IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

IN AND FOR THE COUNTY OF PIMA

THE STATE OF ARIZONA, Plaintiff, vs. JASON PATROU Defendant.	)	CR-20063586

BEFORE: THE HONORABLE HOWARD FELL
Judge of the Superior Court
Division SR

REPORTER'S TRANSCRIPT

MOTIONS

TUCSON, ARIZONA

December 3, 2007

Reported By: HELENE J. DIEHL, OFFICIAL

RPR, Certified Court Reporter #50272

APPEARANCES:

LINDSEY ST. JOHN
Deputy County Attorney
on behalf of the State;

JOSEPH ST. LOUIS
on behalf of the Defendant.

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P R O C E E D I N G S

THE COURT: State of Arizona versus Jason Patrou, 20063586. Joe St. Louis with Mr. Patrou, present out of custody. Lindsey St. John for the State.

All right, we got a motion to dismiss based on illegal seizure. Dismiss illegal blood draw, suppress the results. Suppress the involuntary pretrial statement or alleged to be involuntary pretrial statements and the motion for inspection of the laboratory by defense expert.

How do you guys want to proceed?

MS. ST. JOHN: Well, Your Honor, we had originally discussed doing the expert testimony today, addressing the inspection of the crime lab and then doing the officer testimony in two weeks at the other EH. Joe informs me this afternoon, however, that there isn't going to be time for my expert to proceed. The Court did advise this was the only time we were getting, and I expected him to plan accordingly. I certainly did. And I would ask that my witness be able to testify today as well. She did come down from Phoenix, although his witness did come from New Mexico; correct?

MS. ARVIZU: Yes, ma'am.

MS. ST. JOHN: Out of town.

THE COURT: Can I ask a question? Of course I can.

What the -- if the laboratory were inspected today

what does that got to do with Mr. Patrou?

MR. ST. LOUIS: That's what Ms. Arvizu is going to explain to you.

THE COURT: Okay.

MS. ST. JOHN: That would be my question as well.

THE COURT: You are ready, willing and able to enlighten me?

MS. ARVIZU: Yes, sir.

MR. ST. LOUIS: Absolutely.

THE COURT: Let's get started and see how we do. You know, Lindsay, if you don't cross-examine Ms. Arvizu it will go faster. Same thing with you, Joe.

MS. ST. JOHN: That's a good trial tip, thank you.

MR. ST. LOUIS: Hop on up there, Jeanine.

THE COURT: Be sworn, please.

JEANINE ARVIZU,

Being first duly sworn, took the stand and testified as follows: contradict

DIRECT EXAMINATION

MR. ST. LOUIS:

Q Would you state your name for the record, please?

A Jeanine Arvizu, A-R-V-I-Z-U.

Q And Ms. Arvizu how are you employed?

A I am a quality auditor, and a chemist specializing

in assessment of laboratory and data quality assessment.

Q How does one become a quality auditor?

A As a practicing analytical chemist and a laboratory manager I became interested in the subject of quality assurance applied to analytical measurement, and began working interagency quality assurance issues for the Department of Energy, at which time I became certified as a quality auditor through the American Society for Quality.

Q I guess let's back up a little bit. Tell us your educational background, if you would, please?

A I have a bachelor of science degree in biochemistry from California Polytechnic State University in San Luis Obispo, California and ABD in chemistry from the University of New Mexico.

Q Tell us what an ABD is?

A Essentially all the dissertation is completed, all of the course work examinations, proposal defense for -- to be admitted to candidacy for Ph.D. but did not complete and defend a Dissertation.

Q Instead of doing that what did you do?

A I went to work for an operating contractor for the Department of Energy at one of national laboratories and established and managed a full service analytical laboratory.

Q Okay. Would that include Headspace Gas Chromatography?

A Yes.

Q Which laboratory was it?

A Idaho National Engineering Laboratory.

Q Tell us how about the kind of work, if you are working, are the laboratory themselves actually run by federal government employees?

A No, they are not. In the National Laboratory complex, most people are familiar with the Department of Energy, federal employees provide oversight but the labs are actually operated by what is called OMM contractor operating and maintenance contractor. Generally a contract position to the commercial entity. In the past it has been to university as well.

Q You get the job at this laboratory in Idaho. When was that?

A That was in early '80s.

Q And what is it you are doing for this lab?

A I established and managed full service analytical laboratory that conducted the full suite of analytical testing of unknown samples.

Q When you say you established the lab, what exactly does that encompass?

A Well, I hired the staff, I bought the equipment. Either conducted or supervised the method validation testing. Eventually built a laboratory.

Q Okay. And how long were you with the lab in the Department of Energy in Idaho?

A Just over 10 years.

Q What was your position when you left the laboratory?

A I'm trying to remember the specific title. I think it was called scientific specialist.

Q What did it mean, whatever title?

A I was tasked on a detail assignment to Department of Energy headquarters to work large scale analytical issues for -- across the DOE complex.

Q Okay. So you leave the lab sometime I guess early '90s?

A Yes. I think -- I am terrible with dates, I would have to actually go reconstruct it. I was at the lab in 1989 when my daughter was born. That's my frame of reference.

Q Okay. I tell you what, I have a copy of your CV here, maybe this will help you?

THE COURT: So you know how to test blood for alcohol concentration?

THE WITNESS: I can test darn near anything.

MS. ST. JOHN: That's a good question, Judge.

That's fine.

BY MR. ST. LOUIS:

Q Showing you what's been marked as Defendant's Exhibit A, tell me what that is, please?

A That looks like my resume.

Q Okay. All right. So when is it that you left the lab in Idaho?

A 1992.

Q And where did you go from there?

A I started a consulting firm that did independent assessments of laboratories for federal agencies.

Q What is an independent assessment of a laboratory?

A People who use laboratory results to make very important decisions typically contact with independent auditors, independent assessments to conduct assessment of whether or not the laboratory has the systems and controls that are necessary to reliably and consistently produce good quality data. Then they conduct data quality assessment on the data actually produced by the laboratories.

For example, for the Navy in our evaluation program that I managed we evaluated commercial and government laboratories across the country and conducted an assessment of the laboratory, did an on-site audit. Once a lab was approved to do work for the Navy then we, on a routine ongoing basis, assessed the quality of the data produced by the laboratory.

Q When you say we, you, someone else, you and someone else?

A Yeah, it was my company and the auditors that we employed. The group of auditors we employed.

Q Did you yourself go in and inspect these laboratories?

A Yes, I did.

Q Okay. Which is essentially what we are asking the Judge to allow you to do in this case?

A Yes.

Q And did you say that you have some sort of certain indication or recognition that you are qualified to do this by some agency?

A It's by the American Society for Quality. I hold certification as a quality auditor.

Q Okay. And how long have you held that certification?

A I have re-certified several times. It is a four year re-certification period. Frankly, I would have to go back and check my records to see how long. It's been quite some time.

Q Been a while?

A It's been a while.

Q Has anybody used your services as an auditor to go in and inspect laboratories?

A Yes.

Q Who?

A The Department of Energy, the U.S. Navy, defense lawyers, contractors for federal agencies.

Q Okay. So the federal government has hired you sometimes to go in and audit the quality of the work being done in laboratories?

A Both to audit the quality of the work after the fact and to evaluate labs to see if we should send them work in the future.

Q Okay. What we are asking in this case is that you be allowed to go in and audit the quality of the work after the fact?

A That's correct.

Q When you were running the lab in Idaho or when you were working there would you have people come in and perform audits on that laboratory?

A Quite routinely. In fact, in one year period we had a total of 50 on-site audits of my laboratory.

Q So 50 audits in a 52 week period?

A Yeah.

Q Did that interfere in any way from you being able to get your work done?

A No.

Q Do you know --

A It's just the price of doing business. It's just part of that business that you are in.

Q Okay. If the Judge let you tell us what you would do -- if the Judge said, I am going to allow you to do an

audit of this lab like you have done for the other labs, what would you do?

A Well, the on-site inspection process is based on an understanding of how the laboratory says they do their work. So as preparation for any on-site laboratory the first thing you do is review the relevant documentation that describes operating practices in the laboratory at the time the work was performed, because it's recognized that, for example, in this case the work was done in 2006. They may have updated procedures and changed practices in the interim. I would be asking to review all of the relevant documentation that was in place in the laboratory at the time the work was performed.

I believe I have copies of that already and have reviewed those materials already. I have a pretty good understanding of what the laboratory documents as their standard operating procedures, which essentially are the rules of the road for the laboratory. It's set standards, set criteria set down on paper, the decision making process that analysts go through.

Then you go into the laboratory and the paper trail is always one thing, but practice is entirely another. So as an auditor who is familiar with operating practices in a laboratory, you assess to what extent it's even possible to successfully execute those procedures in the facility. Given the operating constraints of the facility that's certainly an

issue in this case, given the extraordinary challenges faced by trying to run an analytical laboratory in a refurbished aircraft manufacturing facility.

So you are assessing whether or not there are facility controls, whether the analysts in question that are doing the work in the laboratory are following good laboratory purposes. Whether they are adhering to their own protocols and procedures, because on paper you can only see essentially what gets documented. In person you can see things that you can just never see on paper.

THE COURT: What if when you go in and make your observation, let's assume that the laboratory was doing a lousy job at one point in time but they know you are coming and they say, hey, Jeanine is going to be here, we have to be on our best behavior. They do everything absolutely perfectly. You would say, gosh, I wish this were my laboratory. How do you say two years earlier it was different?

THE WITNESS: That's a very good question, and if, in fact, the facility had changed that would be an issue, because you couldn't go back and operate, essentially, assess the facility, especially when facility issues have such foundation in the concerns about the operation of the establishment.

THE COURT: So if there is a hole in the roof and --

hole in the roof in 2006, and the hole in the roof is still there and all kinds of materials falls in, okay, fine. But how do you know whether the analysts were adhering to protocol because you see them do it tomorrow and everything looks great, but you don't know what they did?

THE WITNESS: If they are using the same procedure -- okay, in a laboratory you have what are called standard operating procedures. The recipe, if you will, the laboratory follows. I haven't been provided with any new procedures, I am presuming they are still using the same procedure they were using at that point in time.

The expectation for a lab that doesn't go through a lot of audits may be different in terms of people trying to polish up the act and trying to clean things up. We have very sensitive -- as auditors, you need to recognize that that does happen.

But the concerns about how many instruments did you have in place and how many square feet of available space. What was the air handling system like. Those kinds of thing to my understanding have not been remediated in the interim period. So it's not like they are going to be able to change their HVAC system, heating ventilating, air conditioning system and how they draw makeup air in the interim. You can see how they compensate for the fact that they are living and operating in a less than desirable facility.

I managed an analytical lab for the Department of Energy that was clearly not an optimally desired facility. A lot of -- frankly, you can tell a lot of times the difference between government facilities and commercial facilities. Government -- government laboratories are often trying to retrofit old facilities and turn them into labs, that creates their own special set of challenges.

I have had to go back much longer than this period of time, this is only a year, I have actually had to go back and do assessments much older in time, and those it gets harder. As the elapsed time between the time the work was done and the time you were able to do the on-site inspection gets longer it's more difficult to do.

THE COURT: I am going to take you out of the order Mr. St. Louis wants to proceed in, but all right, so --

MR. ST. LOUIS: You want to come sit over here, Judge?

THE COURT: So, the air quality in the laboratory is something that is important to you in making an assessment; correct?

THE WITNESS: Yes.

THE COURT: And that's, I guess, having listened to the cases for year, that's when they draw an air blank. Is that something that is the ambient air in the facility?

THE WITNESS: Very good.

THE COURT: So if that's dirty or contaminated with all kinds of crud that might effect the test results?

THE WITNESS: Yes.

THE COURT: All right. So that's one of the things you are going to look at.

What are some of the others, because otherwise -- let's assume that the machine -- that the machine worked properly.

THE WITNESS: Okay.

THE COURT: You know, that you checked the quality control for that particular period of time and it checked out. What other kinds of things are you concerned about?

THE WITNESS: The biggest issue, frankly, is sample integrity. Because the gas chromatograph instruments that are used for this kind of testing, they are very robust. It is a proven technology, that's not really the concern.

The concern is the fact that -- and I am looking for where our makeup air is in this room. Probably through these vents here. I would be looking for operating practices, who goes into the laboratory through which places and what kind of access controls are present. Do people who have been in an extraction lab then walk through a volatile lab. What kind of things are working in proximity to other kinds of operations. There are incompatible activities that sometimes get pushed in physical proximity, in short, if you have a very

limited amount of space available.

THE COURT: Okay. So probably wrong about this.

So let's assume that Joe is working in a toluene lab and he comes into the laboratory where they are doing blood alcohol concentration testing and he reeks of toluene. And so they draw an air blank and get a bunch of his reek in it, how is it going to change the test results to what extent -- to what percentage?

A That's actually a pretty good example, because what it shows is --

THE COURT: That damn Internet works all of the time.

THE WITNESS: The operating practices for that laboratory are such that they have been unable to prevent introduction of external contaminants to the evidentiary samples and to those blanks, and so they have essentially either through administrative or physical control means have not been able to protect the integrity of the sample. So I don't have the confidence that you want to have that the instrument results that come off the back end is representative of the sample at the time you selected it.

THE COURT: How much is it going to be off? Is it going to be off five percent, 50 percent?

THE WITNESS: That's the problem, you don't know.

THE COURT: What would make something off more than

let's say 10 percent? What contaminate -- how would it get in the gray top tube, or when it's withdrawn from the gray top tube how does it get in the gas chromatograph that it would change something more than 10 percent?

THE WITNESS: If you have a situation where the laboratories practices is such they let volatiles be present in the area, and that they have some sort of a mechanism where they can get into the tube, then any volatile could get in there.

The toluene example, it would show toluene in that sample and fortuitously enough in this case there is toluene in the sample. Does that mean that there is ethanol in the sample? Not necessarily. Does it mean there could be because they didn't control sample integrity? Yes. And that's really the problem. That they have allowed the samples integrity to be compromised such that it's exposed to whatever is out there, and you just don't know.

THE COURT: What was the blood alcohol concentration in this case, do you remember?

THE WITNESS: I would have to look it up.

THE COURT: Who knows?

MS. ST. JOHN: It's .133.

THE COURT: All right so .133. So how would -- how would -- how could or would something from the ambient air get into the sample to make -- end up making a blood alcohol

concentration .133.

THE WITNESS: From this particular lab I have seen standard control materials that are supposedly of known concentration that had concentrations of volatiles in excess of that, higher than that. So in this lab their practices are such that that can happen. Did it happen in this case? I don't know.

THE COURT: All right, so back to one of the original questions. How would your physically inspecting the laboratory give you answers to those questions, since it seems like, based on the documents that you have received, you know lots about the lab?

THE WITNESS: It gives you a better understanding of scope and breadth and depth, essentially. How pervasive is this problem? In all likelihood, because from my experience in running a volatile laboratory and a lab that handled radioactive material and understanding contamination control, I can look at whether their practices are contributing to the contamination exposure problems. Look at the physical environment. Administrative -- so it's really more is there an issue with contamination in this laboratory? I would submit that the evidence clearly documents that that is an issue. An on-site inspection would simply give a better understanding of the scope and breadth of the problems that contribute to that.

THE COURT: So you could assess and report, but you will never know, will you, on the day that Mr. Patrou's blood was tested what the situation was in the laboratory?

THE WITNESS: That's correct. That is correct.

THE COURT: Okay.

MR. ST. LOUIS: No, no, please, you're going to let me ask questions?

