the stain that dries quicker will be more likely to exhibit sperm cells later on, yes.

Q Will you agree with me that in general the older the deposition of semen is if it's in a moist condition the less likely it is to find motile sperm?

A Yes. And as far as that goes, in dry stains, too, because once the stain has dried that's going to take away any motion period.

Q Okay.

So that you wouldn't expect to find motile sperm cells in a dry stain?

A Absolutely not.

Q But in a wet stain there are some conclusions, although they're not specific, that you can draw from the presence of active sperm in a vaginal smear; isn't that right?

A There have been, as I indicated before, some probable indications along that line. Some of these probable indications have indicated various numbers of hours with regard to

observed situations where motile sperm were detected a given period of time after sexual intercourse; but these are based on limited numbers of samples.

In other words, a study, for instance, of 75 people or something like that, which, of course, one would easily recognize as not being as reliable as a study involving thousands of people, or something like that, which is, of course, preferable.

As I indicated earlier, the time since intercourse is an aspect of sexual assault examination and analysis that is one -- or it is one way. A variety of -- actually a variety of approaches have been taken and most forensics or forensic examiners are not really all that hot on it.

Q Let me ask you this question, there were a number of samples that you identified and you told us that they were consistent with having -- blood was consistent with having come from Tina; is that right?

For example, S-1, Q-5, I believe you said that because of the presence of Type AB blood you believed that was blood that came from -- was

consistent with K-9 as as opposed to the other?

A That's correct.

Q Okay.

And you indicated that Q-33 -- excuse me -- Q-27, S-33, the brick, was consistent with Tina; is that right?

A That's correct.

Q And the same as with the blood scraping Q-4, S-26, consistent with Tina?

A Yes.

Q Now although you haven't identified it, given the fact that Tina was Type A would it have been possible for Tyrone to be AB -- would it be possible for Tyrone to be actually Type AB also?

A Well, the word possible, yes.

Q Its genetically possible?

A Genetically possible, yes. Probable, based on the tests I've observed of what I've run I wouldn't think so, but it's possible.

Q So that you believe that the light bulb that was found next to Tyrone actually had Tina's blood on it, not Tyrone's blood on it?

A If that was S-1, yes.

Q Yes.

A Or at least it's consistent with that source.

Q And you would say that to the exclusion of Tyrone based on your analysis?

A I couldn't absolutely exclude him because he does have the PGM 1 plus. And if he had -- if some of his blood were there the possibility of masking of hers -- masking by hers would be there. But the majority of it did reflect her characteristics.

Q When you examine the fingernails for the presence of blood do you also examine for the presence of human tissue?

A Tissue in a sense of skin and that sort of thing we would probably note it. We do not have the histological capability for identifying skin and that kind of material as a routine practice. So as results relate to identifying tissue as such, skin, no.

Q Well, you would note the presence of tissue then?

A I would note the presence of something like that, yes, if it were present. Often times -- well, I'm sorry. Go ahead.

Q So, is it possible that you could

Q Would washing it necessarily remove all traces of the blood?

A For the purpose of identification in that regard, yes, the way the normal forensic can identify indication one could successfully wash carefully and remove it.

Q When you say one could successfully wash carefully that leads me to believe that one could also run one's hands under water and still have blood under one's fingers nails; is that right?

A I would say it's possible.

MS. VAN PELT: Your Honor, I have a series of exhibits Mrs. Clark didn't use and I want to ask this witness about. I don't know if you want to do it now or after.

THE COURT: Let's break for lunch now. I was going to, hopefully, get Agent Spalding off the stand. I guess we're not going to do that.

See you at 1:30.

Don't discuss the case.

(Whereupon the jury was excused.)

(Whereupon the witness was excused.)

(Whereupon Court was recessed.)

(Whereupon Court was reconvened as follows:)

THE COURT: Anything before we bring the jury out?

MS. VAN PELT: Your Honor, I have one witness who is not able to be back here on Monday.

I indicated he might have to wait a while before he got on.