THE COURT: Yeah, go ahead.

BY MR. ST. LOUIS:

Q All right. So, Ms. Arvizu, let's talk about this. I think the question I had asked you is what are you asking the Judge to do. If he says, all right, Ms. Arvizu, I am going to let you have an inspection and do an audit as you have done in the other laboratories, what would you do?

A This type of an assessment would typically involve one day on-site in the laboratory. Preparation time to review all of the relevant documents, but then one day on-site at a point in time when the laboratory was conducting this type of testing. So it's not like it would be a surprise to them that I was coming. They would know in advance, and I would make sure to schedule it for a time when it was a part of their normal routine production operations to be conducting blood alcohol testing.

As a practicing chemist in an analytical laboratory, I understand that I have to be very sensitive to interrupting

an analyst who is in the progress of testing. You don't want to interrupt them and cause them to make a mistake. So you are very sensitive to those kinds of interruptions. Part of what I am watching is what other kind of interruptions does that person experience that are in that operating environment.

I would observe the testing. I would review records that sort of set the pedigree for what happened at this point in time that are not necessarily the kind of thing that are produced in a case file to set the context for what else was going on in the laboratory back at that point in time back in 2006.

And at the end of the on-site inspection I would meet with the laboratory management at the end of the day and let them know what I found. There won't be surprises if I issue a written report. You meet with management and always explain to them the issues that are identified and the problems that are identified.

And then typically I prepare a written audit report for the data users to identify any issues that -- any problems -- findings or problems that were identified.

Q Okay. So we are talking one day?

A Yes.

Q And you are not a rap star or professional athlete, how big an entourage do you have with you?

A Um, my entourage is usually my hard bound laboratory

notebook and indelible ink pen.

THE COURT: You do it by yourself?

THE WITNESS: I typically do this by myself. As a matter of courtesy I always invite the data users to accompany me. They usually can't make it through an entire day because it tends to bore them, but for half a day or so it can be very very interesting to them. So I would presume I would invite you, I would invite the prosecutor, I would invite the judge, anybody else who wanted to come. Except my problem in this particular case might be the physical space available in the lab might constrain just how big my rock star entourage gets to be.

BY MR. ST. LOUIS:

Q Okay. Let me ask you, you want them to be doing business as usual, testing peoples blood?

A Yes.

Q That would mean that there would be police reports with names on it, potentially case numbers lying about. One of the things you said is that you had worked for the Navy?

A Yes.

Q And did you have any sort of security clearance when you work for the Navy?

A My security clearance was -- when I worked for the Department of Energy I held DOEQ nuclear security level clearance for more than 10 years. Also as a condition of my

certification as a quality auditor there are ethical standards to adhere to, of which the privacy of the client's record is clearly one.

Q So if the Judge tells you don't reveal any names or case numbers that you see when you go into the laboratory unless I say it's okay, can you abide by that?

A Certainly.

THE COURT: Well, you would even if I didn't tell you to do that; right?

THE WITNESS: Yes, sir.

THE COURT: Because that would violate your code of ethics.

THE WITNESS: That's correct.

BY MR. ST. LOUIS:

Q So, Ms. Arvizu, let's talk about this laboratory. You said that from the items that you have seen there is clearly an ongoing problem with contamination in this laboratory?

A Yes.

Q Do you believe that it existed at the time that Mr. Patrou's blood was tested in September of 2006?

A In the case files that I have reviewed from 2003 through 2006 it has been an ongoing problem.

Q Okay. Let's go through those a little bit, if we may.

Okay, I guess the first thing that we should do -- can you see that, Judge, it's kind of tilted away from you?

THE COURT: Yeah. Examples of blood test result calibrators.

MR. ST. LOUIS: Because I can readjust -- maybe we can.

MS. ST. JOHN: You might be able to turn it a little more.

MR. ST. LOUIS: That's what I am thinking. Let's see if I actually lose a finger, as the gentleman from TPD was concerned, and let's see if I can knock my speaker off the table.

Okay, there we go. I think that's probably okay. All right, I am going to quit monkeying with it.

THE COURT: That's good. It's right where you had it three minutes ago.

MR. ST. LOUIS:

Q All right. So I guess let's begin by talking to the Judge about how we would set up a blood run. At the very beginning of a blood run before we can test blood are there certain items that we need to run or to test or to use?

A Yeah. The gas chromatograph instrument is basically a stupid machine and it doesn't know what you are trying to test for until you tell it. And so the mechanism that we use to do that is to calibrate the instrument.

So we are accomplishing two things. One is we are identifying the analytes of interest. In the case ethanol, that's qualitative identification.

Q What it is?

A Yeah, what is present.

And then quantitation is how much. So we are going to develop a relationship between a known quantity of a calibrator and the instrument response so you can draw up a curve and determine the concentration of an unknown.

THE COURT: So if you put in something that's supposed to be .1 percent -- or I am sorry, .1 alcohol concentration, you would expect the machine to come back to that result or close to it?

THE WITNESS: Exactly, exactly.

THE COURT: Okay.

BY MR. ST. LOUIS:

Q And not to be too picky, but really what we do is we take -- we'll take somebody's blood, put it in a tube, we'll put in a second chemical or internal standard solution; right?

A Yes.

Q Okay. Then we sort of heat that up and create a gas out of that?

A Uh-huh.

Q Is that yes?

A Yes, constant temperature.

Q And then we insert a needle and we draw the gas that's the mixture of this?

A Yes.

Q And when we are talking about a calibrator, we don't actually have blood in there, we have -- or do we -- we don't use blood to calibrate?

A No.

Q We just just alcohol in a known concentrate and some internal standard solution?

A Correct.

Q Okay.

In the DPS laboratory that tested Mr. Patrou's blood, do you know how many calibrators they used?

A Yes, I believe they typically use four.

Q You know what those are?

A Yeah, .01, .10, .20, and .30.

Q Now, what does -- what we have done is taken pure alcohol, we have broken it down to a concentration where when we heat it up and it becomes a gas we expect the gas chromatograph to read these numbers?

A Yeah. What you are doing with calibration is you are -- when you have a prepared solution that's .01 concentration and you know it's that concentration because gravimetrically, stoichiometrically you have prepared it to be that concentration.

Q You've got to spell stoichiometrically for the court reporter?

A S-T-O-I-C-H-I-O-M-E-T-R-I-C-A-L-L-Y, I think.

Q And now you got to tell the lawyers what that word means?

A Stoichiometrically is if you start with 100 percent and do two fold or 50 percent dilution you will end up with 50 percent solution. It's just a fancy level.

THE COURT: In your review of the materials from the DPS Laboratory, is there any suggestion that the samples that they used from wherever they received them were inaccurate?

THE WITNESS: The calibrators?

THE COURT: Yeah.

THE WITNESS: Unfortunately their -- that's actually a very good question.

THE COURT: I am doing well. I am asking good questions. I said that to Mr. St. Louis.

THE WITNESS: He's been studying outside of class.

The -- your ability to rely on result depends on the traceability of these standard solutions. Because it has to be of known quality and source. Because you can get a straight line and have that straight line be very far moved from reality.

THE COURT: Uh-huh.

THE WITNESS: In this case the laboratory's

documentation of the standard that they used, the traceability records are incomplete. So it's not possible after the fact for me as an independent auditor to reconstruct and make sure that the solution they were using was within its shelf life and had been independently verified at the time it was used.

THE COURT: Okay.

THE WITNESS: Now, maybe some of that documentation still exists in the laboratory and I would attempt to find that for back in 2006, if I was on-site.

THE COURT: Okay.

BY MR. ST. LOUIS:

Q Okay. So when we make the calibrator what is in it?

A Differs from lab to lab, but in this particular lab there's obviously alcohol in those concentrations that we've specified earlier. There is an internal standard solution which is very robust. Expect very top tier, the right way to do gas chromatography for quantitation. There's water in the solution to bring it into the desired concentration. And in this laboratory they also apparently use a preservative in their standards.

Q Okay. So how many of these items are actually read by the gas chromatograph when it produces a result?

A The gas chromatograph will respond to any volatile organic that comes off of the sample and comes through the instrument. In theory if this is all that's present, you

should get two peaks in a calibration solution. You should get a peak for alcohol and you should get a peak for the internal standard.

Q Okay. Let's look at an example of this. This is a chromatogram. This would be the seventh item that was run?

A Yes.

Q And we can see -- I mean there is a bunch of information at the top of what is printed out by the printer?

A Yeah. The header information is just descriptive information to provide some context for the analytical results below.

Q Okay. This one happens to have been created January 22nd, 2004?

A Yes.

Q All right. Why do we have two separate graphs on the page?

A Because there are two separate columns on the gas chromatograph. Again, good practice. There is actually a splitter, so when you inject a sample the sample is split inside the instrument and half of it goes into one column and half of it goes into other column. That's a very powerful tool for identification of a particular compound.

Q So when we take this gas that we've created from the two substances and we inject it into the machine, it goes through kind of a Y splitter?

A Yes.
Q Goes through two long tubes called columns.
A Yes.
Q What is at the end of those columns?
A In this case there is a detector that as each -- what happens is the sample goes in, it goes through -- you called it a column, in fact it is a long capillary column that is wound up inside the oven that is the gas chromatograph, and as a mixture goes through that column different compounds proceed through the column at a different rate. So some of the compounds come out soon. And you can see in this case one of them comes out about -- I can't see where exactly that is, a little after a minute, and the second one comes out a little after two minutes.

So there is a detector that as each compound, each plug of a compound comes out of the instrument, you get a peak that has a relationship to both what it is and how much of it is present.

Q Okay. So most of the time is there anything going through the tube or the column?
A Most of the time no, because most of the time you are just down there at the baseline.
Q And what makes the baseline, what substance, if any, makes any --
A Just the air that is going through.

Q Okay. So most of the time you will have this nice flat line going through?

A It's helium gas.

Q Okay. You've got helium gas going through there making a nice flat baseline?

A Uh-huh.

Q Right?

A That's what you hope for.

Q Okay. And then when something else goes through that flame detector it makes a peak?

A Yeah.

Q Okay. When we look at the X axis of the graph, what is the X axis?

A The X axis is time, in this case minutes.

Q So how long from the time we have injected a sample into the gas chromatograph until it's finished looking at it?

A That's subject to the analysts control. In this case the sample was run about -- it looks like five and a half minutes.

Q Okay. And that's what DPS used, at least that's what the Southern Regional Crime Lab uses?

A That is experimentally determined, empirically determined in each laboratory for their column conditions and their operation, and it varies from method to method.

Q But for headspace gas chromatography for alcohol in

the Southern Regional Crime Laboratory the samples are tested or examined for five-and-a-half minutes?

A That is their routine practice, yes.

Q How about the Y axis, the up and down access?

A That's the response in millivolts, which is essentially just the instrumental result to the compound that is passing through the detector.

Q Okay.

All right, so we talked about each -- I guess we have two peaks because we are measuring two substances?

A Right. And the way --

THE COURT: Well, no, you are measuring the same substance two different times.

THE WITNESS: That's exactly correct. In the first column, the column on top, I am measuring two peaks. And the column on the bottom I am measuring the same two peaks, they come out different retention times. That's how you identified that it's alcohol, because there is nothing unique about a peak that comes out a little over a minute. There is a lot of compounds that could come out a little over a minute. But what you do experimentally is you say, for these operating conditions and our columns the peak that comes out at a little over a minute is alcohol, and in this other column the alcohol peak comes out at 2.0 minutes. And so if I get a peak in both columns in both locations that -- in the expected location

that's confirmation that it is, in fact, alcohol.

BY MR. ST. LOUIS:

Q So the left most peak in both the top and bottom column is ethanol?

A Yes.

Is it being measured in both column. It is being detected in both columns. The lab reuses one column for qualitative identification and the second column for quantitation or determination of how much is present?

Q So only one of the two columns gives you a reading?

A That's correct, a reading of how much. You will still get results, but you need to evaluate that.

Q Okay. And what about the second peak in both columns, what is that?

A That is the internal standard that's essentially a fixed frame of reference. And this laboratory uses n-Propanol. There is a variety of internal standards that can be used.

Q N-Propanol or normal propanol is a different type of alcohol with a different number of molecules. Different numbers of carbon atoms in the carbon chain.

A Ethanol or drinking alcohol has two carbons and propanol just has three carbons. But they are both alcohol, so chemically they behave very similarly.

Q What we are doing when we talk about internal

standard we are talking about a control. We are talking about something that is in absolutely every sample that we put into the gas chromatograph?

A Yes.

Q Okay. In addition to testing alcohol we also look at a number of chemically similar substances?

A Yes.

Q And we can see, again, from the header information this happens to be the 9th item that was run. It is a standard mix, same date, January 22nd, 2004, we are now in analysis mode versus calibration mode?

A Yes.

Q What's the difference?

A They are designed for two completely different purposes. The calibration mode is to set the boundaries for the instrument. To tell the stupid instrument this is what concentration corresponds to how much alcohol.

In analysis mode, using that calibration as my frame of reference I am then going forward and testing essentially samples. They are unknown samples. In this case this isn't an unknown, this is a control sample, a mixed standard that includes one, two, three -- six volatile organic compounds. And the purpose of this is to get empirical evidence for the fact that at the time this test was performed, this instrument was capable of physically separating and distinguishing

between all six of those compounds.

Q Okay. And let's run through those quickly, and we will use the top column. The first substance would be what?

A Methanol.

Q And that's wood alcohol?

A Yes.

Q The second is what, please?

A Acetaldehyde.

THE COURT: What is that?

THE WITNESS: Actually one of the breakdown products of ethanol, biological breakdown product.

BY MR. ST. LOUIS:

Q When somebody drinks ethanol the body breaks it down?

A That's one of the components.

Q How about the third?

A Ethanol.

Q Good old drinking alcohol?

A Yes.

Q The fourth?

A Isopropanol.

Q That's rubbing alcohol?

A Rubbing alcohol.

Q Okay, how about the fifth?

A Acetone. Fingernail polish solvent.

Q That's also something the human body makes if the person is in insulin shock or has certain types of diabetes?

A Yes, ketones. This is an example of a ketone volatile organic that can be present.

Q Okay. How about the next item?

A And the last one is -- did we go through n-Propanol already?

Q No, we have not.

A That's propanol.

Q The sixth item is n-Propanol, which is the internal standard?

A Yes.

Q And the last one?

A The last peak out in the right is toluene. Toluene is an aromatic solvent.

Q Something in carburetor cleaner?

A I don't know about carburetor cleaner. I wouldn't be surprised. I know it's in gasoline.

Q Let's go through the typical run, the format that they used.

The first items are what?

A The first items are calibration solution.

Q We got 01?

A Basically fire up the instrument, you have the FID is lit and you have got your oven equilibrated and you are

doing -- in this case they do replicate injections of each calibration solution.

Q Okay.

THE COURT: That's good.

THE WITNESS: That is a good practice, yes.

BY MR. ST. LOUIS:

Q Two .01, two .10, two .20, two .30?

A Yes.

Q What comes next?

A Samples.

Q All right. The first one is the mixed volatile?

A Yes.

Q And that's what we are just looking at?

A That's the one with six different volatiles present.

Q What comes after that?

A After that they run a blank.

Q What is the purpose of a blank?

A Blanks are absolutely essential in the world of volatile organic testing. Their purpose is to essentially serve as a clean slate. A sample that's introduced to the analytical stream as a sample that is known to be free of volatile organisms, and that gives you a means of identifying whether or not your handling processes are compromised in that process.

So whether or not you're letting volatiles from the

environment get into your samples, that's how you can determine it from the blank.