Could we possibly, once Mrs. Clark and Mr. Tucker finish with their case and we get the introduction of evidence and motions -- you know -- if they rest subject to the introduction and we put on that one witness and then do the evidence afterwards.

THE COURT: It's okay with me if it's okay with everybody else. Sure.

MS. VAN PELT: Because there's housekeeping things.

THE COURT: Well, it might just waste your time if your motion for acquittal is granted.

MS. VAN PELT: It's a short witness,

Judge.

THE COURT: Okay.

MS. VAN PELT: I mean I have given that serious thought.

THE COURT: All right.

Bring out the jury, please.

You can have a seat, we don't do the Federal bit here.

(Whereupon the jury was brought out.)

ROBERT P. SPALDING,

having been previously sworn, resumed the stand, and testified as follows:

CONTINUED CROSS-EXAMINATION BY MS. VAN PELT:

THE COURT: All right.

Miss Van Pelt

Q Agent Spalding, there are a lot of other items that you examined for the presence of blood or semen that you didn't find any of either substance on; isn't that right?

A That is correct.

Q And, for example, other than what you've told us this morning, on all of the other swabs and slides there was no evidence of semen?

A Basically, yes, on the -- only items that were testified to so far, to the best of my recollection, are the ones that were -- where body fluids were identified and characterized.

Q So that basically the inference that is safe to be drawn then is that everything, if not everything, almost everything, that you found blood or semen on has been brought out this morning?

A Yes.

Q Okay.

A Yes.

Q So I don't have to run through the list and say there was no blood on this, there was no semen on this?

A No.

Q If you haven't told us it's true?

A I think that's an fair assumption.

Q Okay.

A There were some -- a little over 200 items that were sent in and what we've talked

about is the important stuff.

Q I hadn't intended to go through them all, don't worry. Relax.

THE COURT: You weren't going to do it in this Courtroom.

MS. VAN PELT: But I only made a note of one or two things that I was going to ask him in that regard.

Q Now other than what you've talked about before, you examined other items for the presence of amylase, specifically cigarette butts?

A Yes.

Q And, in fact, were there a whole series of cigarette butts submitted. And in each case you were asked to examine them for the presence of amylase and see, if there was amylase present, whether it contained any blood group substances?

A According to my records there were three cigarette butts submitted, and on those three cigarette butts the H blood group substance was identified.

Q Okay.

These are small enough, I think we can do them sitting on the stand.

Showing you what's been marked S-6 for identification, do you recognize that?

A Yes. State's 64 ID is the paper bag containing a cigarette butt. It's labeled Q-9 with my initials on it. And as per the comments I made earlier about the evidence we spoke of this morning, it was received with the remainder of that evidence.

Q Okay.

Did you perform any -- or should I do them all with you first here.

A Yeah, that might be easier to do them all.

Q All right.

S-24 for identification.

A S-24 is a similar bag with the label Q-2 and my initials. It also contains a cigarette butt. And, as I've said, was likewise received with the remainder of the evidence.

Q Showing you what's been marked S-25.

A S-25 is an envelope similar to those that the blood samples were in this morning. It's labeled Q-3, and was, again, received with the remainder of the evidence.

Q Showing you what's been marked S-58.

A Okay.

S-58 is an envelope similar to that that Q-3 is contained in. It's labeled Q-53 through Q-57; however, my initials and markings do not appear on the four cigarette butts contained inside.

The information I have and reports that I have that I prepared do not reflect the examination of those. And I would explain that simply by saying a number -- in view of the volume of the evidence in the case a number of discussions did take place between myself and the police department, and a number of examinations were deemed unnecessary, or perhaps something that we might considerate at a later date, but were not initially conducted. And this would fit within that category, I believe.

Q So that S-58 which purports to be the contents of the ashtray in the living room, in fact, contains items that fit that description; is that right?

A Yes.

Q And you initially received them and gave them Q numbers, but you performed no examinations on them?

A That is correct.

Q Showing you what's been marked S-71 I'll ask you the same questions.

A S-71 is an envelope similar to the one I just described for 53 to 57, yes, S-58.

The comments I made with respect to this sample would be the same as with the previous sample in that no examinations were conducted on the items.

Q All right.

And this purports to be the contents of an ashtray in bedroom/kitchen, two matches and one cigarette butt; is that right?

A That's correct.

Q Showing you what's been marked S-79 for identification, can you identify it and did you perform any examinations on those?

A S-79 is a paper bag like the previous ones, a small one. It is labeled Q-72 through Q-74. It contains two cigarette butts and one match. And it, likewise, was not examined.

Q And the notation is that this was found on the step above second floor; is that correct?

A Yes, I believe that's correct what

that says.

Q I have the ones that you didn't examine.

A Correct.

Q And then S-82, I believe it is?

A Yes, S-82, an envelope similar to the envelopes that we've seen. As indicated on the outside contains one cigarette butt, fifth step down. It also is labeled Q-75, my initials. It contains a cigarette -- a single cigarette butt which was not examined for the reasons I've already stated.

Q Okay.

Now, directing your attention to the exhibits that you did examine, did you examine them for the presence of amylase and other blood group substances or amylase and then other blood group substance if they were in amylase?

A That would include S-6, S-25, and I'm not sure of this S number.

Q You got S-24 there?

A Is that 24?

All right.

Q Which is either Q-2 or Q-3.

A Q-2.

Yes, those items were examined for the presence of amylase. They were also examined for the presence of blood group substances.

Q Were you able to detect any blood group substances on any of these exhibits?

A The identification of the H blood group substance was made on all three of the single cigarette butts in these items.

Q And am I correct that from what you told us before lunch that that would tend to indicate that the person who smoked that cigarette was someone who had a secretor status?

A That would be reasonable, yes.

Q Because a person who is a secretor is a person whose blood group substances show up in his --

A The body fluids other than the blood.

Q -- in his other body fluids?

MS. VAN PELT: I have no other questions.

MS. CLARK: I just have one.

THE COURT: I'm counting.

REDIRECT EXAMINATION BY MS. CLARK:

Q Agent Spalding, would you just clarify again for us your classifications or your denotations when you say human blood inconclusive versus insufficient for characterization?

A Yes. In the examination of any of these stains it would be not unreasonable to encounter a stain which was of sufficient quantity that we were able to conduct testing beyond human blood, that is attempt to determine blood type or blood types.

And if, for some reason, the biochemical makeup of that stain had been -- had deteriorated to the point where the chemical characteristics that we're looking for are not identifiable anymore then the normal result would be that that stain would give us an inconclusive conclusion -- I mean inconclusive result.

If, on the other hand, if we were able to identify human blood in a sample or specimen stain, and the stain were consumed by those by -- that degree of testing -- in the process of identifying it as human blood the stain were consumed and there were no longer any stain left

then I would report that, and it would be common to report that as human blood insufficient in quantity for further examination.

MS. CLARK: Thank you.

I have no further questions.

THE COURT: You may step down, Agent Spalding.

Thank you very much.

Please watch your step, sir.

THE WITNESS: Thank you, your Honor.

(Whereupon the witness was excused.)

THE COURT: Are we going to need this thing for the next witness?

Let's get rid of it.

MS. VAN PELT: Miss Delabar will have to wake up.

THE COURT: Call your next witness.

MS. CLARK: Glenn Owens.

G L E N N O W E N S, having been first duly sworn testified as follows:

DIRECT EXAMINATION BY MS. CLARK:

Q Are you employed by the Union County Prosecutor's Office?

A That's correct.

Q And could you tell me your title?

A I'm a sergeant in charge of the forensic unit which includes photography, and fingerprints, and video.

Q All right.

In regard to your responsibilities in fingerprinting can you tell me what training, education, and experience you've had?

A 1959 through 1971 I was a Bureau of Criminal Identification Officer with the Sheriff's Office.

From 1971 through today I was with the Prosecutor's forensic unit and I head that unit.