Q How many blanks should we use in a typical run in order to have confidence that nothing is getting in?

A That's actually a decision made depending on how important the data quality are to your decision making process.

In programs that I have reviewed where the data were very, very important, they will have instrument blanks, and what that is, is when you wrap this up it is not one little sample, they use auto-samplers. So you can rack and run the samples all night long. You load up the little auto-sampler tray and one of the positions is a blank, so it's got the internal standard, it's got all of the same things that the regular samples have, except you are using water that you know to be free of any volatile organic.

So every -- best practice laboratories will actually run an instrument blank between every single analytical sample. The labs, for example, that do DOT testing for people who drive as part of their work, the commercial labs will run an instrument blank in between every sample to look for things like carry over problems. That's an instrument blank. The only thing that that can detect is contamination that's occurring during the time that the sample is on the instrument while it's racked up and running overnight while the analyst

is home sleeping.

In addition to an instrument blank there's what is called a method blank. That probably is the single most important blank sample, because that's a sample that is prepared and processed in exactly the same time and space as my -- as my unknown samples. So that if I am doing something to the samples that might cross contaminate them, that's my best chance to find that out is from that method blank sample.

Q So we have one -- one type of blank that will tell us if there is contamination going on during the testing process?

A One is just during instrument analysis, the other is what I would call the whole analytical process, that's the method blank, that's the big one. Instrument analysis is just the time on the instrument.

Q Okay, and then the Judge earlier mentioned an air blank?

A Yeah, that made my day. The routine analysis of air blanks in volatile organism laboratories is a best practice strongly recommended for laboratories so you understand what is in your ambient air. Because when you get a gray topped tube received from the field, you have to take that tube off to prepare these samples. If you have contamination, ambient contamination in your laboratory environment, that clearly is

an opportunity for contamination of that sample.

If you routinely run air blanks, and not just as a one time exercise, but when you routinely run them over time it gives you a very compelling picture of the air quality in your laboratory.

Now, in places where they make very important physical decisions based on volatile organic results, like environmental and so forth, they will actually have blanks that they stored in the refrigerator to see if cross contamination is occurring during the refrigerator storage. And they will include blanks during transportation from the time sample is collected in the field until it's actually received by the laboratory.

Basically at every point you can introduce a blank from the moment the sample is collected to the moment the test result is obtained you want coverage with blanks to try to assure yourself that you don't have a contamination problem.

Q What type of blank is this, the tenth item that was run, for example, in Mr. Patrou's case?

A That would be hard for me to tell by virtue of the record, because it does not describe it.

Q Well, that is the first blank that they used; correct?

A Yes, at position 10.

Q And how many blanks in total in Mr. Patrou's case,

there was something like 40 samples that were run?

A A total of approximately -- I would have to look at the batch, but approximately that many.

Q Sure. Showing you what's been marked as Defendant's Exhibit B, I will ask you if you recognize what that is, please?

A Yes. This appears to be the batch run conducted on September 22nd, 2006. So it starts with calibration, includes a blank, and includes Mr. Patrou's samples.

Q All right. Move to admit Exhibit B for purposes of this hearing?

MS. ST. JOHN: No objection.

THE COURT: Okay, B is admitted.

MR. ST. LOUIS:

Q Okay. All right, and so we were talking about how many samples would be in there?

A In the total number of samples, total number of injections is on the order of 100, but the actual number of unknown samples was about 40.

Q So you told us in -- what did you call it, best --

THE COURT: Best practices.

BY MR. ST. LOUIS:

Q Best practice laboratories they run --

A That there is an instrument blank between each unknown sample.

Q So if they were running 40 samples -- well, I guess they do it in duplicate, so that's a total of 80 samples?

A Yes.

Q How many blanks?

A In that case there would be 40 blanks, one blank between each unknown replicate of samples.

Q How many blanks were run in this particular case?

A One blank at the very beginning of the analytical run. The calibration in this case was performed about 9:30 in the morning, 9:30, 10:00. It looks like they finished calibrating at about 10:30. They ran a mixed standard and then they ran a blank.

From my perspective as an auditor what that means is that it's difficult to reconcile that with the fact that I want the blank to be processed with the analytical samples, not to be treated as a separate quality control sample that gets special handling. This appears to be a one time blank run right at the very beginning of the batch run along with the controls, rather than just integrate with the analytical samples.

Mr. Patrou's analytical sample in this run did not come through the instrument until 2237 -- oh dear.

Q 10:37?

A Yes, that night. So more than 12 hours later until this analytical sample went through.

Now, for example, when EPA pays for volatile organic analysis they require you to essentially treat every 12 hours like a new batch.

Q So you are saying that there was one blank total?

A Period, in this batch, yes. If this represents a complete data set.

Q Okay. We don't know if it is an air blank or we know it's not an air blank?

A I wouldn't -- I would not expect that it's an air blank given its position, and air blanks, which we've discussed earlier, are samples that are handled like unknown samples, they are not part of the quality control stream.

Q One air blank at the -- sorry, not air blank. One blank sample at the beginning of a run, is that enough to insure that there is no contamination affecting the results in Mr. Patrou's sample 12 hours later?

A The blanks don't insure contamination doesn't occur, but the blanks do give you a hope of being able to identify it when it does happen. So they are not preventative as much as they enable you to identify whether or not contamination is a problem.

Q Would we be able to draw any conclusions from a blank 12 hours before a sample was run?

A That would seem to stretch the bounds of applicability.

Q Okay. What comes after the blank?

A After the blank is a .08 control sample.

Q This is something that is bought from a company guaranteed when you test it on a gas chromatograph the result will be about a .08?

A Yeah. This gets to the traceability issue that we discussed earlier. They call it a .08 control, but I don't have any way of knowing exactly what lot number from what supplier this represents.

Q Now, are you just being real picky there?

A No. That's the fundamental perceptive traceability. This is a desirable quality in analytical chemistry.

THE COURT: Let me ask you something, Joe. I am probably just missing it, buy why is all of this information, which is real interesting, you know, I'm interested in this from Ms. Arvizu, relevant to whether or not she should inspect the laboratory? Isn't the kind of stuff I am hearing now the kind of thing you want the jury to hear so that they -- you know, because it may disparage the results?

MR. ST. LOUIS: Well, we are actually going to go through -- she talked about seeing contamination in this laboratory dating to 2003. We are going to run through some examples of that, so I want you to have the background to be on the same page with us when we are talking about that.

I didn't want to have to stop after every slide and

explain where this comes from.

THE COURT: Okay.

BY MR. ST. LOUIS:

Q Okay. So what is after the first control?

A Then they start running analytical samples, unknown samples.

Q And then control every how often?

A Let's see, it looks like about every -- after every 10 samples they run the same control.

Q Is that a problem?

A No.

Q Okay. All right so 22 --

A It's just that it's not from a different source, it's presumably the same control.

Q Okay. And then so we get to the end of the run, at some point we have our last control?

A Yes.

Q Which is what in this case?

A In this case it was injection number 99.

Q All right, and what do we have after that?

A After they run the last control sample they run each of the calibration solutions that they started off calibrating the instrument with. This time they run them in analysis mode instead of in calibration mode to verify that that same curve is still, in fact, a straight line.

Q So you have a .01, a .10, a .20, a .30?
A Yes.
Q Do we do them in duplicate?
A I believe those are just run single time at the last injection.
Q So we have taken a substance at the beginning, told the machine this is what an .01 looks like; right?
A Yes.
Q And then at the end we are testing it again and seeing if it measures it .01?
A Yes.
Q And based on that we are deciding what we measured in between is; correct?
A That's correct.
Q Okay. Let's look at some examples. You talked about you saw contamination in this lab dating back to 2003?
A Yes.
Q Let's look at a set of data from January of 2003.
MR. ST. LOUIS: You know, I don't know that I actually -- I have the chromatogram for this, Judge, I may not have brought those with me. I may have to bring them at the second part of the hearing on the 17th.
BY MR. ST. LOUIS:
Q So let's talk about this. We have a --
MS. ST. JOHN: Joe, I have the copy he sent me on

Friday. Is that what you want?

MR. ST. LOUIS: I didn't see it in there, to tell you the truth.

MS. ST. JOHN: Okay.

BY MR. ST. LOUIS:

Q We have a sample from January 15th, 2003?

A Yes.

Q And it is -- we can see it's a little cut off because poor quality of copying, but it is a .30 calibrator?

A Yes.

Q Okay. And so this is what we were just looking at a minute ago. We got a solution when we test it, it should be measured by the gas chromatograph as .30?

A Yes. This is the calibration part where we are telling the instrument this much correspond to a .30 concentration sample.

Q Okay. So we have a baseline down here, we have the zero, and you said the Y axis measure voltage?

A Yes.

Q So anything above zero is how much voltage is present?

A Yes, it's merely volt response.

Q And anything below zero is a negative or imaginary number?

A Yes.

Q And here we have a peak that seems to start off life as a negative number?

A Yes.

Q What is going on there?

A That line that's drawn there is an attempt by the instrument in its default manner to integrate that peak and integrating is just getting the area under the peak, seeing how much is there. And what it has done, these are, in fact, stupid instruments, is there is a small negative spike just before the peak, and so the instrument is trying to integrate from the bottom of that negative spike up to the tail of that peak. And that's what it is trying, and, in fact, it will -- it will integrate that area.

In this case the analyst has recognized that that clearly is inappropriate, that's not an appropriate thing to do, so -- if you will page forward.

Q Okay. Now we can see that this is calibrator January 15th, 2003, 10:36:52 a.m.?

A Yes.

Q We have another slide here, look at the header data we can also see the same thing, it is the seventh thing run .30 calibrator, January 15th, 2003, 10:36:52 a.m.?

A Yes.

Q And when we look at it we can see that it's changed now?

A Yes.

Q How is that possible?

A The analyst has gone in and recognized that the default value by the instrument was inappropriate and they have gone in and adjusted it. These are stupid instruments that we let smart analysts operate, and so the analyst has gone in and readjusted the baseline that serves as the base for doing that integration so it no longer -- you can still see the little negative spike off there to the left, but now you see the little line indicating the area subject to integration does no longer include that area.

Q So the analyst can go in and change the data?

A Yes.

Q After?

A They are not changing the raw data that the instrument has collected, but they are changing the processing of that data to yield meaningful results to the user.

Q But you can go into the instrument after it's done a test and say, don't measure from here to here, measure from here to here instead?

A That's one of the cases when you can do it. It is a good practice, labs need to know how to do that and they should have done in this -- a case like this. The labs need very strict controls on when it's done, under what authority, for what reason, and how it's documented. Because manual

integration can also be abused, so it's something that you want to have happen, and it should happen in a number of cases. This is one of them. But it needs to be controlled and subject to independent review.

Q All right. So what is causing -- you referred to it as a negative spike, what is causing that?

A I don't really have any way of knowing that after the fact. The laboratory from some of the materials that I've read has had a longstanding problem with the quality of the electrical service to the laboratory to the point that in some cases they have actually lost instrumentation, lost computer instrumentation as a result of electrical problems. If you don't have appropriately conditioned power to an instrument that can cause problems. But I have no way of knowing after the fact.

MS. ST. JOHN: I am going to object, I'd just like to voir dire the witness.

BY MS. ST. JOHN:

Q Do you know of instances where there have been electrical problems with the actual gas chromato --

A GC.

Q Chromatograph.

A No. When I read about it in some of the facility reports it simply referred to it, I believe, as computer equipment --

Q Okay.
A -- in the laboratory. These are all operated by computer.
Q But to your knowledge, you have no knowledge of it being specific to the GC instrument?
A No, no, I do not.
Q Okay. Thank you.
BY MR. ST. LOUIS:
Q Electrical, there have been documented instances of electrical issues in the lab that tested Mr. Patrou's blood?
A Yes.
Q Causing problems with the computers?
A Yes.
Q On at least two occasions?
A Yes.
Q But they don't tell us what type of computer, do they?
A No.
Q And, of course, the gas chromatograph is in many ways a computer?
A Virtually all analytical instruments nowadays are computer operated.
Q Okay.
Did you review a transcript of an interview of an analyst Brooke Arnone who ran the tests that we were looking

at?

A Yes.

Q Where she discussed the negative spike and what could have caused it?

A Yes.

THE COURT: What did she say?

THE WITNESS: They actually were calling the instrument manufacturer to try to investigate this because it had been a recurring problem. And she talks about correcting the baseline to give a truer value of that particular key.

THE COURT: So explain to me so, if you had, like in that previous slide, the downward peak and then the analyst adjusts the machine --

THE WITNESS: Uh-huh.

THE COURT: -- so that the baseline is flat, we get rid of the downward peak, what does that do? Doesn't that change the final result of a test?

THE WITNESS: It does. It would -- clearly if they had used this one with the integration to the negative peak, that would have given a dramatically different result.

THE COURT: So why do you say that it's okay to do that?

THE WITNESS: Because the instrument is essentially simply trying to pick where are the two points -- may I draw it on the board?

THE COURT: Sure, sure.

THE WITNESS: If I may.

MR. ST. LOUIS: There they are in front of the laptop on the desk.

THE WITNESS: Thank you. That's my sort of the zero point -- arbitrary zero point for the instrument.

You are coming along here and on a very small -- if you get small enough you can see that there's actually noise, just electronic noise. And what your instrument is trying to do is trying to decide at what point does this peak intersect this line, and it decides it's there and there. In which case then it simply integrates the area under this curve all the way to that point and that point, so there is an algorithm in there that will do that.

In this case what happened was there was a little downward peak here, so the instrument, in its stupidity, didn't realize that and it drew the line like this. So it said, ooh, my first point is here, my second point is there, and it integrated all of this area.

THE COURT: Which it shouldn't.

THE WITNESS: Which it shouldn't.

So it's -- you know, in the old days you used to have to actually integrate this stuff the old fashion way instead of computer assisted. There were days where you would cut the peak out and weigh it and stuff. So clearly that

would have given you a wrong response.

THE COURT: Higher or lower?

THE WITNESS: This would actually -- it depends how their algorithm is structured. In the old cut the thing out and weigh it, it would have given too much area, it counts these as negative numbers, it would give you too little.

THE COURT: Okay.

THE WITNESS: Okay. So in this case the instrument thought this little negative spike clued it somehow wrong to think that's the point where this peak intersects the baseline. So it could have integrated improperly.

Now, you want analysts to be able to go in and fix that kind of thing. They should have done that and they did.

THE COURT: Okay.

THE WITNESS: Okay.

BY MR. ST. LOUIS:

Q Okay, and so I have given you what's been marked as Defendant's Exhibit C.

THE COURT: I am sorry, Joe, before I forget.

So once that's been corrected and then assuming everything else is done properly we get an accurate blood alcohol result?

THE WITNESS: Yes, if everything else --

THE COURT: At the end of the day.

THE WITNESS: That's correct, that's correct.

THE COURT: Okay.

MR. ST. LOUIS:

Q Let me -- let's talk for just a second about the fact that there is a negative peak at all showing up. Is that typical in gas chromatography, headspace gas chromatography?

A It happens. It is not desirable. You typically want to remediate that kind of a problem. You want to go in and figure out what is causing it and fix that kind of a problem.

Q You don't want it occurring, I guess, while there is an actual sample in there while the machine is measuring a substance?

A Exactly.

Q What is it going to do if that happens?

A Well, may I draw one more time?

THE COURT: You have carte blanche to draw.

THE WITNESS: Okay, and I flunked art.

If in the middle of this peak you get electronic interference going on, you can just sort of intuitively think about what that might mean. It can alter the effective integrated value of that peak.

BY MR. ST. LOUIS:

Q Knock it up, knock it down?

A I don't know how the algorithm processes negative

number. If it processes them as absolute numbers or negative.

Q If it --

A That's the problem, that's why you want to remove negative spikes from your operating environment.

Q Okay. Because it can effect the actual reading of a reported result or a reported sample?

A Yeah. I think that the analyst's comment was that they were ready to send the instrument back to the manufacturer.

Q We are going to run through that real quick. I handed you what's been marked as Defendant's Exhibit C, that's an interview of Brooke Arnone regarding the January 20th, 2004 -- or January 22nd, 2004 run?

A Yes.

Q And you've read that?

A Yes.

Q And in there Ms. Arnone talks about, as you said, that there was some sort of -- she described it as an electronic spike, and I am on page 13?

A Yes.

Q Okay. Do we know that that's electricity?

A I think that's probably the most realistic explanation for it.

Q But that's not what the manufacturer was telling the lab apparently?

A Apparently they have had a couple of different potential sources that they have explored.

Q Okay.

THE COURT: That's a nice way of putting it.

BY MR. ST. LOUIS:

Q On page 14 she's asked, why did that happen? Talks about having difficulties with the instrument?

A Yes.

Q And talks about talking to the manufacturer Varian?

A Varian, they're instrument manufacturer. At one point apparently Varian said you might have water in your system, and you can remember from your picture we don't actually inject water into the GC.

And the laboratory apparently at about somewhere prior to this made the determination that when they didn't run quite so many samples in a batch, when they only ran around 40 instead of 50, this became less of a problem. So they don't really know why it happened, but they observed the fact that if they had smaller batch sizes, they didn't run more than 40 unknown samples, it became less of a problem. So apparently at some point in time the laboratory stopped running lots of samples and cut back and started running only 40 samples in a batch

Q So this isn't a one time deal, this negative spike had been showing up?

A Apparently for sometime, yes.
Q And as a result the laboratory switches from 50 or 52 samples down to 40?
A Yes.
Q Okay and --
A They neglected to document when that change actually happened.
Q In fact, it's not in their protocol, is it? It doesn't say analyst you will only run 40 samples.
A No. That's really unfortunate because that's the perfect opportunity to take advantage of learnings like that and to document them so that another analyst can reproduce the same results in the future.
Q Okay. And, in fact, you made some reference to it on page 19, Ms. Arnone says, honestly we were ready to throw the instrument away?
A Yeah. I can relate. I think anybody in the laboratory has had an instrument like that.
Q Okay. So this is in 2003, Mr. Patrou's test was in 2006?
A Yes.
Q So certainly they had fixed the problem a few years before that?
Right?
A Yeah, wish that were so.

Q Okay. Let's take a look at a sample on May 12th of 2006?

THE COURT: It wasn't fixed yet?

THE WITNESS: No.

THE COURT: Okay, and then September 22nd, 2006, had it been fixed?

THE WITNESS: I think -- I don't know that this one was still in, but they had issues but they had other contamination problems that were an issue then.

THE COURT: Okay.

THE WITNESS: I only have a limited number of cases that I review, so it has to be pretty pervasive before it shows up.

THE COURT: Yeah.

MR. ST. LOUIS: I will let you know, Judge, if the State wants to give us the rest we will be happy to go through them.

You want to see it, Lindsey?

MS. ST. JOHN: That's the next run?

MR. ST. LOUIS: Yeah.

MS. ST. JOHN: No thanks.

BY MR. ST. LOUIS:

Q Show you what's been marked as Defendant's Exhibit D, can you tell me what that is, please?

A This is a run -- batch run from May 12th of 2006.

Q Take a look at the .01 calibrator, if you would?
A The .01 calibrator?
Q Yeah, it's the fourth page in.
A Yes.
Q Okay. And on the right-hand side we see the baseline dipping down below zero?
A Yes. This is in the second injection of this calibrator. There was -- they run them in duplicate so they put it through both columns one time and it doesn't show up. When they put it through the second time this does show up.
Q This is a little different, this is not as sharp a peak as what we were looking under, what you drew on the board?
A That's correct.
Q What is going on here?
A Again, can't say. This looks less like an electronic spike than the last one did. Electronic spikes tend to be the nice little straight lines, but clearly there is an indication of a signal below what looks to be a nice flat baseline.
Q And should that be the case?
A No.
Q Okay. Then let's look at a second set from June of 2006, this is Exhibit B.
MR. ST. LOUIS: Lindsay, I will assume you don't

want to see this unless --

MS. ST. JOHN: I will give you a holler.

THE COURT: What date is this one?

THE WITNESS: June 17th, 2006.

BY MR. ST. LOUIS:

Q Let's look at the .20 verifier if we can, please?

A Okay.

Q This would be something right at the very end of the run?

A Okay.

Q All right. On the bottom column we see, again, we had the baseline dipping down below zero?

A Yes.

Q And we have -- I don't know, is the machine trying to fix that baseline?

A You know, I can't tell. Like I said, the analysts have the ability to go in and do some things. I can't tell that -- if that's sort of the instrument default or if the analyst has actually gone in there. I would have to see the raw data to tell.

Q So in 2006, the year that Mr. Patrou's blood was testing, we still have issues with something causing dips below the baseline?

A As far as I know it's still the same instrument. At least it has the same instrument name, and it's always real

important to be able to know the pedigree of your instrument. This appears to be the same instrument. But you don't expect people to put serial numbers on every page, but it is still called bred, kind of cute, and so I presume that it is still the same instrument.

Q Okay. But not only the same instrument, same problem?

A Same problem with same kind of symptoms, yeah.

Q Okay. If you are allowed to go into the lab and inspect it, are you going to be able to look at things that will give you more information as to what could be causing this sort of a problem?

A Well, again, I have only looked at so little data, you know, one a year or something, so I can't get an understanding of just how pervasive this is. Is this a every batch kind of circumstance? Is this something that comes and goes? Part of those kind of occurrences is how you can diagnose the problem, when is it occur.

Q What can you look at in terms of physically going in there that will give you a clue as to where electronic spikes might be coming from?

A I am not -- I am not a power quality expert, I am not going in there with little altimeters or I don't know, whatever else to assess the quality of the power. But if you see electronic spikes on an ongoing basis, including on

multiple instruments, it may not just be occurring on the GC, it may be occurring that would be symptomatic for example.

Q Okay, all right.

Let's press on to October 9th and 10th of 2003.

THE COURT: If the analyst can repair this, so then what's the problem? So long as the analyst sees it and does it?

THE WITNESS: If they see it. They can't see it coming under the peak is the problem.

THE COURT: Oh, if it's under the peak?

THE WITNESS: Yeah.

BY MR. ST. LOUIS:

Q I am going to show you in a second what's been marked --

THE COURT: But how would you be able to tell if any of them came under the peak?

THE WITNESS: You never do, that's the problem. That's why you want to prevent it from occurring.

THE COURT: At all.

THE WITNESS: At all.

THE COURT: Okay. But -- so tell me again, what can you do to determine whether or not at the time Mr. Patrou's blood was tested that -- well, you can't tell me whether it occurred in his run?

THE WITNESS: I can't tell you whether it occurred.

I can look at other batches run about the same time, look at data from other batches and see whether or not this was a -- really the scope how pervasive a problem was this.

THE COURT: But you can do that without going into the laboratory.

THE WITNESS: That I could do, but I doubt if they would want to copy all of that data and send it to me.

THE COURT: I understand that.

THE WITNESS: It's just ease perspective, that's the kind of stuff you can go do by looking at records.

MR. ST. LOUIS:

Q How about the physical layout, where it is, where it's plugged in, what else is going on in the room?

A Yeah, you can look for best practice type of activities. Where are the instruments even plugged in.? Are they overloading circuits? Do they have long extension cords like this going to where they have things plugged in.? That can be an indicator.

Q So I mean the physical layout and what you observed there, presuming that they tell you this is similar or describe for you how it was different when Mr. Patrou's blood was done, that is going to give you information you can use in assessing the reliability of his results?

A Yes. I won't ever be able to know whether or not they had an electrical problem at the point in time that his

samples were run.

Q Well, I mean the whole point of doing the inspection is so that you are able to have more information to use in helping to defend Mr. Patrou's case; right?

A Sure. The nature of an assessment is that you are trying to get an understanding of the operations at a point in time and space and extend those, given that this is science on a production line.

THE COURT: Literally.

THE WITNESS: It literally is, and that's hard to do. Having done it, it's hard to do. And so quality control practices and having documentation of the variables that matter, and having documentation that describes corrective actions when problems do occur, that's how you do science successfully on a production line.

So that's what we are going back to try to assess, is what kind of controls existed at that point in time and space.

MR. ST. LOUIS:

Q And when you are in there you are going to be watching the folks and seeing how they actually implement what they have on paper?

A That's correct.

Q Is that going to give you information that you can use in helping to defend Mr. Patrou's case?

THE COURT: Let me interrupt.

As a scientist you are not here to help defend Mr. Patrou's case.

THE WITNESS: That's why I am struggling with this.

THE COURT: You are just here to provide information, and however it's used, it's used; right?

THE WITNESS: Yes, sir. I am thinking some of the findings might help the laboratory to understand the nature of the issues and the challenges that they face.

THE COURT: You've got no vested interest in this, other than you are getting paid to do this?

THE WITNESS: Yeah, I get paid to assess data regardless of who is using the results.

THE COURT: And what the results are.

THE WITNESS: And what the results are, yes.

MR. ST. LOUIS:

Q Let's put it this way. Would it help you to have more information to give a jury so that they can assess whether or not the results were reliable?

A It would help me to understand more about the operations in the laboratory at that point in time so I could tell any data user, whether it's you, whether it's -- and I forgot her name.

THE COURT: Lindsay.

THE WITNESS: Lindsay, thank you. Whether it's you, anybody who asks me with how reliable and how valid is this result. Now the only thing I can base my conclusion on is this relatively small little package and all of these little snippets that I have read from other cases and other reports, which just doesn't substitute for actually seeing things in person in the laboratory.

So at this point I am pretty tentative, and tell you that there are significant issues, there are repetitive contamination issues, but my degree of comfort is qualified.

THE COURT: I guess I should have asked right from the beginning, although I am assuming that the Department of Public Safety is not particularly interested in having Ms. Arvizu visit for a day.

MS. ST. JOHN: That's correct, Your Honor. We are opposing. I would have let the Court know if we weren't.

THE COURT: I was thinking, wait a second, maybe if it's just for a few hours who cares.

MS. ST. JOHN: Although we are all getting educated.

THE WITNESS: Thank you, Your Honor.

BY MR. ST. LOUIS:

Q All right. Let's see, so we are talking now about October 9th. We have talked about the electronic spikes and things happening below the baseline, let's talk about what is

come up above the baseline.

A Okay.

Q Here we have, and it's exhibit -- I am sorry?

THE COURT: F.

BY MR. ST. LOUIS:

Q On the back there is an orange sticky?

A Yes, this is F.

Q And that's the October 9th, 2003?

A Yes.

Q Okay. We can see we are looking at .20 calibrator?

A Yes.

Q And we had some very minute peaks that seem to be coming up?

A Yeah. This is early in the morning. Typically they calibrate the instrument first thing in the morning, as I would expect. This is the calibration solution, the .20 calibration solution where you would expect to only have two peaks present.

Q Okay.

THE COURT: Did you say this is 10/9 of '03.

THE WITNESS: Yes.

BY MR. ST. LOUIS:

Q So we've got -- let's take, for example, bottom column far right, is that a peak?

A Yes.

Q How do we know that's not just like instrument noise or something like that?

A Well, you won't detect it as a peak depending on how the analyst has their baseline set for peak picking routines. But that -- this is a very flat baseline. It also coincides with where this laboratory apparently has a repeat problem.

Q Okay. You talked about -- on your diagram over here you talked about instrument noise on the baseline. What is -- is there a form that that typically takes, can you sort of look at it and know what it looks like?

A May I draw again?

Q Remember you don't have to ask.

A Signal to noise, if you escalate the scale of this enough you will get something that, that's noise, and what you are trying to do is see when there is a signal that's distinguishable from the noise. And there's rules, it has to be three times of the height of the average height of the noise.

But also one of the characteristics of a signal in relation to noise is that this looks like grass, little blades of grass, just up and down. Peaks tend to have a little more breadth to them. Unless they are electronic spikes like the one we saw, which was just like a straight spike. So a spike tends to be very, very narrow, but a peak tends to have a little more breadth to it.

Q Okay.
A So it has both height and breadth.
Q So we are going -- we are looking at the 98th item on October 10th, 2003, and that's a subject test?
A This is an unknown sample from, I presume, from a subject, yes. You can tell that from the sample ID number.
Q And we have one peak, but we have the machine indicating that there are two substances present in this one peak?
A Yes.
Q Is that a problem?
A Yes.
Q Why?
A What's happening is that the instrument is not able to resolve these two peaks. We talked about the mixed standard and how the instrument had to be able to show that those six peaks were separated from each other. What we mean by separated is that this peak comes all of the way down to the baseline before it goes up again for the second peak. That's what it's called. That's what resolution means for chromatography.
In this case what has happened is the two peaks are too close, so you have one peak like that. Ooh, my artistic ability is suffering, and another peak next to it and it can't really tell the difference so it sort of smooshes them

together.

Q Okay. Is there a problem with the lab reporting this result in a criminal case?

A Yes.

MS. ST. JOHN: Objection relevance.

THE COURT: Well, you know, it's my learning peak answer.

THE WITNESS: It's a problem if you are attempting to identify and quantify either of those compounds.

BY MR. ST. LOUIS:

Q What should you do if you get a situation like this?

A You can't report those results. You would have to run the sample under different conditions to try to separate them. Yeah, you would have to run it over again.

Q Now, so we --

A Some problems you can fix by reprocessing the data, like those that we have already discussed. That's not a problem that can be solved by processing the data differently.

THE COURT: So are we getting to a point where you would suggest that this particular example is one of some contaminates being in the sample?

THE WITNESS: It quite conceivably could have been a contaminate in the sample.

THE COURT: Because if there's two different peaks, presumably you have two different substances; right.

THE WITNESS: Yes.
THE COURT: While there could be two different substances in someone's blood, I suppose, no?
THE WITNESS: Uh-huh.
THE COURT: It could have come from some external source.
THE WITNESS: It could have, and in any event the fact that it co-allutes or comes out means I can't tell how much is attributable to ethanol and how much is attributable to the other compound.
BY MR. ST. LOUIS:
Q So let's go a few days later. That was October 9th, correct, that we were just looking at?
A Yes.
Q Let's look at October 20th. Let me hand you what has been marked as Defendant's Exhibit G. Have you seen that before?
A Yes.
Q Okay. Let's look at the blank first, if we may, the tenth item?
A Yes.
Q We see now very minute peaks have grown slightly?
A Yes.
Q And do we know what these are?
A No. That's the blank that you are essentially

introducing to assess whether or not any volatiles are getting into my samples.

Q Now, we have just one sample here, but it's throughout the run; is that correct?

A Yes.

Q And let me show you, then, one that was done, just happens to have been done the next day, which is October 21st of 2003. Let's look at the blank on that one, if we may first.

What -- I am sorry, did I say what exhibit that was, Your Honor?

THE CLERK: H.

MR. ST. LOUIS: Thank you.

BY MR. ST. LOUIS:

Q It looks like the peaks are continuing to grow?

A They are continuing to grow. I will just mention that the sample ID's are cut off on your copies of your evidentiary copy, but you can tell it from the time of the injection.

Q Okay. So this is 10/21/2003 at 1:46?

A 1:46, yes.

Q Okay. All right, and, again, this is the blank and we have something else in the blank?

A Yes.

Q Now, we talked about how important it is to use a

blank to make sure you don't have anything else in there?

THE COURT: Blank blank.

THE WITNESS: Yes, a blank blank.

BY MR. ST. LOUIS:

Q A what kind of blank. Not an air blank method?

A Method blank and instrument blanks.

Q Okay. In both of those it's important not to have any other substances in there?

A Yes.

Q All right. So if we have something showing up in the blank, is it a do over? Do we go ahead and use it?

A Here is the problem. In this particular blank you will notice that the analyst has written negative off to the side, that hand entry there, NEG on the top. What I inferred the conclusion they are drawing from that is that they didn't see any alcohol present, they didn't see a peak at the retention time that corresponds to alcohol, therefore, they are saying that it's okay, no harm, no foul.

The fact that I have other volatile organisms that are showing up in my blank doesn't necessarily mean that I have a problem with the determination of alcohol.

Q Is that okay? Is it close enough for government work?

A I hate that term.

THE COURT: Well, unless ultimately there were two

peaks that were close together, as you described earlier, so long as the -- so long as they could be distinguished from one another, then that would be okay?

THE WITNESS: That would be okay. The problem is, if they are letting other volatiles get into this sample, they might also be letting alcohol in to the analytical samples. But you will never ever know because it is only going to show up one peak showing up on your alcohol.

THE COURT: Yeah.

THE WITNESS: So whether it makes the alcohol peak grow larger, or whatever, you will just never know.

THE COURT: So your point is, I guess, that because there was a contaminant in the blank sample it makes you nervous about what may be in the analytical sample?

THE WITNESS: That's absolutely a fair statement. And sort of the magnitude of my nervousness is increased by how frequently I see it and over what long period of time I see it.

THE COURT: And so that's why you are talking about because you looked at the October of 2003, and then let's fast forward a little bit, to save Mr. St. Louis some time.

So you saw this again after that period of time?

THE WITNESS: Yes.

THE COURT: And -- and obviously you only had a snapshot of what was going on the in laboratory?

THE WITNESS: Yes.

THE COURT: But -- so you saw it several times, and what was the most recent to Mr. Patrou's analysis in September 22nd of '06? Did you see this kind of thing happening even then?

THE WITNESS: Yes.

THE COURT: And after?

THE WITNESS: I haven't seen anything after that.

THE COURT: But up until that time?

THE WITNESS: Yes.

BY MR. ST. LOUIS:

Q Including in Mr. Patrou samples --

MS. ST. JOHN: I would object to her last answer. I like foundation for that. I don't think that she has any documentation of it occurring up to the time of that Patrou's sample. I think the latest occurrence is 2003.

THE COURT: Well, what was the answer to Joe's last question, did you see it, in fact, in the run that included Mr. Patrou's blood?

THE WITNESS: Yes.

THE COURT: Yeah, all right. So it was that recent then, okay.

MR. ST. LOUIS: This is the one I don't have, January 22nd, 2004, but I will bring it next time.

THE COURT: Okay. But the results -- I mean you saw

peaks that weren't supposed to be there?

THE WITNESS: These were big peaks.

THE COURT: Big peaks in what, in a blank?

THE WITNESS: In the control samples.

THE COURT: Okay. So that's not good at all?

THE WITNESS: It's dreadful.

THE COURT: Okay.

BY MR. ST. LOUIS:

Q January 22nd and 23rd, 2004, fifth item run, a .20 calibrator, we have sort of reached the -- an ultimate on the peaks other than alcohol and ethanol?

A Yes.

Q What is that that we are looking at?

A I don't know what that is. They -- again, it's clearly a peak. It is not identified. That can be -- the individual analyst can choose not to report that regardless of its size.

Q I mean you talked about three time signal to noise, we have got to be well passed that?

A Yeah, that's not --

THE COURT: So there is something there?

THE WITNESS: Oh, in a disturbingly large quantity.

THE COURT: What would it be, you think?

THE WITNESS: You know, and this -- the problem with

this particular one is that the analyst -- I read, I don't know if it was a deposition or trial or what it was, some kind of testimony, said, no, I would never run a calibrator with something else in it, because clearly that would be wrong. Well, yeah but he did, after his testimony. So it makes --

THE COURT: So he wouldn't have done it up until he testified, but thereafter.

THE WITNESS: But then he started -- oh, that's kind of scary.

That's not ambiguous. I think that any, you know, some of this stuff you can say is close enough for government work. That's a very significant peak in a calibration solution.

Here is the deal with calibration solutions. You have got to be vested in insuring the quality of those solutions, because that's foundational for everything that you are doing subsequently for quantitation purposes. And if you are allowing extraneous material to get into there, you don't know what else has gotten in, you don't know what else has gotten out. It's a hard job to maintain these materials and have them be good for their entire shelf life.

Again, I haven't seen any traceability documentation to be able to know exactly when that calibrator was prepared, on what day, by whom, using what lot number of materials. The analyst in this case said he just threw it out when he

recognized that there was a problem and something else, he threw that calibrator out, but he didn't document that. What a missed opportunity from a quality control perspective, that's the kind of thing you go and investigate, why in the world did this happen, not just throw it out and trust serendipity it doesn't happen again. Because point in fact after he says he threw it out it was showing up again.

So clearly there is an operating problem in their practices in the laboratory that enabled a reference, a calibration standard to be so terribly compromised, and they don't know why it's happening.

THE COURT: And so how could you find out by visiting a lab tomorrow?

THE WITNESS: You know, once you understand contamination control you can see people's practices, you can see things that have the potential to cause contamination. And it can be how you are storing things, how you are physically using materials. Proximity to dishwashing and other activities. You know, any number of things.

THE COURT: And do we know -- I don't know if you know, does anybody know are the analysts that were the subject of -- they're still working at DPS in that laboratory?

MS. ST. JOHN: The subject of what, Your Honor?

THE COURT: Of the kinds of things that Ms. Arvizu testified about. She said that, you know, well, if the

analyst is, you know, I don't know what, you know, dipping his hand in an alcohol solution before he does whatever.

THE WITNESS: It can be not changing your gloves between when you open the concentrated solution and when you are handling samples, for example.

THE COURT: So is the analyst or analysts that did the work in the cases that Ms. Arvizu has reviewed, do they still work at the DPS laboratory?

MS. ST. JOHN: At least some of them they certainly do. I don't know about all of them.

MR. ST. LOUIS: This is Linda Holden, she is still there.

THE COURT: Okay. So, again, let me try to help Mr. St. Louis save time. What else -- so we have talked a lot about this, and I get it, I think I understand.

What else did you notice in your review of documents, protocols, whatever you have reviewed, would indicate to you that visiting the laboratory would assist you in making determinations about the assessment that you try to make when you are hired to do this kind of thing?

THE WITNESS: When I've read testimony, depositions or whatever, from people from the laboratory ranging from analysts to Mr. Heller, who I believe is the laboratory director, specifically addressing these kinds of issues. It causes me great concern that they really don't understand

contamination and the origins and the means of identifying it, preventing it, and responding to incidents of contamination.

I have also understood that, for example, the laboratory -- I don't remember which case, in one case when a quality control sample failed, they just re-ran the sample. Well, that's not acceptable, you know, when a quality control sample has failed that's an indication that the batch has failed. You don't get to do mulligans in quality control samples. And that appears not to have simply been an individual analyst's practical approach, but even the lab director acknowledged they didn't have a policy for re-running quality control samples.

So it really paints a pretty unflattering picture of the maturity and the technical rigor, or lack thereof, for operations in the laboratory.

Now, does that mean that everybody working in the laboratory is doing a poor job? No, it certainly doesn't. But my concern is they're constrained by their physical environment. They don't know -- no analyst is an island, and they are constrained by using equipment and expendable materials and standards and reagents that other people use and that are in the environment.

THE COURT: Okay. So you would, among other things, look at the physical space?

THE WITNESS: Yes.

THE COURT: The way that the laboratory is set up in terms of how many folks work there, the proximity to one another, the equipment that they use.

What else?

THE WITNESS: The operating practices. What else is done in proximity. Who travels passed where, with what kinds of materials.

THE COURT: So the person who might bring the sample from point A to point B.

THE WITNESS: Essentially you behave like a sample. Where am I received? How am I stored?

THE COURT: You would want to see all of that?

THE WITNESS: Yes.

THE COURT: All right, okay.

COURT REPORTER: Can I have a break?

THE COURT: All right, about 15 minutes, okay?

(Court recessed.)

THE COURT: We're back on the record 20063586 Ms. Arvizu is still here, Mr. St. Louis is still asking some questions, I guess.

MS. ST. JOHN: Judge, we have a brief proposal for timing. We are scheduled two weeks from today to do the evidentiary hearing on the rest of the matters.

THE COURT: The 17th at 11:00 in the morning.

MS. ST. JOHN: The 17th at 11:00. And in light of

the presentation that Ms. Arvizu has gone through, I actually think I can eliminate some of the testimony I was eliciting through my power point presentation.

THE COURT: We have two power point presentations. Isn't technology great.

MS. ST. JOHN: Didn't you see the two projectors?

MR. ST. LOUIS: They took mine and made their own off of it.

MS. ST. JOHN: Yeah, thank you, Joe.

I wonder if we could do Ms. Spirk on that day?

THE COURT: I don't care.

MS. ST. JOHN: Because we can then eliminate -- I think we can shorten her testimony and we might have to find another day for the officers.

THE COURT: Well and, you know, that's that -- I am going to be leaving that week.

MS. ST. JOHN: Right, Judge.

MR. ST. LOUIS: Helene tells us.

THE COURT: But if I don't pick up a trial then I have the 18th, 19th, and 20th to work on your stuff if you want me to. I just don't know if I will pick up a trial. I can not pick up a trial.

MS. ST. JOHN: Of this month?

THE COURT: Yeah, so we will do the 17th at 11:00 and then if you want to finish up everything, if we can, then

you can have either Tuesday, Wednesday or Thursday, you know, by about -- well Tuesday I have a doctors appointment 11:30. You can have the afternoon of Tuesday.

MS. ST. JOHN: I am sorry to be a party pooper, I am double booked for that week.

THE COURT: Just a thought.

MS. ST. JOHN: If we can do the -- on 17th we will do Ms. Spirk and, Judge, you get back on the 14th?

THE COURT: Yeah, but I will be under the influence of narcotics.

MS. ST. JOHN: Could we do --

MR. ST. LOUIS: You want to clarify that for the record.

THE COURT: Yeah. I am having knee surgery and the doctor said that I should -- he said you can go to work whenever you want to, it's just whether or not the Oxycodone is going to effect my ability. But probably some of you people probably think I will be clearer headed then.

MS. ST. JOHN: Would possibly the 21st or the 28th?

THE COURT: The 21st you can have all day that day, we don't work that day.

MR. ST. LOUIS: I am in Hawaii.

THE COURT: You -- actually the 14th -- I should be back on the 14th. I don't have anything scheduled for that day yet, so if you wanted to try to schedule it for the

afternoon of the 14th, I start a murder trial the next day.

MS. ST. JOHN: If we can do 1:30.

MR. ST. LOUIS: I have a Justice Court EH, if you want to bump that I will notify the Court I made you aware of that and that you took precedence as the Superior Court.

THE COURT: So be it.

MS. ST. JOHN: So 1:30?

THE COURT: 1:30, January 14th.

MS. ST. JOHN: And that will be my officers.

THE COURT: So we'll finish up the motions that day.

All right, the whole afternoon, three hours.

Okay, back to Ms. Arvizu.

BY MR. ST. LOUIS:

Q Let's -- close enough, I can figure it out.

All right, let's mix things up a bit, to keep our Judge's interest.

Too late, right?

THE COURT: No, no, I'm interested. Hey, if I weren't asking questions you know I wasn't interested.

BY MR. ST. LOUIS:

Q Have you seen a videotape that depicts portions of the inside of the laboratory?

A Yes.

Q And does it have some examples of some of the things that you would be looking for and would be able to use to

provide information to whoever asked you questions?

A Yes.

Q Okay. What is our next exhibit number?

THE CLERK: I.

BY MR. ST. LOUIS:

Q I -- okay, my secretary is bringing it over, so when she gets here I will have a copy of this marked as an exhibit. I don't know if you want to lower the lights for this?

THE COURT: Is this the videotape?

MR. ST. LOUIS: It's the video.

THE CLERK: And that will be I.

MR. ST. LOUIS: It will be I.

THE COURT: Lindsay, I assume you have no problem with the videotape being admitted for this hearing?

MS. ST. JOHN: Yes.

THE COURT: I guess nobody cares about everything, right , A through I so far for the purposes of this hearing.

MS. ST. JOHN: For the purposes of this hearing.

THE COURT: A through I are admitted.

MR. ST. LOUIS: Thank you.

(Whereupon, Exhibit I is played for the Court.)

MR. ST. LOUIS: Can I just make the editorial comment, that's not us saying that, that's DPS saying that.

THE COURT: I said it to Ms. Arvizu, I bet they wish they hadn't made the video. I feel dirty having watched it.

MS. ST. JOHN: Just to clarify, Joe, your Exhibit I is -- it includes the whole video, right, not chopped up?

MR. ST. LOUIS: That's right.

THE COURT: Okay, all right.

MS. ST. JOHN: Because to clarify, the video doesn't actually end here.

MR. ST. LOUIS: Yeah, there's more if you want to watch it.

THE COURT: No, that's okay, I get the point.

MS. ST. JOHN: I just want to make sure the record is complete.

THE COURT: Okay.

BY MR. ST. LOUIS:

Q Ms. Arvizu, are there some specific instances of problems that you saw on there that you can point out?

A Obviously I think to the casual observer it's obvious that that is not a state of the art laboratory facility. It's extremely crowded. You know, it's troubling when you see analysts handling samples without gloves, and nobody is wearing safety glasses and, you know, the analysts bump into -- she's probably got a big old bruise there where she bumped in just walking by. It's obvious there is a lot of issues.

Q At one point there's air tanks, gas tanks?

A Yes, there are compressed gas cylinders inside the

laboratory.

Q Let me see if I can find that real quick. Is that in this area, do you recall?

A You know, I think it was around the corner in another room.

THE COURT: But in any case what is the problem with that?

THE WITNESS: Yeah. Better practice is to have those outside and plumbed in so that you can change tanks and things outside, put the filters and stuff on them. They are having to move those compressed gas cylinders in through those obviously narrow halls. That's an extraordinary challenging operating environment. I have profound respect for the fact that those people have to work in that every day.

MR. ST. LOUIS: Okay, there we are, I got it. Good for me, I'm impressed.

THE COURT: I thought those were helium tanks for the balloons when they have parties.

MR. ST. LOUIS: As I was searching I think Ms. Arvizu explained what the issue is with having them there.

THE COURT: Yeah.

MR. ST. LOUIS: Okay.

BY MR. ST. LOUIS:

Q We saw at one point someone handling evidence with no gloves on. That's the kind of thing you are looking for?

A Yes.

Q And then you -- we don't know from what we watched how much, if any, of that video depicts the area where they do gas chromatography?

A Exactly. I can't, you know, sort of -- a lot of these instruments look alike, quite frankly, big white boxes, and unless you can see them for a little longer, a little up closer you cannot really tell the application. I would expect a lab does other things with the gas chromatograph besides just headspace GC for purposes of blood alcohol. There are a lot of other applications.

Q Okay, all right.

And then I had my secretary bring over the January 21st, 2004, chromatograms we were discussing earlier. Those are the ones that had the enormous peaks.

A The big peaks, yeah.

Q And that's Exhibit J?

A J.

Q Okay, movie time is over.

And I guess that's where we were still talking about January, yeah, because there is an issue in these peaks that we still see occurring in Mr. Patrou's sample some years later; correct?

A Yes.

Q Okay. We were looking -- when we left off we were

looking at the .20 calibrator, we were talking about the large peaks on the left we see that in the second .20 calibrator, sample six, as well; is that correct?

A Yes.

Q Same thing?

A Same thing.

Q Then we have 123rd item, the .10 verifier?

A Yes.

Q Okay. In this one we have a long low peak on the far right-hand side that is not identified by the machine?

A Yes, just after four minutes.

Q But -- does it bother you if I call it a machine versus an instrument?

A We like to call them instruments. I understand that they are frequently referred to as machines.

Q I mean you plug it in and turn it on; right?

A You plug it in and turn it on.

Q What is this peak, what are we looking at?

A This is a recurring problem, again, that has been happening for a number of years, this broad peak that pops up intermittently out past four minutes.

Q And it seems to be just in the bottom column, not in the top column?

A That's correct. And it shows up in calibrating solutions, verification solutions and unknown samples.

Q What is it?
A I don't know.
Q Does the lab know?
A No.
Q Why is there just one -- why would there just be a peak in the bottom column?
A Again, I don't know. But that can give you some clues when you are looking for a source.
Q Such as?
A Well, for example, we -- I believe we've talked a little bit about toluene contamination and one of the potential sources of toluene might be the mixed standard that has six volatiles in it, and toluene is one of the six volatile organisms. But when toluene shows up it generally is only showing up by itself, it is not showing up with the other five things from the mixed standard. That's a clue that the toluene isn't coming from the mixed standard. You have to look for an alternate source of toluene.
Q And is there, in fact, toluene contamination in Mr. Patrou's samples?
A Yes.
Q Then we have the fourth item, which is 124th item that was run, this is right after we have got the long low peak on the far right side; correct?
A Yes.

Q Once again we have the two large peaks on the left-hand side?

A Yep.

Q What is going on with this run?

A We have multiple contaminants showing up in different samples repetitively.

Q Okay. All right, let's talk about toluene contamination for a second and move on to March 23rd, 2004. You read the trial testimony of Mr. Ruskin regarding a case that he testified on March 23rd, 2004; is that correct?

A Yes.

Q I apologize, Judge, I meant to get over and have these pre-marked, it didn't happen.

Showing you what's been marked as Defendant's Exhibit K, ma'am, what is that, please?

A Testimony in a trial by Seth Ruskin.

Q And that's the testimony relating to a test he performed on March 23rd of 2004?

A Yes.

MS. ST. JOHN: I am sorry, if we can just pause for a moment.

Your Honor, I am just now looking at the cover sheet of Defendant's Exhibit I, it says narrated by Pima County Attorney, not accurate. Part of it is. We would disagree with that, but that would be my only qualification.

THE COURT: I knew that wasn't Ms. LaWall's voice when they were doing the whole laboratory thing.

MS. ST. JOHN: Sorry to go out of order.

Sorry, Joe.

MR. ST. LOUIS: That's okay. For the record, we watched a portion where she did an introduction to it.

THE COURT: Yeah, that was her voice.

MR. ST. LOUIS: And her face as well.

THE COURT: Yeah.

BY MR. ST. LOUIS:

Q And, you know, I don't know what happened last week, I know I went to Atlanta on Wednesday, apparently we don't have the March 23rd materials here either. I will bring those over next time.

You do have the interview of Mr. Ruskin; correct?

A Yes.

Q Okay. If we can turn to page 28, and this is something you read before, Ms. Arvizu?

A Yes.

Q We are asking about whether he would ever use a calibrator with contamination in it?

A Yes.

Q And he responded that he would not?

A He says not intentionally, no.

Q Okay. And then I asked him, well, if he ever saw

anything in the calibrator he would start over, do a new batch and how does he respond?

A He said possibly. It's not occurred so I haven't had to make that decision yet.

Q Okay. Looking at what will come next time, which is the seventh item that was run, March 23rd, 2004, there is a .30 calibrator?

A Yes.

Q Okay. And we can see that we have contamination identified by the machine as being toluene?

A Yes.

Q We have that in both columns?

A Yes.

Q And this was in the seventh item that is run, so that is before we have intentionally introduced it in the mixed sample?

A That is correct.

Q Mixed sample comes later?

A These are the very first things you do.

Q Then we look at the blank, which is the tenth item, and we have some peaks on the far right side?

A Yes.

Q What is that, please?

A Appears to be toluene.

Q In the blank?

A In the blank.
Q Now, these are kind of small toluene peaks?
A Those are small toluene peaks.
Q Does that matter?
A Yeah, it sure does. This is -- this is the same run where I had toluene in my calibration solutions.
Q But I mean does the fact -- I know you don't like the phrase, but the fact that it's just a small amount of toluene that appears to have gotten into the blank, is that enough to say, this is fine, we don't need to worry about it?
A I don't think it is because it's indicative of the fact that they have -- their practices are such that they are allowing volatile contaminants to be introduced to the blank and to the calibrators and to the unknown samples. If they don't know what is getting in there, they don't know whether any ethanol that is present is from its original source or from contamination.
Q Okay. So what you are saying, what we do see leads us to believe that there may be other things coming in we can't see?
A That's the concern.
Q Okay. Going back to the trial testimony, which is Exhibit what, I am sorry?
A K.
Q K.

If you would look at page 33, I, in fact, asked Mr. Ruskin about whether he sees anything unusual in the calibrators and the verifier.

A Yes.

Q Okay.

God bless you.

And he does indicate that there is a toluene peak in there?

A Did you say page 33, I am sorry, I am having a hard time finding it.

Q Thirty-four, I apologize.

A Thank you.

Well, there is so many things on this page and I still don't know what remedial action is.

Q Let's take them in order, top of the page?

A It's not at the top of the page, we might have different page numbers?

Okay, here we go. It's on 33. There it is -- there was an extra peak, a toluene peak in the .30 calibrator and verification standard at the end.

Q How does it get in there? He says he does not know?

A He doesn't know.

Q All right. And then we talk about whether he took any sort of remedial action and he asked what that means?

A Yeah.

MS. ST. JOHN: For the record, I ask for his answer to be read.

MR. ST. LOUIS:

Q Okay, go ahead.

A The question was: All right, and did so take some sort of remedial action then, in reference to the presence of toluene?

And SR answers: What do you mean by remedial action?

Question: Well I mean actually to find out the source of the toluene and an action to insure that future test runs would not be -- not contain calibrators that have toluene in them?

Q And Mr. Ruskin's response?

A His response was that he has a working bottle of the calibrators and NIST standards in my bio-safety hood -- this is a clue for a practice that can cause contamination problems -- where he prepares the samples and prepares the head space vials, he took that little bottle, didn't document it, can't say for certain, but dumped it out, poured it in the waste and refilled it from the stock bottles in the refrigerator

Q So let's talk about this. In order to do the calibrators you've got to take the ethanol, the pure ethanol and use volumetric dilution, or the other phrase you used?

A Stoichiometric, yeah.

THE COURT: I didn't get it right.

BY MR. ST. LOUIS:

Q And dilute that down to where you know it is a .10, a .20, a .30; is that right?

A That's correct.

Q Is Mr. Ruskin saying he mixes some up and keeps a little bottles of the .10, .20 and .30 in the work area?

A That's what he seems to indicate, yes.

Q And there is a problem with that?

A Yes, that's a potential source of ethanol contamination.

Q How so?

A Well, we've seen the pictures, there's very little space there, hood space in particular, even in the most spacious of laboratories hood space is what is at the biggest premium. Hoods are contained areas where the air flows up out of them, out the stack, out of the top, so there is a lot of air flow going through the hood.

When you are working in a hood you have to be concerned about what else might be present that can cause a contamination problem. And if you have more concentrated solutions, as he says, he says he has a working bottle of NIST standard in his hood, usually those NIST standards have storage conditions that require that they be refrigerated and

kept from light and so forth, so if there is a working bottle being stored in the hood that would in and of itself cause a shelf life problem for it. But that's a more concentrated solution.

So what you essentially have is high level stuff and low level stuff in immediate proximity. That's sort of the first law of contamination control is keep your unknowns away from any potentially higher level sources of the anolites of interest.

Q And this is another example of the kinds of things that you would be looking at if Judge Fell let you go in and do an inspection?

A Yes.

THE COURT: Again, would not they clean that up knowing you are coming, assuming it is still that way?

THE WITNESS: You know, only if they know it is a problem.

THE COURT: Well, they know now.

THE WITNESS: Well, they certainly should. You know, I've -- labs just don't -- you can't be running around cleaning up everything and seeing everything that I am going -- I have audited so many laboratories over so many years, I will see things that you get kind of immune to them because it's your normal operating practice.

I saw things taking the public tour of the FBI

laboratory that tourists take watching through the glass windows. They knew there's 300 tourist traipsing by the glass window.

THE COURT: Yeah, but they didn't know you were going to be one of them.

THE WITNESS: Yeah, but they saw my auditors notebook.

BY MR. ST. LOUIS:

Q Okay. We asked -- this is -- I can't see the page, I think 35 or thereabouts. Did that solve the problem with you dump out the .30 calibrator?

A Yeah. Unfortunately the analyst says he doesn't know, he didn't document it, that's just his best recollection. And unfortunately if you look at data from some weeks later it's the same problem again. So clearly his attempt at something resembling remedial action was completely insufficient to prevent it from happening. Both prevent it from happening and recognize and respond to it happening.

Q This issue about here we have a contaminant and a calibrator, and other than the chromatograms disclosed to this guy's lawyer in this case, there is no record of that?

A That's correct.

Q I mean they don't document this stuff when it happened?

A No, apparently not.

Q Is that one of reasons why you cannot rely on the paper record, you need to go in and see what is going on?

A Yes.

Q Okay. So then -- apparently I don't have these either, Judge, I do apologize, I will bring both sets of the chromatograms on the 17th.

April 15th, 2004, about three weeks later.

A Yes.

Q Okay. Again a run by SR, Seth Ruskin?

A Again this is a calibration solution with toluene, an even larger peak of toluene it looks like.

Q Again, it's before we've intentionally introduced it through the mixed standards?

A That's correct.

Q Shows up in the blank?

A Yes.

Q Talked to Mr. Ruskin about this about page 40, thereabouts, basically questioned whether he saw it the first time it came down and he insisted he did?

A Yes.

Q And this, I think, is maybe the next page. Asked him what he would have done and how it got back in, and he says he doesn't know?

A Yeah, he just doesn't know because I didn't write down any apparently action I would have done.

That is a very clear indication of a laboratory not having a very robust quality control program in place, because basically every time you find a problem and you find a way to fix that problem it needs to be documented so it doesn't reoccur throughout the laboratory.

When one individual analyst does something, throws away a solution, decides that solves the problem, you lose the ability to look at it systematically across the entire laboratory and prevent it from happening.

Q I mean not perhaps helpful to Mr. Patrou except maybe in the larger sense if you are in that lab and you have something come up, you want to know that, hey, two years ago we had that problem, here was the source of it, here is how we fixed it?

A Exactly.

Q Okay. So we've been talking 2003, we have been talking 2004. Let's go to 2006.

MR. ST. LOUIS: You know what, I do actually have the last two I was talking about.

THE COURT: K was the 3/23/04 and then I guess L is going to be 4/15/04.

MR. ST. LOUIS: L is actually -- K is Mr. Ruskin's trial testimony.

THE COURT: Right, 3/23/04.

MR. ST. LOUIS: L will be.

THE COURT: We didn't mark the 4/15/04 run by Ruskin.

MR. ST. LOUIS: L will be 3/23/04, M will be four -- 4/15/04. I hope that's not too confusing.

THE COURT: It is. I thought K was --

THE WITNESS: The K testimony is dated 3/16/06.

THE COURT: 3/16/06?

MR. ST. LOUIS: Yeah, that's the trial testimony.

THE COURT: Okay. All right, that's where I got messed up.

MR. ST. LOUIS: Okay.

So L is the chromatograms from March of 2004; M is the chromatograms from April, 2004; and now N, which is some chromatograms from April, 2006.

MR. ST. LOUIS:

Q Okay. We start off with item 34 which is -- you need a second?

A No, I got it.

Q Exhibit N now should be April 21st, 2006.

A Okay. It's April 24th.

Q That may be the date of the report.

A Yes, analysis is the 21st, that's correct.

Q Okay, thank you.

Would you turn to item 34, please?

A Page 34, item injection 34?

Q Injection 34.
A It's cut off. The top of 1840, that injection is at 18:40:26.
Q Yes, yes.
A Okay.
Q With me?
A Yep.
Q Okay. That is a subject sample?
A This is a subject sample, again it's cut off the top of this exhibit.
Q All right. Well, we can identify it from the time?
A From the time 18:40:06.
Q Okay.
A And there's a couple of peaks out there on the far right end right before the end of the run, and a couple on the left side before the peaks of interest.
Q Now, what is causing these peaks?
A Don't know.
Q Do we see them in any other sample? Do we see them in the whole blood controls?
A They are seen in several other samples in this run. Again, can't see this, the header information is gone.
Q Okay.
A There is that same broad peak on the right side in the blank.

Q Let me stop you for a second. Let's just talk about sample 34 for a minute.

A Okay.

Q We are seeing a series of small peaks before the ethanol peaks. We are seeing some after the, and maybe tailing into the internal standard peak, and then we are seeing others at the even of run?

A Yes.

Q Do we know what those are?

A No.

Q Other than the subject test do we see those in the whole blood controls at all?

A Let me look just a moment. I don't -- I can't tell which is the controls on this, that's the problem.

Q Those are the ones that are going to be right around .8.

MS. ST. JOHN: Your Honor, I am going to object. She can't determine which ones are the control, at this point it's Joe telling her which ones to look at.

THE COURT: Can you figure it out yourself in looking at the materials?

THE WITNESS: I can tell it from my materials because the times aren't cut off. It is the sample identifier that is cut off the top.

MS. ST. JOHN: The copy?

THE WITNESS: Yes, the copy that's in evidence.

MS. ST. JOHN: I withdraw my objection.

THE WITNESS: Sorry, I don't have it on my materials which of these is the control.

BY MR. ST. LOUIS:

Q Why don't you go through Exhibit N for a minute and see if you see other injections that gives a similar series of small peaks?

A There are -- it's apparent that it's some kind of a control sample because it's subject to repetitive analysis. The analytical result is about the .08 that the whole blood control is, and it's that same lumpy kind of long retention time sample in several of the controls, or what appears to be the controls.

Q Give us the times of those?

A 23:19, 00:55, 2:31, these are all on April 21st going over the 24 hour clock to the 22nd, and 04:06

Q Thank you.

Now, let's look, if we may at the 35th item run, this was at 18:49:08.

A Okay.

Q All right. This is, again, a sample?

A This is a sample that has not only the two little peaks at the very far retention time, but it also has that big broad lumpy one shortly passed four minutes on the bottom

there in the purple. It only shows up in the bottom column.

Q So in the bottom column we are seeing this long low extra peak that we were seeing in January, 2004?

A Yes.

Q And now it's showing up in somebody's blood test?

A Yes.

Q And it's not in the first one?

A That's correct, it's -- this was a sample that was split and it's not showing up in one of the columns, it's only showing up in the second column.

Q But if we look at -- so we look at item 34, which is a test of sample 2006713378, we do not see the long low peak?

A Not in that first column.

Q And then if we look at item 35, which is a test of 2006713378, we do see it?

A Yes.

Q So there is some intermittent contamination going on?

A Yeah.

Q Okay.

A Those are the hardest to figure out and find is when there's sporadic and not real predictable.

Q Same run the 10th item that was run, the blank which was run at 15:10:24?

A Yep. This has toluene in it. It appears from the

retention time those appear to be toluene peaks.

Q All right. So this is almost exactly two years, two years and a couple of weeks after Mr. Ruskin's supposedly resolve the second toluene contamination?

A Yep.

Q All right. And then we have finally the .01 verifier, the .10 verifier of 4:24:16?

A Yeah. This is the very end of a batch after a long overnight auto-sampler run early in the morning and that's that same broad low peak showing up on the second column.

Q Okay. And then we have Mr. Patrou's samples; correct?

A Yes.

Q And those were admitted as Exhibit --

THE COURT: B.

THE WITNESS: I don't believe I have that.

THE COURT: J, K, L, M, and N are admitted by stipulation of counsel for the purposes of this hearing.

BY MR. ST. LOUIS:

Q Tell us what you see in Exhibit B?

A It is another run through the calibration sequence. There is a small peak in the beginning short retention time of the .01, .10, .20, throughout the calibration.

Q Can you show Judge Fell and Ms. St. John, if she cares to see, what you are talking about?

MS. ST. JOHN: May I come up and look also?

THE COURT: Yeah.

THE WITNESS: Short retention time. These are the calibration standards, start with the .01 in duplicate through the .10, in duplicate through the .20, seems to be pretty consistently, although diminishing as you go through.

MS. ST. JOHN: Those are -- what is diminishing?

THE WITNESS: The size of this peak. It starts off and then we are up to the mixed standard.

MS. ST. JOHN: Thank you.

MR. ST. LOUIS: All right. She is not done yet, though.

THE WITNESS: I am not done, there's more.

MS. ST. JOHN: Thank you. Didn't want to spoil the surprise.

THE WITNESS: Okay this is the blank right after the calibration and mixed standard, then they run the blank. It has the same early peak, and this is the toluene peak, which I attribute to toluene by virtue of its retention times, that's where it shows up in the mixed standard. And this is after the mixed standard was introduced, which was the previous one in the injection sequence.

And then there is a whole series of control samples. Time wise you can tell that this -- they go through the entire batch, they are called Control One, Control Two, it is the

same sample analyzed over the course of the entire batch run.

I am trying to find the actual analytical sample, it's in here somewhere.

MR. ST. LOUIS: I think it's 91 and 92.

THE WITNESS: I'm close. See that same little one is up front. I went too far. Yep, and that's the analytical sample in this case.

MR. ST. LOUIS: Keep your voice up just a bit if you can for the court reporter.

MS. ST. JOHN: And to clarify is that the first or second sample that we are looking at?

THE WITNESS: This is the first injection of the subject sample. This is the second injection of the subject sample. In both cases there are a series of small short retention time peaks leading right up to the ethanol peak, both columns, both injections.

THE COURT: And so there's some contaminant in the sample from Mr. Patrou, but you can't tell what it is, how it may have effected the result?

THE WITNESS: That's correct.

THE COURT: But as you said earlier this afternoon, it troubles you because if there is some contaminant, unknown contaminant, possibly there could have been a contaminant that included ethanol which would have given a result different from what may have actually been in Mr. Patrou's blood.

THE WITNESS: That's correct. That's right.
MR. ST. LOUIS:
Q Go to the .10 verifier if you would, please?
A As soon as she sat down.
This is the .10 verifier, which is the 101st injection at 23:56. This is -- this is just after Mr. Patrou's sample. This one has that large broad peak on the second column off to the high side of four minutes.
THE COURT: Is that where toluene would be?
THE WITNESS: No, toluene is a little earlier. This is that same lumpy peak that has been showing up for months.
THE COURT: That you can't explain?
THE WITNESS: Yeah, exactly.
BY MR. ST. LOUIS:
Q Actually for years?
A Years. Yeah, for years.
Q Thank you.
Did you have an opportunity to review some materials from some folks who did get to go into the laboratory?
A Yes.
Q And one of those -- one of those an ASCLD audit from 2003?
A Yes.
Q While I'm doing this why don't you talk to us a little bit about how ASCLD list requirements?

A Okay. ASCLD is the American Society of Crime Laboratory Directors. They have a laboratory accreditation bureau that sets standards. In order to achieve accreditation by ASCLD you must conform to their standards. They are what they call requirements fit into three categories. They have essential requirements, important requirements, and desirable requirements.

In order to be accredited you must meet 100 percent of the essential requirements, but you don't have to meet all or comply with all of the important and desirable requirement. It's sort of like you have a curfew but you don't really have to be in by midnight, it's just desirable. They are not mandatory requirements.

And during the course of their ASCLD inspections in support of ASCLD accreditation, one of the essential requirements is how the laboratory responds in the event that they have a technical problem. We've mentioned that -- I've mentioned that a couple of times earlier today, that how a laboratory responds when it identifies a problem is a very important component of a quality assurance program. And the requirement states if the laboratory has an indication of a significant technical problem is there a procedure in writing and in use whereby the laboratory initiates a review and takes any corrective action required.

Based on my observation of the data, clearly that is

not a requirement that is satisfied by the laboratory at the period in question. Because certainly the presence of large amounts of contaminant in calibration standards would be a serious technical problem that would merit corrective action that they should comply with a procedure for how to respond and document such a problem. The analyst clearly did not follow such a thing, and from his testimony I recall the lab director stating he knew of no such requirement in their own laboratory that such things be documented.

So clearly they have issues with respect to compliance with this requirement.

Q So they initially flunked this?

A Yes.

Q And then what happens?

MS. ST. JOHN: I am going to ask for the rule of completion, I ask that the actual finding be read, the actual ASCLD finding be read.

THE WITNESS: Okay basically when you judge compliance with a requirement if you determine that there is a finding requirement has not been met you give an example. The example given in this case is that a biology examiner did not meet target values on a body fluid identification proficiency test. Follow-up remediation was not instituted as described by the laboratory's corrective action policy.

So this would seem to state that they have a policy

but it was unfollowed. If in fact they have such a written policy it was also not followed in the work that we've talk about.

BY MR. ST. LOUIS:

Q Okay. As an auditor do you take that and say, well, that's fine, that just relates to body fluid identification, has nothing to do with blood alcohol?

A No. The problem is really, is it institutional practice in your laboratory when there is a technical problem that it be documented, that it be investigated, and that's not an independent activity. That requires that you involve other people to discuss it and have actually a scientific discussion. And that the resolution be documented to the file so that there is a closed loop so you can go back after the fact and assess the efficacy of whatever your corrective action was.

That's what apparently was identified as a discreet finding by the ASCLD auditors, which I would identify as a finding based on my review of the materials we've discussed here.

Q Now, as I understand it what happens is in essence there is an investigation done, they agree to make some changes to how they are doing things?

A Yes.

Q And as a result they pass?

A Yes. The response in this case was very discreetly directed towards proficiency samples, because the original finding dealt with proficiency samples. So the laboratory's response was directed more to what to do when we flunk a proficiency sample than what the requirement is, which is to do corrective action in the event of a technical failure. That's not limited to a technical failure with proficiency samples, that's technical failure throughout the operation of the laboratory.

So they did a corrective action to fix the discreet problem rather than a systematic failure.

Q Let's talk about the large picture for a minute. The fact that the laboratory is ASCLD accredited mean the results are reliable?

A No. Accreditation is a formal acknowledgment by the independent accrediting body that they have met that body's requirements. It's not a guarantee. It is not a gold star seal of approval. But what it does mean is the laboratory is essentially going on record saying that they comply with these requirements so they are essentially going on record saying we comply with the essential requirements that requires when we have a technical problem we investigate it, we document it for corrective action.

In this country a lot of the forensic labs that have had to be closed for serious problems have held ASCLD

accreditation at the time they were closed. It is not a guarantee of quality, it is a good first step.

Q Okay. One of the important requirements was each examiner proficiency tested annually in each sub-discipline in which case work was performed. The lab failed that important requirement?

A Yes. The original finding they had a finding.

Q Okay. We have sort of the original findings as Exhibit O and the final solution or the final findings as Exhibit P; is that correct?

A Yes.

Q I think the only one they end up reversing, though, is the essential, isn't it?

A That's my recollection.

Q Okay. So even at the end of the day they still failed the important requirement?

A You don't have to comply with all of the important requirements in order to achieve accreditation. The laboratory can simply elect not to comply.

Q So when you fail it you don't do remedial action?

A You don't have to if you can still achieve a passing score.

Q Okay. They failed on the desirable requirements that the lab director had no formal training in management or experience in management?

A Yes.

Q The important requirement: Is their adequate and proper plumbing and wiring availability and accessible for personnel to carry out assigned tasks. They failed that?

A Yes.

Q In fact, they talk about lack of proper wiring resulted in the circuit overload damaging the computer?

A Yes.

Q Do they identify if that was a computer that had anything to do with blood alcohol testing?

A No.

Q They also talk about a multitude of exposed wires and gas lines strung across the walls and the ceiling of the laboratory. We saw that in the videotape taken some years later?

A Yes.

Q Does the laboratory have proper general ventilation?

A Yeah, that was originally a finding, an important finding.

MS. ST. JOHN: I ask that the finding be read.

THE WITNESS: Original inspection finding the property room is not air conditioned. On warm days fans are used to circulate air. The fans blow dust into the property room.

BY MR. ST. LOUIS:

Q Is the heating, cooling, and humidity control in the laboratory adequate? It was indicated through staff interviews that instrument operation during the summer months created high temperatures in the laboratory work areas.

A I can understand that finding based on what I have seen. When you have a lot of air moving through a lab, when you have a lot of instruments in a laboratory, they generate a lot of heat. And it is generally a much bigger challenge to provide air conditioning for instrumentation than it is for people even.

Putting all of those instruments and all of those ovens in the very small space with a lot of bodies is an extremely challenging HVAC situation.

Q One of the things you talked to us about is you need to move -- I think you did you need to move the bad air out of the laboratory and clean air in?

A Yeah. The direction that the air flows matters a great deal. New laboratory construction, I am delighted to hear they are actually going to be constructing a new laboratory, that's great news, but when you cost a new laboratory 50 percent of the design and construction costs are due to the HVAC system, because conditioning the air and having an effective system for transporting that air through the laboratory in a way that doesn't compromise your sample analysis is such a formidable challenge. You've got to know

where the air flows, where is positive pressure, where is negative pressure. You have got to insure that once air is exposed to contaminants it gets sent out of the laboratory, not into an adjacent laboratory space.

So the movement of air through a laboratory is a massive analytical challenge.

Q And, in fact, you have had me -- or you have alerted me to this issue, I have asked every analyst in the lab just about, and Mr. Heller, about the air flow, and no one can answer questions about how often it moves out or where it goes.

MS. ST. JOHN: Objection, Your Honor, defense counsel is testifying.

THE COURT: Thank you for the testimony, Mr. St. Louis.

MR. ST. LOUIS: Trying to save time, Judge.

THE COURT: All right. So let's -- let's cut this off. You need to go to the laboratory based on all of the factors that you've described to me so far?

THE WITNESS: That would be my recommendation.

THE COURT: Yes, for you to do a valid assessment.

And if Mr. St. Louis provides you with even more information it just may sit more valuable for you to go to the laboratory than I've heard thus far?

THE WITNESS: Yes, sir.

THE COURT: And if I ain't convinced now I am not going to be; right?

THE WITNESS: That's probably true.

THE COURT: Okay. Joe with that said?

MR. ST. LOUIS: You are requesting I ask no further questions, Your Honor.

THE COURT: Well, you can thank Ms. Arvizu for being here.

No, if you have more, but I get the point and I think I understand Ms. Arvizu's testimony, and I think I understand her opinion about the need for her to visit the laboratory so that she can complete a proper quality assurance audit and analysis. And, you know, hearing more about particular situations probably isn't going to make any difference to me.

MR. ST. LOUIS: Okay. Then I don't know if we got the last two exhibits in, which were O and P.

THE COURT: Okay, O and P are admitted.

MR. ST. LOUIS: Thank you.

THE COURT: All right. Did you have any cross examination?

MS. ST. JOHN: Please, Your Honor.

CROSS EXAMINATION

BY MS. ST. JOHN:

Q Now it's my turn, thank you.

Now, I just want to go back to your qualifications and training. You talked to us about a lot of lab experience. Do you primarily have experience in using gas chromatography in environmental testing?

A General, general analytical applied to a variety of disciplines and data uses. Probably environmental is the single most common application in my personal experience.

Q And you have specific experience in waste water management testing; correct?

A A variety of matrices, waste water, drinking water, slug, solids, soil, brine. Anything that you can characterize.

Q You can stick through a GC?

A Stick it through a GC.

Q Okay. But you don't actually have training on forensic alcohol testing; correct?

A No, I do not.

Q So you have never done forensic alcohol testing?

A No.

Q So do you feel that there are differences for forensic testing than there are for environmental testing? Are there procedural differences?

A There are certainly different uses and a fundamental precept of quality assurance is that the level of quality necessary increases as the importance of the decision based on the data increases. I would expect to have differences.

There's differences between environmental food and pharmaceutical laboratories as well. That's not specific to forensics.

Q Really your area of expertise is not in forensic alcohol testing, really it's in quality assurance measures sort of on a wider spectrum?

A Yes, ma'am. Yes, ma'am.

Q So you have actually testified to quality assurance practices for fingerprint analysis?

A Yes.

Q And for DNA analysis?

A Yes.

Q You have actually testified on cock fighting; is that correct?

A No.

Q No, I must have been mistaken?

A I did speak at a -- I didn't -- it's not sworn testimony like in Court. I spoke at a --

Q You spoke on it?

A Yeah.

Q Okay. So that's not one of your areas of expertise?

A No, that's not an area of expertise.
Q Okay. Now you said you did some auditing while you were in the Navy. Do you know what lab specifically you audited while in the Navy?
A I was never in the Navy. I was contracted.
Q For the Navy, I am very sorry.
A I am sure that's a very big difference.
Q Yes, I am sure it is.
A What kinds of laboratories?
Q Do you know specifically which laboratories?
A Oh, many. I audited Navy laboratories at Navy facilities from Pensacola to Honolulu.
Q Did those include forensic alcohol laboratories?
A No, no. It included Headspace GC but not forensic alcohol.
Q But Headspace GC can be used for other types of testing; correct?
A In these particular cases it was for volatile organisms that did include alcohol but not specifically.
Q In blood?
A For forensic purposes in blood, yes.
Q Thank you. Now, just to clarify you don't have a Ph.D, you completed the course work; correct?
A Correct. It's admission to candidacy and testing, but not the dissertation event.

Q Okay. You are actually -- you have been hired in this case, you are actually hired by numerous defense attorneys around the country; correct?

A Yes.

Q For similar critiques of local laboratories?

A Yes. What I generally do is conduct a data quality assessment on a particular case, and then basically get back to the lawyer as to whether or not the data are reliable and can be supported, the conclusions can be supported based on the record.

Q But you have publications that indicate that you think it's generally a good idea to have outside auditors, like yourself, go into any crime laboratory around the country?

A Into any laboratory that provides testing, but crime labs certainly in particular, yes, ma'am.

Q So you would be asking for this sort of tour for any type of laboratory, it is not necessarily specific to this case?

A Not necessarily. If, for example, sometimes I will get a data set for a client that indicates that the laboratory has a very robust, very effectively functioning quality assurance program. Both the scope of their program as documented in their procedures is very complete, plus the records the data indicate that they actually comply with it,

you know, the data are consistent with their own program. I would not recommend an audit in that kind of a circumstance, and I have given that kind of feedback to attorneys.

It is this kind of a case where the whole picture is a pretty compelling picture of a laboratory that is facing some massive operational challenges to do effective work and that the data seemed to indicate that they are having some issues, that's where I would recommend an audit.

Q Now, since you have started your own -- I think you said the last couple of years you've been working as a defense expert primarily as a consultant?

A Yes.

Q Have you worked for the government since you have become a private consultant?

A Yes. Not in forensic cases, though.

Q Okay. So in forensic testing you have only ever been employed by defense attorneys?

A That's correct. In criminal cases it's different. Civil, you know, I don't know how that all works.

Q Okay. How much are you being paid to testify today?

A I charge $150 an hour for my time.

Q Okay. Now, I want to talk to you a little bit about some of the contaminations as you alleged.

Just to clarify, you are looking at these as inconsistencies that you wouldn't want to see in testing

results, not necessarily specific to any experience in forensic alcohol testing?

A In relation to my experience related to volatile organisms, of which alcohol is just one example, yes, ma'am, but not specific to forensic alcohol.

Q Okay. Now, you indicated that you have already received -- some of the things you said you wanted to obtain by visiting the lab was information about the square footage, the number of machines, and the location.

Are those things that you could learn through interviews?

A No. It's more about proximity. It's not just how many -- what is the footprints of your analytical instrumentation in relation to the footprint of the laboratory space. I think just from watching the video you can see some of the practical constraints associated with operating in an environment where you have got so many things piled on the back corner.

So it's really a desire to see more than what the video was able to show.

Q Okay. So it just gives you a more full understanding?

A Yes, ma'am, that's a fair statement.

Q Okay. Now, you talked a little bit about the calibrator and your concern about traceability. You haven't

been provided documentation showing where the calibrators were generated from, purchased from, and the expiration dates; correct?

A That is correct.

Q But if you were provided that information that would be helpful, even without going into the lab?

A That certainly would. If there is additional documentation that would help to support that. It's going to be hard to show traceability for the calibrator when the record is only described as .01. Because that is not a unique identifier that can identify the .01 standard that Mary uses in January from the one that Fred is using from December to February.

Q But how does going into the lab help you hone in on that issue?

A To see in practice what they do, because what they -- how they do that is not documented in their procedures and it's not evident from the record. So if I could see in practice that might help clarify, if you will, how that happens.

Q But I guess what you were saying is that you can't trace what Mary, or in this case Seth was using on such and such a date?

A That's correct.

Q Okay. Then we talked about the mixed standard

isn't -- well, I am sorry, we'll skip that. We'll move forward to the blank.

Isn't the most important thing about the blank -- I mean you said that you are very concerned about having any volatile show up, but isn't the primary concern having volatile show up in the area of interest where you expect ethanol to read out?

A On a discreet sample, yes, that's the most serious failure that can occur in a blank.

Q Have you ever seen that in any of the documentation you have been provided?

A No.

Q Okay. It was your earlier testimony that you've seen contamination resulting in a .133 alcohol concentration or higher. Do you have documentation of such ethanol contamination?

A I have seen cases of contamination at that concentration in volatiles. Frankly, I don't remember if they were alcohol or not, but I have seen that level of contamination.

Q In this lab?

A No, no, just in general. I am sorry, my answer dealt with can you get that much contamination just from contamination. If I misstated that I apologize.

Q No, I am sure I just misunderstood. But your

testimony is that you have seen that in your experience, but not specific to this lab?

A Yes, but not specifically in this case, yes.

Q Okay. You talked about the benefit of having an air blank which would show you the presence of any other volatile compound in the surrounding area; correct?

A Uh-huh.

Q Wouldn't those also show up in the method blank that we talked about being used in this actual run?

A If, in fact, this is a method blank that's a possibility. The real power of an air blank is you get an idea what the normal ambient background is in the laboratory, because like I said, contamination it's spurious, it shows up and it goes away. So it's not constant. It is not a homogenous air environment, it comes and goes.

So if you run frequent air blanks you get an idea -- you can control chart it and get an idea what is kind of normal, what exists as a result of normal laboratory operations. Whereas a method blank is specific to my batch of samples.

Q But running a method blank with each batch gives you at least the ambient air at the time that batch was run?

A If you are only going to run one blank sample that's definitely the one you want, yes, ma'am.

Q Now, you don't have specific -- and I am sorry to

hammer this again, but testing for alcohol, blood alcohol testing?

A Not blood alcohol, no.

Q Do you know whether blood samples are opened in the lab or just under -- just under the hood? Do you have any knowledge about that?

A I have no direct knowledge about that. I have my hopes.

Q Okay. You hope that they just open it under the hood?

A I am hoping it's just under the hood. By an appropriately attired and gloved analyst, yes.

Q So these hoods aren't just a piece of glass, they actually have negative pressure; right?

A Yes. It's a box that has a hood door that can come down. It has to, under AIHA requirements it has to be tested for air flow per air changes. Periodically with the door in a position. But it basically just encapsulates all of that air and goes out a stack, out the top of the lab.

THE COURT: Like a really, really good range hood?

THE WITNESS: It's like a really fancy, very expensive range hood, yes.

MS. ST. JOHN: I should get one of those.

BY MS. ST. JOHN:

Q Now, if blood is only ever opened under this

pressurized hood, doesn't that limit the possibility of environmental contaminant from other parts of the lab?

A That -- that's in theory supposed to be the practice. Although think about where it's drawing its air from. It's drawing its hair from everywhere else in the lab. The air that's going up and through the hood and out comes from the ambient hair in the laboratory. So if I am sitting here working at the hood, the air that it's sucking is coming from behind me and it's going up and out. What matters is what is the air quality of the air back there? Also what else is in my hood.

And if you are familiar with DNA analysis, it's the swipe down the hood thing, never have the amplified stuff around the unamplified material. The same kind of principle, keep the concentrated stuff away from the clean stuff.

Q Isn't it easier sort of in rather than DNA testing and in this type of GC testing to tell whether or not there was a contaminant, because you would see the volatile samples, volatile compounds showing up in the blank or in some of the samples that are being run?

A That's -- that's actually very true, except the insidious problem with something like ethanol contamination is if you see it in a sample you don't know whether it's because of contamination or not. And simply because it conforms to your expectation for that sample doesn't lend any scientific

credence to its having been there in the first place.

The problem is really, does the lab have really robust, really effective system to protect the integrity of the sample so nothing ever gets in my controls and in my blanks that shouldn't be there. Then when I see something in an unknown sample, then I can tell you, you know what, this lab has their act together. They control the integrity of the sample. If there's ethanol there, it is probably there at the point of collection. But when a lab has such ineffective controls you just don't know.

Now, if it's toluene in the blood sample, I -- okay, I have a biochemistry background, I don't claim to be some kind of a blood expert, but I would be pretty surprised if somebody had appreciable quantities of toluene present in their blood, they are probably pretty sick. So I can say with some degree of confidence that's attributable to contamination.

If it's ethanol, I don't know whether it's contamination or not, because they both look alike. Analytically there is no way to tell the difference.

THE COURT: Or a combination of both?

THE WITNESS: Exactly, or a combination of both.

BY MS. ST. JOHN:

Q Aren't we back to the same quandary, they run two samples?

A Yes.

Q And the samples have to agree with each other to a certain percentage to have a published result?

A That's correct.

Q So for the two samples to agree with each other either they are both contaminated or both not?

A That's correct.

Q If they are both contaminated wouldn't you expect the blank to be contaminant? Wouldn't you expect the whole blood control be contaminated?

A A lay person might. Unfortunately it doesn't quite work like that. What I might expect is to see it in both samples. In a lot of cases, as we saw, you do, you see toluene in both samples. It depends where the contamination is occurring, at what point in the process it is occurring.

Really the only way to have a lot of confidence in this kind of testing is to have really rigorous controls in place, and then things like blanks simply serve to validate the efficacy of your controls, rather than saying, gee, I see that my blanks are contaminated, I see my standards are contaminated, but I am pretty sure it didn't happen to my samples.

I don't know. That's my real problem. Just because ethanol is there, I have no way to say where it came from given the fact that this lab can't seem to control what gets

into and out of their samples.

Q Now, let's talk about this case specifically.

You said that at the beginning we run controls and at the end you run the same controls but they are called verifiers at the end; right?

A Yes.

Q Specific to the defendant's blood run, did the verifiers respond appropriately?

A My recollection is that they did.

Q Now, we talked about this negative baseline peak a while back, and you indicated that the way the negative baseline was corrected and was documented was appropriate?

A Yes.

Q And it was documented appropriately also?

A Oh, you know, I always want more documentation, but, yes, at least it was documented the fact that there was a subsequent chromatogram that a reviewer would go to.

Q And you indicated that this is probably an electrical problem not a chemical problem?

A That appears to be the case, yes, ma'am.

Q So that would not be a contaminant, per se?

A No, no.

Q Okay. And we learned that as a result of this electrical problem they started running fewer samples. You don't know when that happened, but in this case, in the

defendant's blood run, were there only 40 samples run?

A I have no way of knowing because I didn't get the entire run log, which would be awfully nice to have. I really only got the sample in this case and the controls that spanned it. I don't know how many samples there were.

Q Okay, so that's an appropriate question for someone else?

A Yes.

Q Okay. We talked about -- for something like this negative electrical peak that you said occurred kind of sporadically, not in a predictable time or manner, isn't the best test to run two duplicate samples?

A That would be an effective way of determining whether or not it was occurring under a peak, yes.

Q Okay. Now, we talked about kind of the noise on both ends of the baseline appearing in one of the calibrators. And I -- gosh, sure could use your power point, Joe.

I don't recall what specific data run it was, you know what, I will have it in just a second, I am sorry, Judge.

Okay, it's the data run from October 9th, 2003, and we were looking at the .20 calibrator.

It's okay, Joe, thank you.

THE WITNESS: Did you find it? Is that it?

MS. ST. JOHN: He did, he did, he found it faster than us.

THE WITNESS: I'm humbled.

THE COURT: Well, he's got a computer.

BY MS. ST. JOHN:

Q So for the .20 calibrator you were concerned about these extra small peaks?

A Yes, yes.

Q The baseline noise?

A Yes.

Q But did, in fact, the calibrator produce a linear calibration line?

A Yeah. That's not the problem.

Q Okay. But in this case it didn't actually effect the calibration, you are just concerned about the presence of other materials?

A Exactly. The fact that practices allowed a reference standard to become contaminated.

Q Okay. For the October 10th run we are looking at acetone appearing -- I don't know.

We're worried about this acetone, what we were calling double it, right, where we've got two numbers reporting for that peak.

A Yes.

Q Now, did that occur in both duplicate samples?

A No, it did not.

Q It only occurred in one of the samples?

A That's correct.
Q Only on one of the columns?
A Yes.
Q Does that indicate to you that there was acetone present or not and that the instrument is just reading it?
A There was certainly an unresolved quality issue. The discreet origins I can't say to.
Q Okay. We looked at the 21st, the run for the 21st, again, having some extra areas of interest?
THE COURT: He's got a remote.
MS. ST. JOHN: Oh, show off. Thank you.
BY MS. ST. JOHN:
Q Again, these aren't showing up in the ethanol area of interest, you are just, again, concerned about outside --
A That's correct, yes, ma'am.
If it was showing up in the ethanol in a sample I would never know it. That's my problem.
Q Isn't that the point of dual column run?
A If, in fact, it's ethanol contamination it will show up in both different places.
Q So your concern is that it's specifically ethanol that is the contaminant?
A Yes, ma'am. Yes, ma'am.
Q Okay. Now, you testified that there was this acetone peak or bump showing up in the defendant's run, the

blank sample, and I would like you to look at his run?

A This -- in this case?

Q In this case.

A Acetone?

THE COURT: No, toluene.

MS. ST. JOHN: No, we also -- she also said acetone, so I just want to clarify that there isn't --

THE WITNESS: I apologize, I don't ever recall acetone in this case, I only recall toluene. The only acetone I recall for this laboratory was that Roger's case that we just had the spectrum up.

Q Okay. So to clarify, no claim that there was acetone peak?

A No, ma'am, no.

Q In this specific case?

A No.

Q Okay. We talked about the early peaks showing up in the calibration solution from the January 23rd, 2004 run, you were concerned that the lab did not know what it was.

Did these early peaks appear in the defendant's specific blood run?

A No.

Q Okay. We talked about toluene and it appearing in certain blood samples in the defendant's run. Did it appear in the blank sample?

A I don't remember. I would have to look, I am sorry.
Q Would you, I appreciate it?
MR. ST. LOUIS: Exhibit B.
THE WITNESS: I don't have that, if I can look at my --
BY MS. ST. JOHN:
Q Oh, okay.
A And you wanted to know if it showed up in which?
Q In the blank?
A Yes, ma'am, it's in the blank.
Q It's in the blank. Does it also show up in the defendant's sample?
THE COURT: Toluene?
MS. ST. JOHN: Toluene
THE COURT: Yeah, it does.
THE WITNESS: My recollection is it does. I just want to find it and make sure.
MS. ST. JOHN:
Q But the GC isn't actually reading out as toluene, it's not integrated, you are just saying it's probably toluene based on the run time?
A It's retention time in both columns, yes, ma'am. And that's always subject to analyst control. You note I didn't identify that earlier the big tall peak, the analyst can pick which one to show or not.

Q We talked about the April 21st, 2006 run, and, again, about toluene. And really -- really about noise in the big -- about the little unexplained bumps you are seeing. Is that common for whole blood?

A It is common for whole blood sample. Where you should not be seeing it is in the nice pristine control samples.

Q Okay. So for the first one we were talking about, which was April 21, the 34th run, that's actually a test sample that we were seeing it in?

This one.

A Yes, that's an analytical sample.

Q Okay. So it's not that surprising to see all of this extra noise?

A No, it is not.

Q Okay. Now, just briefly on the ASCLD report, you said that they are systemic failures in the procedure for reviewing technical problems. But did ASCLD note systemic failures?

A They found a finding related to the general requirement and gave an explicit example, which is typical. But it was a discreet specific example that related to a systemic particular requirement.

Q Okay. In fact, anywhere in the ASCLD report did they note any forensic alcohol problems, testing problem?

A I don't recall any finding that were specific to alcohol.

Q Okay.

Thank you. I have no further questions.

Thank you, Your Honor.

THE COURT: All right.

MR. ST. LOUIS: Judge, I have an Exhibit Q, which is a copy of all of power point slides.

THE COURT: Great. We will admit that.

Okay thank, you very much.

THE WITNESS: Thank you for staying awake for the whole afternoon.

THE COURT: No, it's real interesting. I think it's real interesting.

All right. We are off the record.

C E R T I F I C A T E

I, Helene J. Diehl, certify that I took the shorthand notes in the foregoing matter; that the same was transcribed under my direction; that the preceding pages of typewritten matter are a true, accurate and complete transcript of all the matters adduced, to the best of my skill and ability.

_____

HELENE J. DIEHL, RPR
Certified Court Reporter #50272
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