Q And have you had an opportunity as a result of these years of experience to attend seminars or anything like that?

A Quite frequently.

MS. VAN PELT: He's a fingerprint expert, Judge.

THE COURT: All right.

Thank you.

The defense stipulates Mr. Owens that

you are a fingerprint expert.

Q Directing your attention to November 15, 1985 Sgt. Owens, did you have occasion to respond to the State Medical Examiner's Office to attend a preliminary examination of two children?

A Yes, I did.

Q And why were you going there?

A We take the photographs and the fingerprints of the deceased at that time and any autopsy photographs that the doctor would request.

Q And on this particular occasion -- strike that.

Did you have occasion to respond on November 16, 1985 to the same place?

A Yes, that was the completion of the -- we went in the afternoon of the 15th, completed around 4:30, 5:00 that afternoon, and then came back on the 16th and started again on the autopsies.

Q Did you perform any unusual examination on Tina Urquhart while you were attending the preliminary examination on November 15?

A Well, it's not unusual, we do it quite frequently with deceased victims where they might

have been strangled or carried by the perpetrator.

Q Could you tell us what, if anything, you did?

A Yes. We use two methods -- at that time I used two methods. An iodine fuming method which is actually using iodine fumes to attempt to go over the skin and raise latent prints that might be on the skin.

The second method I used that day was the magnabrush, it's actually a magnet that we put the powder on and then go close to the skin, and if there are oils from latent fingerprints on the skin they will be visible to us at that time.

Q Now, Sgt. Owens, Tina was naked when you saw her; correct?

A That's correct.

Q And could you tell me when you performed this examination -- or the two examinations you told us about did you find anything?

A I did not find what we call good ridge detail. In other words, fingerprints that were able to be identified. There were a lot of smudges and smearing. But, in other words, I did not have any fingerprint that could be identified.

Q Now tell me -- would you explain the process by which you think you can even identify fingerprints on a naked body?

A Well, the naked body, even though it's an porous surface sometimes when a person grabs hold of the leg or the flesh, and then is sweating enough to leave sweat there, and then goes away from that surface and leaves his latent print on that surface we're sometimes able to raise them with these chemicals.

In my 28 years I think I probably done it about twice, and it's very -- the odds against it are tremendous.

Q And what are the factors that go into whether you're going to be successful or not at being able to ascertain -- or raise a print on a naked body?

A Well, time is probably the factor that's against us the most because the more time that goes by these oils have a chance to go back into the surface of the skin and once they do we've lost the ridge detail that we need.

Q Now, Investigator Owens, from your training, education, and experience can you tell me if a fingerprint has been placed on something,

if you found sufficient ridge detail to be able to say, hey, that's a print, it's a good print, and let's say identify it, can you tell when that print was put someplace?

A I couldn't, no.

MS. CALRK: I'd like to have two items marked, your Honor.

THE COURT: 277'77 and 278.

(Whereupon two photographs were marked S-277 and S-278 for identification.)

Q Investigator Owens, I show you what what has been marked S-277 for identification and ask you whether you recognize that photograph?

A Yes. This is one of the two -- several I took of the lower portion of the victims that day.

Now this is the little boy Tyrone, the sole and the lower portion of his legs while laying on the table.

Q Does that photograph fairly and accurately depict what you saw when you were taking the photograph?

A It does.

Q And showing you what has been marked S-278 for identification I ask you whether you

recognize what that photograph is?

A Yes. And this is another of the series I took that day. And is of the lower portion, again of the legs and the soles of the feet of the little girl Tina.

Q And does that photograph fairly and accurately depict what you saw?

A It does.

MS. CLARK: No further questions of this witness.

THE COURT: Any questions?

MS. VAN PELT: No questions.

THE COURT: Thank you, Sgt. Owens. You're excused, sir.

Please watch your step.

THE WITNESS: Thank you.

(Whereupon the witness was excused.)

THE COURT: Call your next witness.

MS. CLARK: Chief Propsner.

J O H N C. P R O P S N E R, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MS. CLARK: