IN THE CITY COURT OF TUCSON

COUNTY OF PIMA, STATE OF ARIZONA

STATE OF ARIZONA, Plaintiff, vs. MICHAEL MARRAMA, Defendant.	CASE NO. TR0703880

Tucson, Arizona
June 23, 2009
2:09 p.m.

BEFORE THE HONORABLE JUDGE BERNING

TRANSCRIPT: MOTIONS HEARING

Transcript prepared by:

VERBATIM REPORTING & TRANSCRIPTION, LLC

A P P E A R A N C E S

On Behalf of the State:

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On Behalf of the Defendant:

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2:09:53

THE COURT: .....present counsel as well as state. Time set for argument, evidentiary hearing on Defendant's motion. I'm not sure what the type of the motion it is.

MS. NATIVIDAD: Motion to suppress the blood test results, Your Honor.

THE COURT: Oh, okay.

MS. NATIVIDAD: Is that correct, Mr. St. Louis?

MR. ST. LOUIS: It is correct, Ms. Natividad.

THE COURT: I'm thinking you probably will be proceeding first, Mr. St. Louis. Is that okay with you?

MR. ST. LOUIS: I will if you give me one minute.

THE COURT: We will give you one minute. And I'll give you two minutes.

MR. ST. LOUIS: I'll steal one of these books.

THE COURT: You can move things if you want. Take things. You can steal them, move them, take them. You'll be required to return them though.

MR. ST. LOUIS: You're so picky.

(Pause - whispered conversation)

MR. ST. LOUIS: I think we're in business, Your Honor.

THE COURT: We are? Hold on for one second. I'm trying to find your motion here.

(Pause - whispered conversation)

THE COURT: Care to make an opening statement?

MS. NATIVIDAD: The state waives, Your Honor.

THE COURT: Mr. St. Louis.

MR. ST. LOUIS: Judge, you're going to hear from Janine Arvizu today. Ms. Arvizu is someone who made us run a laboratory that pretty much exclusively worked for the federal government. After she did that, she went on and got a certification to be a lead laboratory inspector from an international organization and she's been hired by the federal government to go around and do lab inspections. She's going to talk to you about her evaluation of the procedures used in this case, the specific problems with the blood run in Mr. Marrama's case, and she's going to explain to you why the results are unreliable and -- and therefore inadmissable in this case. And that's what we're going to do today.

THE COURT: All right. You're ready to proceed then?

MR. ST. LOUIS: I am.

THE COURT: Why don't you call your witness?

MR. ST. LOUIS: I'd like to call Janine Arvizu.

(Witness summoned)

THE COURT: There we are. Okay. Before you sit down, would you please raise your right hand? Do you swear or affirm that any testimony you give will be the whole truth and

nothing but the truth?

MS. ARVIZU: I do.

THE COURT: Thank you very much. You may be seated. And you may proceed, Mr. St. Louis.

MR. ST. LOUIS: Thank you.

JANE ARVIZU

having first been duly sworn in, testified as follows on:

DIRECT EXAMINATION

BY MR. ST. LOUIS:

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

A Janine Arvizu. J-A-N-I-N-E A-R-V-I-Z-U.

Q Okay. And Ms. Arvizu, are you employed?

A I work as an independent contractor.

Q In what area?

A As a laboratory quality assurance consultant.

Q Would you -- what is a laboratory quality assurance consultant?

A I'm an auditor who specializes in the assessment of laboratories and their work product. And I work for people who use laboratory results to make very important decisions. And they want to understand how valid the methods are that the labs use and how reliable the results are that the laboratories generate. The way that they do that is by bringing onboard an independent auditor to assess the quality of the lab's work in a specific case and more generally as to

the efficacy of their quality assurance program.

Q Would you give us a little bit of your education background that allows you to be employed in that position?

A I have bachelor of science degree in biochemistry from California Polytechnics State University in San Luis Obispo, California and AVD in chemistry from the University of New Mexico. What that means is essentially that I was advanced to candidacy for a PHD degree, but did not defend my dissertation. I have been certified as a quality auditor by the American Society for Quality for a number of years, which entails passing a certification examination. And I have been involved in the generation and insuring the quality of analytical results for many years, in excess of 25. I manage an analytical laboratory for the Department of Energy. It was a full service analytical lab that handled very complex sample matrices for the full suite of analytical techniques. And I -- after I left the Department of Energy, I have been conducting assessments of analytical programs and data quality assessments for federal agencies including the Navy in which capacity as which their quality program manager. I assessed commercial and government laboratories doing analytical work for the Navy and actually wrote and authored their quality standard that they used for those assessments.

Q Okay. So at -- at some point you must have started off working in a lab somewhere.

A Yes, sir.

Q Where was that?

A That was at Department of Energy laboratory, Idaho National Engineering Laboratory.

Q And eventually you came to run that laboratory; is that correct?

A Yes. At the time I came onboard, they did not have a functioning analytical service laboratory. And I established that and grew it in a very short period of time to about a 45 person laboratory.

Q Okay. How long were you in the -- the labora- -- and -- and this is, it's a private laboratory, but its customer is the federal government; is that how it works?

A The national labs in this country are actually operated by operating and maintenance contractors, management contractors. They -- they're not federal employees, but it's like a captive contract where your only customer is the Department of Energy.

Q And -- and how long did you work in that laboratory?

A About 10 years.

Q And did you need any sort of governmental clearance to do that type of work?

A Yes. I held a Department of Energy Q level clearance, which is a nuclear security clearance.

Q Okay. I'm not sure what that is, but it sounds

important.

A I'm not sure if there's a direct analogy, but I think it's like top secret. There's a lower grade clearance, that's L clearance, but with a Q, you're eligible for sensitive nuclear security secrets.

Q Okay. So you worked in this laboratory for 10 years. You -- you got them up and running. And -- and did you say that you had written actually the quality assurance procedures for the laboratory?

A I authored many quality assurance procedures in that laboratory. I also authored the standard, the quality standard that's used -- was used by the Navy to evaluate its laboratories both commercial and government.

Q Okay. In Mr. Marrama's case, we are dealing with something called headspace-gas chromatography. Are you familiar with that?

A Yes.

Q Can you tell us how you are familiar with that?

A I've bought instruments to do that kind of testing and directed their validation. I've performed testing using headspace GC methods. And for many years have reviewed -- and done data quality assessments on the results of headspace GC testing.

Q Okay. So you've got 10 years in this laboratory that -- that works for the Navy. And then where do you go

after that?

A The 10 years was DOE that I -- the Department of Energy, I'm sorry.

Q Oh, okay. I'm sorry. I apologize.

A Then I went out and started a consulting firm. And that's in -- in that capacity is when I worked for the Navy. I also chaired an advisory panel looking at characterizing high level waste tanks at Hanford. I did a variety of -- of analytical support functions, but in general, they were -- they were focused on ensuring and assessing the quality of analytical results.

Q Okay. And then you told us that you -- you've gotten some certification or in some way had become qualified to perform laboratory inspections?

A Yes. I first did lab inspections for the Department of Energy under their standards. After I left the Department of Energy, I obtained certification as a quality auditor from the American Society for Quality.

Q The American Society for Quality?

A It's a professional organization for Quality practitioners.

Q Okay. And is this something where you pay $15 and they give you the -- the certificate to be able to inspect laboratories?

A No. Actually, there's a -- there's an employment

requirement, there's an educational component and there's an examination that you sit for. And it has an appreciable failure rate. At the time I took it, my recollection is the failure rate was about 30 percent.

Q Okay. At any rate, you were not one of the failees?

A No, I was not.

Q Okay. So once you -- and what is -- I'm just struggling with this. I'm sorry. What -- what is the name -- is there a -- a name for what you -- there must be -- for what you achieved when you passed the examination?

A You're certified as a quality auditor. It's CQA is the designation.

Q Thank you. Since receiving your -- your CQA, have you in fact performed audits on different laboratories?

A Many.

Q Can you tell us generally how does one perform an audit on a laboratory?

A As -- as an independent auditor, I am required to be truly independent of all analytical laboratories of -- if -- for -- as an example, for -- in my work for the Navy, I had to sign a statement attesting to the fact that I had no personal or professional relationship with any analytical testing laboratory or people who worked in analytical testing laboratories both during the term of my employment and for -- as -- in that contract and for three years thereafter. So

you're really serving as an independent party coming in and doing in an assessment of the laboratory, assessing how technically rigorous and how effective their quality assurance is, and in the case of a data audit, actually reconstructing everything that happened to a particular sample or a set of samples so they understand how reliable the testing performed by the laboratory was. Under what -- under what quality system was it -- was it tested and how effective was that system at the time the testing was performed.

Q So if you're going to do an onsite audit -- I mean, that is what it sounds like, you actually go physically into the lab?

A That certainly is the most effective means of -- of doing such an assessment. Onsite audits, you will always be able to have access to more information than you can get simply by doing a paperwork assessment.

Q And the paperwork assessment, that's what a data audit is?

A Yes.

Q And what sort of documents would you get if you were going to do a data audit of a particular lab?

A You get copies of the procedures, you get of their quality manual, you get copies of -- if it's in relation to a specific case or a specific set of samples, you get all of the data relating to that particular analytical scheme. Just all

the background information attesting to the qualifications and -- of the analysts that are involved and an un- -- an understanding of the components of their quality program.

Q And you've been doing that for how long now? Now we all know you started working in a lab when you were five. So.....

A Doing formal audits, probably in excess of 15 years, more -- closer to 20 probably.

Q All right. I'm showing you what's been marked as Defense Exhibit A. Can you tell the court what that is?

A It appears to be my resume.

Q Does it give a little more detail about the -- the different type of work you've done and the information you've just gone over?

A It does.

MR. ST. LOUIS: I would move for the admission of Exhibit A for the purposes of this hearing.

THE COURT: Ms. Natividad.

MS. NATIVIDAD: I don't have any objection.

THE COURT: Without objection, Exhibit A will be admitted.

MR. ST. LOUIS: Don't know if you wanted to see it or not.

Q Okay, Ms. Arvizu. So who has paid you to go in and do laboratory inspections?

A Who -- I'm not sure I understand the question. In this case or -- or more generally?

Q More generally.

A Okay. More generally, for the most part when I'm actually going into a laboratory, the vast majority of those cases have been on behalf of the federal government, on behalf of either the Department of Energy or the U.S. Navy.

Q Okay. And what is it that you're looking for when you go in there and do an inspection?

A You know, you're just looking for everything. When you've been in so many laboratories over -- over the course of a career and have managed your own laboratory, you get a real good understanding of sort of hallmark indicators of good labs and labs that are going to have trouble. And there are things you can see on an onsite lab that you -- that will never come through on -- on the written record. You can see evidence of good practices. You can see evidence of poor practices. You can see evidence of -- of a strong and robust contamination control program and you can see real clear evidence of a laboratory that's likely to have problems with contamination. There are things you can see in person that just don't always come through in the paperwork.

Q And are you able to make those same sorts of assessments whether you have a laboratory that is likely to have some problems from a data audit as well?

A Oh, certainly. It's just not as -- as all-encompassing as it would be in the case of an onsite audit.

Q Okay.

A Because I -- I think everybody who's been through a science class knows that if you didn't write it down, you didn't do it. The -- the premise of science is you're supposed to document very completely your work product so that another independent scientist can assess and judge the quality of your work.

Q Okay. And in fact there was just a report authorized by Congress by a national group.

A National Academy of Sciences.

Q National Academy of Sciences. And one of the things that they criticized the laboratories for was not having work that was reproducible by someone reviewing the records.

A That's correct.

Q Have you ever -- you told us that you perform data audits and -- and onsite inspections. Have you done that in laboratories that perform forensic work, work for court?

A Yes.

Q Tell us about that, if you would.

A Been doing it for a little more than 10 years now. And I have done a large number of data audits where I essentially go in and attempt to assess the data quality of

reported results simply on the basis of the written work product. Some of them are contemporaneous cases; some of them are very, very old cases where I'm doing data quality assessments. But trying to understand how valid was a method that they used and how reliable were -- was it implemented, how reliably was it implemented in a laboratory. So I've done those from states all over the country, overseas from a variety of jurisdictions and in a variety of disciplines, because the principles of quality assurance are independent of the area in which the technique is being applied. The principles of accuracy and precision, sensitivity, reproducibility, completeness, comparability, those kinds of principles are independent of whether you're talking about headspace GC testing or DNA testing or gunshot residue or toxicology fingerprints. These are all techniques that I've done data quality assessments on.

Q So good science likely to lead to reliable results is good science across the board; and bad science.....

A Good science leads to good valid methods. And when good valid methods are implemented in labs with very robust and effective QA programs, then you get reliable results.

Q Okay. Thank you. Ever been ordered into a crime laboratory to be allowed to witness how they perform the testing?

A Yes.

Q Where?

A Here in Tucson.

Q Okay. Would that be in the -- the Tucson Police Department Crime Laboratory?

A No. It's the state one. And I'll -- I'll think of the acronym.

Q Department of --

A DPS.

Q -- Public --

A Thank you.

Q -- yeah. Department of Public Safety --

A Yes.

Q -- Crime Laboratory?

A Yes.

Q Okay. Any other states as well?

A I've been under court order, a witness, DNA testing in a variety of -- of cases and distri- -- and jurisdictions. I think that's about it.

Q Well --

A Mostsly DNA cases.

Q Okay. At my request, did you review some information in Mr. Marrama's case?

A Yes.

Q Can you tell the court what you looked at, please?

A The kinds of materials that I described earlier. I

reviewed the laboratory's standard operating procedure. I'm not sure that's exactly what it was called, but that's the conventional term. But their procedure for doing blood alcohol measurements, I reviewed it. The case file or the contents of the -- the case specific information in this case.

Q Well, let me slow you down. Let me show you what's --

A Okay.

Q -- been marked as Defendant's B and ask you if you recognize that.

A I do. This is the procedure that it's my understanding would have been in effect at the time the subject case was performed. Its effective date is May of 2007 and the work in this case was performed just a few months later.

Q Okay. And -- and what is the name of this document that is Exhibit B?

A It's -- it's a Tucson Police Department Crime Laboratory document and it's titled blood alcohol procedure manual.

Q Okay. And it --

A Version two.

Q Version two?

A Version two.

Q Okay. Then you said that you looked at some

information specific to this particular case?

A Yes.

Q Okay. And what did you look at then?

A It's commonly referred to as case file. It's the raw data generated during the instrumental analysis and a record of notes and observations made by the analyst in the case.

Q Let me show you what's been marked as Defense Exhibit C and I'll ask you if you recognize what that is.

A Yes, I do.

Q What is it?

A It's a 20 page document that represents the case specific information generated in this case.

Q What case specific information are we talking about?

A The results of the blood alcohol testing and all of the associated laboratory analyst and notes.

Q Okay. And is that from Mr. Marrama's blood sample or is that from other people's blood samples or is it something else?

A It includes Mr. Marram- -- I'm not sure I'm pronouncing it right -- Marrama's blood sample results as well as quality control results from the associated batch run. These things are typically run in batches. So there's quality control samples that are more broadly applicable than just to his.

Q Would you double check and see if Mr. Marrama's is actually in there?

A Oh, well, let me look. These -- the sample ID's here are not something I'm accustomed to seeing because they don't have unique sample identification numbers associated with the unknown samples. They identify them by vial numbers, except for QC. No, these are just QC. I apologize. This is just the QC samples.

Q Let me hand you what's been marked as Defense Exhibit D.

A Okay. This -- this looks like -- two, three -- okay. These are -- are the actual case samples, unknown samples in this case --

Q Okay.

A -- that were run in the same batch with those others.

Q So Exhibit C is --

A The quality control information.

Q Okay. For this case.

MR. ST. LOUIS: I like to move for the admission of Defendant's Exhibits C and D.

THE COURT: Ms. Natividad.

MS. NATIVIDAD: No -- no objection, Your Honor.

THE COURT: Without objection, Defendant's C and D will be admitted.

(Defendant's Exhibits C and D admitted)

Q And ma'am, let's I guess take a look at the -- the overall picture first. Did you see some issues with the way the Tucson Police Department Crime Laboratory is conducting gas -- headspace-gas chromatography on blood samples for alcohol in general?

A Yes.

Q Can you tell the court about that?

A Sure. The basis for -- for my assessment of their method in general is what we refer to as their standard operating procedure. Their procedure for blood alcohol testing. And that for me as an auditor, the SOP is a good introduction to just how technically rigorous the laboratory's operation is and what kinds of -- of controls have they set for themselves, how -- how high did they set the bar for themselves. I've reviewed --

Q You know what, let -- let me just take a break.

MR. ST. LOUIS: I guess I want to move for the admission Exhibit B which was identified as --

THE COURT: Is that what she's now referring to?

MR. ST. LOUIS: May 2007 blood alcohol procedure.

THE COURT: Can I have one?

MR. ST. LOUIS: Yeah.

THE COURT: Do you have one?

MR. ST. LOUIS: We've got some extras, yes.

THE COURT: All right. Help me more if I know what I'm looking at.

MR. ST. LOUIS: Do you need a copy, MaryLou?

MS. NATIVIDAD: I do have a copy.

MR. ST. LOUIS: Okay. And with everyone's permission, Judge, I'll give you a copy of this which has now been admitted as Exhibit B.

THE COURT: Okay. Thank you very much.

(Defendant's Exhibit B admitted)

MR. ST. LOUIS: You're welcome.

Q And I interrupted you, ma'am. You were saying what it is that -- that this document means to you when you look at it.

A Yeah. This is -- this is like a scientific recipe. And it should provide sufficient detail so that another qualified gas chromatographer could come along and execute or perform this method precisely the same way that they do it in Tucson. Doesn't mean I'm going to be able to give this procedure to you and you're going to be able to perform the method acceptably. Not -- no offense, but --

Q None taken, ma'am.

A -- but --

Q If I -- if I could do math, I wouldn't be a lawyer.

A But this should provide a level of detail so that scientists don't have to wonder, huh, I wonder if I should do

this or not, I wonder if I should do that or not. This -- that kind of information is typically provided here in the -- in the standard operating procedure.

Q So it should be like -- like a -- like a cookbook, like the recipe that you follow you do A, B, C and D and then you get --

A And not like my grandma's cookbook, because she measured anything. This one is a lot more detailed. This is more like some fine pastry chef getting nice reproducible good desserts out of the oven.

Q Okay.

A Because in order to be reproducible, you need to control all of the variables. So that's really what you're looking at. Have they defined, established and controlled all of the things that can introduce variation to the analysis.

Q And -- and how is this cookbook? Have they in fact done that?

A I'll say I've seen worse, but I've also seen a lot better. This -- this procedure does -- I'll -- it's -- it's low average I'll say, because it tends to accept a lot of things simply on faith and/or -- or understanding or assumptions perhaps. For example, when it talks about the -- it calls them reagents on page 3 of 21. It goes through a little listing -- and this is entirely appropriate. It goes through a listing of what equipment they use and what supplies

they use. That's entirely appropriate. Then it gets down and it says reagents. More typically, these are -- these are called the standards and controls. What we're talking about here is the heart. Technically, scientifically, the heart of the analytical method. These are the basis for drawing conclusions. And it simple says that I have a series of working standard solutions, .05, .10, .15. There's no units on those numbers. It's sort of just assumed that you know what units they're talking about. That scientifically is clearly not an acceptable practice, because -- and the analogy in -- in a recipe would be saying take three baking sodas. Well, three teaspoons, three tablespoons, three cups, three railroad cars, you know, how much. In addition, it doesn't specify anything as to the source and quality of these materials. These are the calibration standards. These are the reference materials that form the basis for the scientific conclusion. And there's no constraints or criteria associated with these acquisitional preparation of these materials.

Q Why is that important?

A Because that's foundational to the reliability of the ultimate results. Labs that don't effectively control their acquisition of these materials, sometimes you get a bad lot from a bad supplier or some low bid supplier more typically that doesn't meet your specifications. How -- and just as an example in number .05. Well, is that .05 plus or

minus one percent, 10 percent, 50 percent? How close do you need to be to that in order to be effective? And how close do you need to know the results in order to be able to use it scientifically? These simply don't provide sufficient detail for a scientist to be able to consistently, reliably, reproducibly get the same results as another party. It just needs more detail. In addition, throughout this document there are about -- there is several places where it addresses the use of blanks. Sometimes these are called negative control samples.

Q And what is a blank?

A What is a blank. A blank analysis is required by every quality standard. And the reason for that is that you need to know how well the instrument works on known samples. And a known sample can be positive. It can have ethanol in it, but it's equally important that you run a known negative samples so you have a sample that you know is completely free of ethanol. And that sample should be introduced to the analytical process and processed just the same way that you're handling all the rest of the samples contemporaneously the same time and the same place and the same location using the same equipment, because what you're trying to do with a blank sample is to assess whether there's any place in that measurement process where there's the potential for the introduction of a contaminate to that process. That is, in

the case of ethanol analysis, is there any way that ethanol could ever been into a sample and me not know about it? Because the dirty little secret about contamination is if you get an expected result and it's due to contamination, you'll never ever know it. So you have to be absolutely rigorous about preventing any opportunity for contamination and for measuring it during the analytical process keeping -- keeping red flags up to see -- out there to see if there are any problems. In this particular procedure, the laboratory only requires a single negative control samples with -- with a batch of samples. Now when you run a batch, they're constrained by the size of their auto-sampler. In point of fact, from reading an interview that you did with the analyst, they don't do a large batch typically on the order. Maybe 20 samples is a typical batch size. But they still only do one negative control or blank sample with their analytical batch. And in their -- in their procedure on page 3 of 4 under preparation of samples, it says remove --

THE COURT: Is that -- is that Exhibit B?

A I'm sorry. Yes, it is. This is their procedure, Exhibit B.

THE COURT: Now I've got -- I've got a page 3 of 21. Is there.....

A Well, look at that. 3 of 20 -- yes, sir.

THE COURT: Okay.

A That's 3 of 21.

THE COURT: Thank you. I'm sorry.

A Remove blood samples and solutions from the BA storage refrigerator. Well, that's when the little flashing blue light goes off on the auditor's head and you say they put their samples and their control solutions in the same refrigerator? From an analytical best practice perspective, no. You never want to have unknown samples share confined space with known prepared solutions of the things you're going to be testing for, because that introduces a potential for cross contamination. If you're going to do that and I would never recommend that you do, but if you're going to do it, you got to put blanks in the refrigerator just to monitor for -- for refrigerator contamination. So it's just --

Q Does -- does that happen? I mean, can you get --

A Oh, yeah.

Q I mean, is that theoretical or does that happen?

A It is not theoretical. I have seen it. Yes. That's what they're there for.

Q You said that they use one blank in this particular way of what -- what's a high -- and I -- I guess -- I mean, you -- you can't get much lower than that unless you get to zero. What's a high number of blanks? What -- what have you seen in practice?

A The best practice I've ever seen where they're

absolutely really rigorous about worrying about contamination control is a blank between every set of unknown samples.

Q So if you're dealing --

A So they'd run an unknown and then they'd run a blank.

Q If you're -- you're testing 20 people, you would have 20 blanks.

A Actually, you have more than that, because you're running them in replicates. But yeah, it's the basic idea.

Q You would have 40 blanks; right?

A Yes.

Q Okay. I can do a little math. Not much, but a little bit. Okay. How did they define that -- what does the Tucson Police Department Crime Laboratory say is the purpose of their blank?

A Yeah, that's -- that was one of the most troubling things. I think that's on page -- it's back a ways. Yeah, page 12. Page 12 of 21, the last entry under the section entitled controls. It states -- and this is the only place that it talks about blanks. A blank shall be analyzed each run for quality control of the internal standard.

Q What does that mean?

A I haven't got any idea really. I -- I sat and thought about it and tried to -- I've never -- I -- I hate -- I've probably read hundreds and hundreds and hundreds of

procedures for -- for gas chroma -- chromatography work and other kinds of analytical work and I've never heard a blank interpreted as being applicable to quality control of the internal standard. The -- the most essential function of a method blank, of a blank, is to assess whether or not the in -- the method is working in the negative sense for -- for a blank and the reason you use positive is in the positive sense. And it's not -- I really -- it appears to be that they're trying to serve some function for the internal standard, because as in -- is the case for the rest of the samples, all of their samples are diluted with an internal standard. So the blank is also in a similar manner diluted with the internal standard. But that's -- that's really a new one on me, that particular interpretation of the function of a blank.

Q Okay. So we've talked about the lack of specificity of -- of the quality assurance samples being used. We've talked about the blank and its issues. And any other issues that you had with the general way in which they perform blood testing in laboratory?

A Yeah. From the laboratory's procedure, it wasn't apparent to me that the -- the internal standard -- in this case, the laboratories using an acido nitrile solution -- is ever quantitatively verified prior to its use in the laboratory.

Q What is acido nitrile?

A It's a methal group with a cyanide group stuck together. And it's a solvent. It's an organic solvent. In the case of this particular method, they use acido nitrile as an internal standard. And what they're trying to do with an internal standard is use a compound that behaves similarly in a GC, which it does, to ethanol and to use a compound that's absolutely not going to be found an unknown samples. So you're not going to find acido nitrile in anybody's blood naturally. And what they do is to quantify and to understand how much ethanol is present in a sample. They do a comparison of the response of the ethanol to the response of acido nitrile. They introduce a known quantity of acido nitrile to every sample. So every peak, every chromatogram that you see will have an extra peak for acido nitrile in it. And that's comparison of the size of those two peaks that's used to quantify an tell you how much ethanol is present. So knowing the absolute actual quantity of acido nitrile is fundamental to the quality of the -- of the measurements. Absolutely essential. It is in fact in this particular case more important than the quality of the calibration standards. The calibration standards are not actually used to quantify in the method they use. They use an internal standard method to quantitate and tell you how much ethanol is there. So they address, you know, we're going to buy the calibration

standards. We don't dilute them. We purchase them from a supplier and we use them as is. But then they prepare their own acido nitrile. And in the procedure, there is no requirement for it's independent verification prior to its use in the method.

Q Is there anything in either B or C or D that would tell us what the -- the actual concentration or -- or measurement of the acido nitrile that was used in this case was?

A There's a reference to the -- the theoretical or the -- the recipe method. Your -- this is how much you want to -- what concentration you want to prepare it at. I don't recall -- I think -- I'd have to look it up and -- here it is, .01 percent. That's not a measured value. That's just a reference value.

Q That's what it's supposed to be?

A That's what it's supposed to be. That's what they're assuming it is for purposes of this analysis.

Q And where is that, please?

A That's on the first page of Exhibit C.

MR. ST. LOUIS: Do you need a copy of that, MaryLou?

MS. NATIVIDAD: Sure. Terra (ph) and I are sharing one.

Q And then --

A It's also in their procedure.

MR. ST. LOUIS: I'm just going to go ahead and hand you --

A In the laboratory's procedure page 4 of 21, the third bullet down says acido nitrile is the internal standard .010 percent volume -- volume. This solution is made by pipetting .100 mils of acido nitrile into a total volume of one liter of deionized water.

Q Is that okay? Is it --

A Well, that can be a start, but then you got to actually quantitatively verify that amount.

Q How do we do that?

A You actually run a separate test in which you take this prepared one liter solution and you take a aliquot, mix it up, get it nice and homogenous. Take out a little sub sample and test it through the instrument and quantify it and see how much acido nitrile is present in that sample.

Q Okay. All right. Any other issues with -- with generally how they're doing the blood testing?

A You know, I've looked at blood test results from over the country. And I confess to be quite surprised at the apparently vary weak quality control requirements here in this laboratory; specifically things like only one blank sample, only one whole blood control sample. And I guess the reason -- I need to explain why that's so important. When the laboratory is -- is measuring their method and seeing if it's

working and so forth, for the most part they're using known solutions that are just ethanol and water. Water is a pretty easy matrix, you know. As an analyst, there's not a lot of challenge associated with getting a compound measured out of water very accurately. Blood's a lot more difficult. It's just messier. It's got more stuff in it and so it's a -- a more challenging matrix if you will. Typically, the performance of an analytical method is -- gets worse as the matrix gets worse. And if you look at validation data for blood alcohol methods, that's very typical. If you look at the accuracy on alcohol and water, it's pretty darn good. And then when you get to alcohol and blood, it gets a little worse. So it's really important that you do blood control samples. They only do one -- one concentration of blood sample run one time. The last blood alcohol methods I looked at in another state just -- just a couple of days ago, they require two different blood alcohol samples be run intermittently throughout the batch.

Q So that was just one sample, one time --

A Exactly.

Q -- two different sources and aliquots of that run a number of times.

A Correct.

Q Okay.

A And that, in effect what that is, it's a higher

standard. It's a higher quality bar to get over than what they have here in -- in this laboratory. And then we get to the -- the mixed sample.

Q Okay.

A This technique, gas chromatography, is a -- is -- has its power and its -- its application in separation of mixtures.

Q Can --

A That's really what it's effective for it.

Q Can you kind of illustrate on the board with -- with the chart?

A Well, I can try, but you'll see I'm not much of an artist. Okay.

Q We all have our limits.

A And -- and this is one of mine. Okay. One, two, three -- well, I only got five here. Six. Okay. In the case of -- of this particular procedure, the laboratory indicates that -- well, let -- actually, before I get to the procedure, let me just explain in 25 words or less how gas chromatography works. When you inject a sample that has a mixture of compounds into a gas chromatography instrument, that instrument's power is, in separating that mixture into its component pieces and telling you how many different things are in there, it doesn't tell you anything at all really about what those things are that are present in the sample. It just

separates them all out. That's its power. So in this case, this would have been a sample that I injected into the instrument. This is an indication of intensity, just how much of it is there. And is this access right here is time, typically, minutes. So I inject the sample. I'm doing that for a reason. There's a little blip in there. I inject the sample and then I start the clock and I wait. And -- and the sample goes into the instrument. It's basically a very fancy heated oven. And inside that oven is a capillary column that is a very specially prepared small diameter tube that's been chemically prepared. And when the sample goes into that tube in this oven, there's a carrier gas that pushes that sample through. And some of the compounds that are not retarded for any reason tend by -- by chemical affinity or size or whatever, tend to blow through very quickly. And so the things that blow through the column very, very quickly will go through that column and they'll come out the other side. And we have what's called a flame ionization detector. It's a very non-specific detector. It'll detect virtually any hydrocarbon that comes rolling through the -- the instrument. And it just gives you a peak. And the size of that peak is directly proportional, how much of this stuff is present in the sample. So I did my injection and I wait and I wait and, oh, and here, this is an indication that there's a compound coming through. And it came through pretty darn quickly. So

there's a little bit of that. And you can see that there was a total in this particular sample of six compounds that were separated by the GC instrument.

Q So it's all going through this -- this tube, this --

A Uh-huh. (Affirmative)

Q -- this column. And then it goes across a flame. And -- and when it across the flame, it burns and that's --

A Yeah. Yeah.

Q -- what causes the peak?

A I just gives you an -- an absolute intensity. It doesn't say anything about what it is it's burning. It's just some unknown hydrocarbon in the case of a flame ionization detector.

Q Okay.

A Okay. So the ethanol responds very effectively as do a lot of the other things that are present in -- in headspace. Now you'll note that what I tried -- what I've tried to do here is do peaks that have decent what we call chromatographic shape. Okay. And any -- any errors are in my authorship, not and necessarily in the chromatography. What you want is peaks where both shoulders or both -- both of these little edges here are -- are like mirror images. You don't have things going on like that where it's tailing out on one side. You also want to avoid things like this. Now what do you suppose that means? It means that the two things are

coming through the column. I got two -- two different compounds that are -- have been going through the column. And they're coming out, but they're coming out so close together that when my FID detector is giving a -- a response, this one doesn't get time to go all the way back down to the baseline before it detects more of the next one. That's an example of something that's called two peaks that are not resolved. This is what's called poor resolution. And what's that's giving you is a clue that GC isn't going to solve your problems if those two compounds happen to be present in your sample. That's an indication that they're just -- they're retention times and that's what this is called. You're going to probably hear about that. This is called retention time. Their retention times are just too close together for this to be an acceptable technique for that kind of a measurement.

Q What --

A Now it may look like this. Sometimes it will look like that. It gets pretty subtle depending on how much overlap and how much relative size of the different constituents are present. Anyway, this is sort of my excuse for representation of one of the quality control samples that this laboratory does as part of its regular -- with every time I run a batch, I run what they call a mix. It's a mixed standard. And it includes -- this is -- that's acido nitrile. This is their -- their internal standard peak that's in every

sample. It's a diluent that they put in to every sample. And these other five peaks are five mixed volatiles that might be present in a blood alcohol sample that they want to be able to be demonstrate and to assess whether or not the technique is working effectively, whether or not this GC is working probably, whether or not you get separation between every one of these peaks or whether or not you have stuff like this going on.

Q Okay.

A Okay.

Q And were there -- was there some sort of issue with the -- the resolution in this case?

A Well, yeah. If you look in their -- in their procedure, their standard operating procedure -- let me find the page. I think -- there it is. Okay. Page 18 of 21. Okay. I mentioned that the GC never tells you what it is, it just tells you how many things you have. The way you determine and confirm what something is, is by running known samples of in this case ethanol, and we run a known sample through this column and we figure out what its retention time is. Then we run ethanol through a different column. And it's a different column with different chemical characteristics, different performance characteristics.

Q Tell me physically how we do that. So we're shooting -- we've heated up the -- the blood sample, we've

turned it into a gas and we've injected it into this machine. Does it go through one column and -- and then a second column or what happens?

A Well, you're putting my artistic ability to task here. This is in the oven. And we actually have one column, but I got two colors.

Q Okay.

A And another column. And I only have one injection point. And -- oops, injection. There's a actually a splitter that actually take -- I only inject one sample out of my one vial, but it takes the sample and it splits it. So half of it goes down the blue column and half of it goes down the red column. So I'm essentially doing simultaneous analysis on two different columns. The idea being that you'll get one example here where you've got one, two, three, four, six different things coming off. And that when I run them through a different column and I see how they come off, maybe this time -- maybe this time it's one, two, three, four, five, six. So the things come off in a completely different order. Different order with very, very different retention times. Now under quality standards, if you were to just run alcohol with a GC instrument and with one blue column and get a result, scientifically that would be invalid. That would be an invalid conclusion to say that that was ethanol. Even if you've ran a known standard of ethanol and said but I know is

ethanol, because that's where ethanol comes out, that's insufficient because there's hundreds of thousands of things out there and bet your bottom dollar there's something else that's going to come out of that same retention time. So the way you get around that scientifically is you either use a different analytical technique, completely different that relies on different scientific principles, or you can use a different column. Now under quality standards like Society of Forensic Toxicology is a -- is a national organization for forensic toxicology that deals with this kind of testing, they say it's acceptable if -- you can use a second GC technique if the columns give significantly different retention times and significantly different elution orders, or the order that these things come out. So this -- you can see like this case and it's really just scrambled them up. So don't run into the risk of misidentifying something.

Q Okay.

A Okay.

THE COURT: Mr. St. Louis, can you hold on for one minute. I have a 3:00 o'clock scheduled, which clearly I'm not going to be done. Mr. Shrieve (phonetic)?

MR. SHRIEVE: Yes.

(TO OTHER MATTERS)

MR. ST. LOUIS: Do you want to take a break for a few minutes?

THE COURT: Can we? Why -- yeah, why don't we break for about two to three minutes. We'll see if we can deal with it.

MR. ST. LOUIS: Sure.

THE CLERK: All rise.

(Pause - off record discussion)

THE COURT: Let's give it a few more minutes on that. We're on the record in this one still? Yeah, go back on.

THE CLERK: Yes, we are back on.

THE COURT: Where did Pashion (phonetic) go. Did she --

MR. ST. LOUIS: She may have stepped outside, Your Honor.

THE COURT: Okay. Well, let's get her in here. We were in the middle of a question or almost the middle of a question. Go ahead. We're back on the record in the State versus Marrama. Let the record reflect the presence of this tape, the -- the presence of the Defendant and counsel and the State. Why don't you continue, Mr. St. Louis.

MR. ST. LOUIS: Thank you.

DIRECT EXAMINATION CONTINUED

BY MR. ST. LOUIS:

Q And Ms. Arvizu, you had just explained to us, I guess, the -- the -- we were talking about the mixed standards

and I guess what they should look like?

A Yes.

Q Okay. And I think it might -- let me ask a followup question. I asked you about how we get the two columns. Is it sort of like a Y splitter, like when you inject the -- the gas into the tube and then half goes through one column and half goes through the other column?

A Yes.

Q Okay. All right. Now you had I guess started, when -- when I asked you illustrate this, you had expressed some concerns about the actual method used at the Tucson Police Department and Crime Laboratory.

A Yeah. On page 18 of 21 in the blood alcohol procedure manual, this is their documentation of the retention times for their mixed standard. And you can see they have two columns called front and middle. Under the second column there, the one that's called BAC1. If you'll look, you can see the acetone and acido nitrile essentially have co-eluting, and that is an indication that those two things are -- are coming out at exactly the same time. Well, not exactly. 1.802 and 1.801. Frankly, by running the mixed standard, you cannot resolve them. You wouldn't know that one was 1.802 and one was 1.801, because they're essentially on top of each other. You don't have that degree of discrimination using this technique on the mixed standard. That is very objective

evidence that their method is not working to resolve the compounds as desired. It's particularly important because of acido nitrile being the internal standard.

Q Okay. Did you review the mixed standard that was actually used in Mr. Marrama's run?

A Yes.

Q And is the -- I think that it's in Exhibit C, is it not?

A C, yes. It's in C.

Q Okay. And I'm going to display on the wall --

MR. ST. LOUIS: I don't know if I'm going to need you to move certain -- yeah, I guess I am. I apologize. Thank you very much. Okay.

Q So I am displaying what's been written as page 5 of 20. Is that 5 of 20 on Exhibit C?

A Yes.

Q Okay. And we can see that the sample I've used is labeled as six mix.

A Yeah. That -- that -- using their terminology, that means it was the sixth vial or the sixth injection of this particular batch and the identify of that is mixed.

Q Would you -- would you show us where it is we're looking at?

THE COURT: Which one is it?

A Yeah, it's the -- it's the long, thicker one, the 20

page one. I'm sorry.

THE COURT: You're trying to take my courtroom. And which page?

MR. ST. LOUIS: Page 5.

A Page 5.

THE COURT: Do you know where she's looking at, Ms. Natividad?

MS. NATIVIDAD: She's looking at -- they're looking at this.

THE COURT: This?

A Yeah. Right down there.

THE COURT: Oh, okay. And is there some desire, hope that I'm actually going to see that or --

MR. ST. LOUIS: Yes.

THE COURT: Oh, that's an interesting concept on your part.

MR. ST. LOUIS: We tried to get a screen.

THE COURT: I have this in front of me.

MR. ST. LOUIS: Okay.

THE COURT: My eyesight is not --

MR. ST. LOUIS: Can you see the large view, the enlarged portion of the sample I've used?

THE COURT: I can sort of -- I can see this -- yeah, people underline things and put red blocks around those things. I can see that.

MR. ST. LOUIS: That's all we need you to do.

THE COURT: Okay. Those I can see.

MR. ST. LOUIS: Okay. All right.

Q So and -- and are there in fact six different substances that are being tested for in this sample?

A Yes.

Q Okay. And -- and we have a list of those I guess at the bottom; correct?

A Yes.

Q The first is acid aldehyde?

A Yes.

Q What is that?

A When I tell you what these things are, you take offense, so I'm just going to say these are all a series of what are called volatile organic carbon compounds, VOC's, that tend to go from the liquid into the headspace and be sampled by this technique.

Q Okay. For -- for those of us that -- that may not have gone quite as far in science as you would, would acid aldehyde be a breakdown product of ethyl alcohol?

A Yes, it is.

Q And would -- would methol -- methanol be wood alcohol?

A Yes.

Q Is ethanol drinking alcohol?

A Yes, that's the targeted analytive (phonetic) interest here.

Q Okay. Acetone is -- is --

A It can be present biologically as a result of a variety of medical conditions. It's again another volatile organic. It just has a ketone group instead of an alcohol group.

Q Okay. And isopropanol is rubbing alcohol?

A Yes.

Q And acido nitrile -- or I'm not saying it correctly.

A Pretty close. Acido nitrile.

Q Acido nitile is the -- the standard that's in everything throughout the whole run; correct?

A Correct.

Q And then when we look, we see that there is a graph that has all of this -- has six peaks; right? One for each --

A Yes.

Q We have --

A Each component.

Q We have the acid aldehyde peak to the most left, then our methanol peak, then our ethanol peak, and then our I guess acetone peak, our isopropanol peak and our acido nitrile peak; correct?

A Yes.

Q One of the things that you talked about was whether

or not the peaks resolved down to the baseline; correct?

A Yes. Yes.

Q Any issues with that here?

A Yeah, well, there is a minor issue with -- it looks like between acetone and isopropanol. Although quite frankly, this chromatogram challenges my eyes too. And as a data reviewer, I would never have accepted this. I would have always expected them to blow it up enough so I can actually see and interpret baselines.

Q Okay. All right. So this is one of the two columns. This would be like, I don't know, either the blue column or the red column as you've drawn on the board; correct?

A Yes.

Q And then we have the printout of a second column; correct?

A Two pages -- two pages later.

Q So that would be page 7 of 20.

A Yes.

Q And against it's the six mix.

A Uh-huh. (Affirmative)

Q Right?

A Yes. Same sample injected at the same time. It's just going down a different column.

Q And in this case, we do not have six mixtures

detected by the gas chromatogram.

A They're only five peak on this spectrum.

Q Okay. So we have methanol, acid aldehyde, ethanol, isopropanol and acido nitrile.

A Right.

Q We have lost the acetone.

A Yeah. Like I said, the instruments are stupid. They don't know what compound is what. They just know that you've told it that if it comes out of this retention time, label it with this name. And it appears that what is happening here is that the acetone is co-eluting with the acido nitrile. That is -- it's not -- it's not just like this. It doesn't even have a little shoulder. They're so close that it can't even tell. It just makes this peak a lot bigger.

Q Okay. So as part of our quality assurance to make sure that the gas chromatograph works properly, we are testing six different substances.

A You're actually testing five. The -- the sixth component is simply there as part of the analytical method.

Q Which is what?

A Acido nitrile.

Q Okay. And you say we're really testing five different things?

A Yes.

Q Okay. And --

A But we're using the sixth to do that testing.

Q Okay. And the gas chromatograph, when it was used the day that Mr. Marrama's blood was run, in the same run, was unable to identify those five substances in the two columns.

A That's correct.

Q That seems like a problem.

A We call it a quality control failure. Although ironically in this case the lab apparently doesn't recognize that, they've -- they sort of institutionalize this failure in their method by actually writing it into their method.

Q Okay.

A The fact that they had co-eluting peaks is actually written into their method.

Q You talked about gas chromatography. The strength of it is you can separate out one thing from another.

A It has the potential to do that.

Q Okay. What does it mean when our quality assurance sample can't even detect all of the substances that are supposed to be in the vial that we're testing?

A It means the method isn't working in the way it was intended.

Q You -- you used a -- a phrase when -- when we were discussing this case I think, fatal error?

A Yes.

Q And what is that?

A When you're -- when you're processing samples, there are some kinds of things that can happen where you can recover and continue going on. Those are essentially reconcilable kinds of errors. But then there are fatal errors that mean that batch can't be run and reported because it didn't meet all the essential criteria, all the quality control criteria that you put in place to ensure the reliability of the run. The failure to effectively resolve target compound from an internal standard would be considered a fatal error that the laboratory should investigate and -- and resolve. You know, it's -- it's really very interesting. They -- they run for three and a half minutes, yet all the compounds come out within one minute of that three and half minute cycle. So they're trying to get six things separated from each other, yet all coming out within one minute.

Q Well, they don't have -- they don't have --

A No, they're not -- they're not using their whole -- they're not using their whole available space here. They got three and a half minutes. But the way their -- their operating conditions are, they're getting all six of their compounds all coming out within one minute. That makes it a lot harder to effectively resolve them.

THE COURT: Okay. We'll take a very short quick break.

(TO OTHER MATTERS)

THE COURT: I apologize to you, Mr. St. Louis and Ms. Natividad for the.....

MR. ST. LOUIS: Yeah, we understand life intrudes.

THE COURT: And actually --

MR. ST. LOUIS: That's the point of this.

(TO OTHER MATTERS)

THE COURT: Do you want to go again for another three minutes before I break you up again, Mr. St. Louis, or do you just want hold till we find out?

MR. ST. LOUIS: At your pleasure.

THE COURT: Why don't you go ahead?

MR. ST. LOUIS: Okay.

THE COURT: I'm retaining so far.

DIRECT EXAMINATION CONTINUED

BY MR. ST. LOUIS:

Q Ms. Arvizu, you -- you were making statements as if the -- the laboratory could control where these come out in the three and a half minutes. I mean, they have no control over that; do they?

A Well, in a sense, yes, analysts do. And it's by varying the operating conditions of -- of the instrument. And that's -- that's part of the method development that goes on before you start --

THE COURT: I'm going to stop you again a second.

(TO OTHER MATTERS)

THE COURT: Go ahead. We're back on the record starting the case with the Defendant and counsel present.

DIRECT EXAMINATION CONTINUED

BY MR. ST. LOUIS:

Q Ms. Arvizu, I had asked you if it was possible for the analyst to change where the peaks come out when -- on the column when you are -- well, not on the column, but on -- on the chromatograph, I guess, when you are testing the mixed standard.

A Not when you're testing it as a sample. Then you're just running it under the -- under the procedure. And it's going to come out where it's going to come out for those conditions. But by varying conditions, by varying the temperature, by varying the operating conditions, flow rate, things in -- in the instrument, the actual operating parameters, yeah, you can change how things come out. So I'm not sure I under -- understand your question. You don't --

Q Well, I mean I -- I guess I'm saying -- and you're saying like maybe the answer to this is no, but I was assuming that when you -- you put the gas into the -- the column, I mean, it's always going to come up in this one spot and you don't really have a choice about that. So if things overlap, they overlap and you're kind of stuck with it, but it sounds like you're saying that's not the way it is.

A Oh, no. That's what scientists do to figure out why that's happening and do the investigation to figure out -- it's a balancing act sometimes and a tradeoff depending on the columns that you use and the conditions and the instruments. And I mean, I see these columns used a lot. I've not seen this as a problem. Part of it's their choice of internal standard. Acido nitrile is a relatively uncommon internal standard. So if -- there are -- there are things that could be done to mitigate or -- or analytically to approach this differently, but once they set their method, they have to follow it.

Q Okay. And -- and you're saying that five out of six is -- is not good enough?

A No.

Q Okay. Were there any other issues with the specific blood run in -- in Mr. Marrama's case?

A Yes.

Q Tell us about that if you would.

A If you could move to the next spectrum.

Q Are we going to talk about the blanks next?

A Yes. Please.

Q Okay.

A After --

Q I -- I think we're back on 5 of 20.

A Okay.

THE COURT: Could you hear that Ms. Natividad?

MS. NATIVIDAD: No, Your Honor. I'm sorry.

THE COURT: They're back to page 5 --

MS. NATIVIDAD: Oh, okay.

THE COURT: -- on this document; right?

MR. ST. LOUIS: Yes, Your Honor.

THE COURT: Well, your numbering on here is --

MR. ST. LOUIS: I didn't do it.

THE COURT: All right. It looks like I did it, which is the problem.

MR. ST. LOUIS: It looks like I did it.

THE COURT: All right.

MR. ST. LOUIS: There's a four that's crossed out and then five has been. Presumably Ms. Connelly (phonetic) has initialed it.

THE COURT: Oh, yes.

A Good practice. Good quality control practice.

Q Initialing and --

A Yes.

Q So -- okay.

A So that you know it wasn't just somebody going in and editing it.

Q Okay. All right. We are looking at this -- I guess we have two chromatograms on this page.

A From two different samples, yes.

Q Okay. But presumably in the same column.

A Well, that would be hard to tell; wouldn't it? This is a really interesting data presentation. I've not -- I've not seen this before, because in looking through these data, I can't tell what column was used when they elect to present the data with two -- two samples on a page. Now when there's one sample on a page as on the very next page, page 6, then it tells me which channel I was -- that's an indication channel A or B, channel -- in this case, front, middle -- which column I was using. But for page 5, that -- this is, I believe that the data exist in the instrument. It's an artifact of their program for actually extracting and reporting the data, but who knows which column this is from. I can't tell.

Q Okay. Anyway, we have I guess one of the columns on page 5 where we're looking at the blank; correct?

A Yes.

Q And we can see the sample ID. It's says five blank.

A Yes. Fifth sample injected after the four calibration standards.

Q And it's actually labeled as a blank?

A Yes.

Q Okay. And our -- our blank is the acid -- I'm not going to get it. Ac -- say it for me.

A Acido nitrile.

Q Acido nitrile. I always want to put an R in there

or something. Acido nitrile. That is what we're testing in the blank; correct?

A You're not testing for acido nitrile. Acido nitrile is simply the -- the solution that was used to dilute the blank sample which was actually purportedly an ethanol-free water sample. That's actually the sample that's being tested. Acido nitrile was added to it as the -- as the internal standard for purposes of the analysis, but what I'm testing is -- is supposed to be an alcohol-free water sample.

Q Okay. We have the acido nitrile peak and then prior to it, we have a second smaller peak.

A Yes.

Q What is it?

A Well, it appears to be alcohol, because it's coming out of the alcohol retention time on both -- both columns, this one and the next one that we'll see in which the blank was run.

Q All right. Let's take a look at the next column. We're looking at column two. Now that's on page 6 of 20?

A Yes.

Q Okay. And that's -- it's the one that's the --

A It's the very next page.

Q -- one -- one chromatogram per page.

A Yeah. Here, I can tell that it's middle column, the single one.

Q Okay. And again the sample ID is five blank.
A Yes.
Q And it's the acido nitrile?
A Yes.
Q Did I get it right?
A Got it right.
Q All right. Now in addition to the acido nitrile peak, we have what appears to be two peaks prior to it.
A Yeah, the first one that's just inside one minute, if you raise -- if you'll look closely enough at the baselines of virtually any of the injected samples, you'll see that as just an air peak. It's not indicative of -- of a contaminate or anything else in the sample. It is simply an artifice of the analytical process.
Q What -- what about this second peak?
A Yeah, it looks like ethanol.
Q How do you figure that out?
A Because it's present at about the proper retention time for ethanol on both columns.
Q Okay. If -- if we -- okay. Is it a problem if we have ethanol in a blank?
A Yes.
Q Why?
A That is an indication that at some point in the analytical process, the laboratory's practices are such that

it has enabled alcohol from an external source to get into an unknown sample. And -- and in this case, it's not an unknown sample, it's a blank. But what it's telling you is that's objective evidence of the fact that this laboratory, for whatever reason -- and not having been there I can't tell you what that might be -- but small amounts of ethanol are finding their way into a blank sample and that shouldn't happen. Now it's particularly important in -- in my review of these data, because of the lab's practices for handling the blank. It doesn't appear that the blank is processed contemporaneously with the analytical sample. If the blank was pro- -- if they processed half of the batch of analytical samples and then the blank and then the other half of the analytical samples, that kind of processing would afford the opportunity for the sample to ex- -- for the blank to experience the same conditions and environment that the analytical -- that the unknown samples experience. The way they do it is they prep the quality control stuff up front, and that includes the blank. And then they start prepping the unknown samples. That's contraindicated by good lab practice, because the purpose of the blank is to serve as a protector for the analytical samples. And so that if the -- if the analytical samples have the potential to be exposed to unacceptable conditions, that's why you want the blank there to be able to measure it. So they actually ran this -- prepared and ran this blank way

before the analytical samples.

Q Tell me if this is just ridiculous, but it appears to me that if you take pages 6 and 7 and you hold them together and you sort of line them up that you can see that that second peak comes out where the ethanol peak is if you hold it up to the light. Does that work or is that just dumb?

A Your homemade light box here?

Q Yeah.

A If the scales are the same, you should be able to tell the relative position that way, yes. Of course, the instrument is not going to pick it up as alcohol. You know, the instrument only identified acido nitrile. It's too small and you can set the -- the -- that's an analyst control variable. You can set that and decide how low you're going to go, what you're going to try to pick up. They're not going to pick it up, so it's not going to report it in the little -- in the little table of what's present in the sample. So yeah, you have to use something like the -- the very low tech light box to be able to identify its location.

Q Okay. The purpose of the blank is to make sure that we're not contaminating samples that are supposed to be alcohol-free with alcohol.

A One of the most important -- and in the case -- certainly in the case of forensics -- an absolute essential data quality criteria is what's called representativeness.

And what that means is, quite frankly, I can have a great deal of confidence in these kinds of analytical techniques, in the accuracy of these kinds of analytical techniques. The actual instrumental measurement, it -- it's easy to have a lot of confidence in that. What's much more difficult is to be able to assure yourself by control of all of this process that that result is representative of the concentration in the subject's blood at the time the sample was drawn. That's what's really germane to a forensic case. The extent to which you can have a good deal of confidence, that everything's in control and that analytical result represents that point and space in time. And that's what's a problem when you don't control blanks effectively enough. You don't control contamination enough. Is there a -- was there the opportunity for the introduction of alcohol from other sources?

Q I guess what I'm getting at is once you have -- once there's ethanol popping up in your blank, isn't it a do over at that point?

A Not under their procedure. They have no requirements that -- no criteria that have to be met. There are no -- this is like -- let's see, what's an analogy. It's like having -- saying that you have a curfew, but no time. So they say you have to run a blank, but there's no pass/fail criteria. There's nothing -- you have -- and not even pass/fail. There's nothing which you have to go back and

investigate and look further and see if there's, you know, how pervasive is this? Is it another -- how do they know? The only other samples that they're ever running in this batch are known samples that have ethanol in them or subject samples. So if small amounts of ethanol are creeping into everything, they just won't know it. Blank is their only chance to detect that.

Q Okay.

A Now this a very small amount admittedly in this blank. This is a very small amount of ethanol. But based on my experience -- and I've been involved in troubleshooting a lot of volatile organic contamination incidents in the laboratory. And it's -- it's -- it tends not to be a real homogenous. It tends not to be a situation where every sample gets the same amount of volatile organic contaminant in it. Depending on the source and the origin, some samples show a lot, some samples don't show any, you know. So any time you see it, that's when the little scientific inquiry button should be triggered and you should be looking into it. But their procedure, when they have their -- checking the quality control of your run on page 6 of 21 in their --

Q That's exhibit B again; right?

A Exhibit B.

Q Okay.

A 6 of 21. It says post-run analysis. It has -- and

he checked the linearity of calibration and the -- the controls -- check the controls for accuracy. Those are all positive controls. Checking the duplicate precision. And there's nothing in there about a blank. It -- it's a little absurd to think it, but the blank could show huge amounts of contamination and they could still be completely compliant with their own procedure by reporting that result out. I don't -- I don't suggest that that would be the case, because, you know, we appear to have competent chemists here. And that doesn't -- that would be inconsistent. What I'm more concerned about is that they're not -- they're not a little concerned about gosh, we've got something showing up at low levels, why aren't we looking into this?

Q Okay. From a scientific point of view, if we have ethyl alcohol, the -- the substance that we're testing for in the blank, should we go ahead and do the run anyway and see what the results are? Can we use the results?

A Different labs have different criteria for that decision. That is a decision that's generally documented in their procedure so that the users are aware of that. That's essentially where you set the bar. You set the bar low if you want to get over it pretty easy; you set the bar high if the decision that you're going to make based on the data is important, that's when you set the bar high. If it's a pretty low value decision, you can probably set the bar pretty low.

Q So it depends on how important the result is that we're looking for?

A Exactly. How important the result is to the decision making process. That's a fundamental precept of analytical quality assurance that if you're using the result to make an important decision, you should set the bar higher. The quality control requirements should be higher. The expectations should be higher. If the decisions are not severe and the, you know, if it's not something of important fiscal or environmental or whatever consequence, if it's not a big dollar decision, you can get by with quick and dirty kinds of analysis when you lower the bar a lot. That's a decision that has to be made by each laboratory depending on the intended use of their data.

Q Okay. What about specifically the blood samples that are supposed to be Mr. Marrama's? 29 and -- and 30. I think that's Exhibit C.

A Yes.

Q Do you see any issues with those?

THE COURT: Well, let -- is something on.....

A This is the small one.

THE COURT: The small one.

A C -- D. Exhibit D.

THE COURT: Okay.

A Five pages.

Q What is the exhibit? What is --

A D. Exhibit D.

MR. ST. LOUIS: D as in dog.

THE COURT: Do you have it, Ms. Natividad?

MS. NATIVIDAD: Yes, Your Honor.

THE COURT: And what's the page?

A Well, we can just start with page 1. I've -- I reviewed an awful lot of data in my day and I've never seen a sample ID for an unknown sample identified with a vial number.

Q Well, what's the problem?

A It's not the unique sample ID number.

Q Well -- well what --

A Okay.

Q -- is an example of a -- a -- a unique sample ID number?

A In this case, 0708-26-0123. And --

Q Any particular reason you chose those numbers?

A Here's the deal. If you're analyzing unknown samples in a -- in an analytical testing laboratory, your most fundamental requirement is to assure unambiguous correlation of a result with the sample that came in the door. Okay. So that you never have to make assumptions. You never have to -- oh, it must have been this sample or it must have been that sample. If you're -- if you're treating me for my blood sugar level -- sugar level, I want to make sure it's my blood sample

that you're responding to the results of and not the lady that's sitting in the bed next to me in the hospital. You know, it's -- you've got to have absolute -- a clean unbroken chain of -- of correlating those. Now the reason they put an -- a field on analytical instruments that say sample ID is so you can uniquely identify your sample. Now I've seen dozen -- hundreds of different ways of identifying samples. And half the battle labs is often figuring out how they do that, what their convention is for ensuring that every single sample gets a unique identifier. Now I understand from other documents that the number I gave you previously is the unique number for Mr. Marrama's sample.

Q What we call the case number of report.

A Yeah. But you can't -- you can't tell that from this, because as this is prepared -- and you can see at the top of this page there's this little header -- header here --

Q Right.

A -- that has his -- the sample ID and his name and parenthetically it says A. In -- in my experience, I would interpret that as being obtained during the report writing software part of the process, the post analytical processing, somewhere where you go into the system and you say pull this data from here and that data from there and create me this kind of a report. This is not raw data. The raw data is the data you see down at the bottom where it says data file is

starred/data/CLC August '07 and then a date and then comma 29. Again, there's that vial 29. And under sample ID, 29 is the sole identifier. That is the raw data that resides in the instrument associated with the chromatogram. Is it possible for me as an independent assessor to unambiguously correlate that with this individual's unique sample ID? It is not, because that's -- that's something that's put together after the fact. There should be some kind of a sample lookup table, if you will. A sample file, a -- a -- something that will -- a lookup chart, a secret master list that tells you for these vials, these are the corresponding unique identifiers of the samples. Because, frankly, sample 29 just tells me nothing.

Q Okay. And -- and you're saying that where it says on there the '07, '08, et cetera, Marrama Michael, that's not something that's on the -- that's not the name of the sample, that's something someone added after the fact?

A Well, just based on my experience with these -- with these systems, and I don't know which particular version of which data system they're using here, but Varian is not a real commonly -- not as common as some of the other instruments. It appears to be that the -- the raw data reside in one location and the analyst probably goes into the system and says pull this data from this file and generate this type of a report. So there -- there should be some kind of lookup table, but I'll just tell you that as an independent person, I

can't draw that conclusion.

Q Now, in this case, we have a result for ethanol and acido nitrile.

A Yes.

Q And we have our two peaks. But in addition to that, we have a number of small peaks along the baseline.

A Yes.

Q What are those substances?

A I don't know. They are volatile organic compounds detected by the instrument during the analysis of the sample in vial 29.

Q And we know that this isn't just noise from the machine somehow?

A Nothing appeared to be, because of comparing it to other samples with approximately this kind of scale. It doesn't appear to be that. It's also not continuous throughout the run. It's only in that general area. It doesn't continue out to the long retention times.

Q Okay. So there's something in this blood sample and we don't know what it is?

A Yes.

Q Do we see the same thing in column two on the next page?

A Yes.

Q Do we see it in vial 30 in the first column on page

3?

A Yeah. Purportedly, this is a duplicate sample of sample 29.

Q Let me go back. Page 2; correct? Oh, I'm sorry, page 3.

A Page 3.

Q That's right. I misspoke. So pages 1 and 3 --

A That's --

Q -- are supposed to be the same sample. They're supposed to be the -- the first and second columns of --

A Correct.

Q -- vial 29.

A Yeah.

Q I misspoke. I'm sorry. And page 2 is the first column for vial 30.

A Yes.

Q Be the same thing in there?

A Yes.

Q And then page 4 is the second column for vial 30?

A Yes.

Q How about in there? Do we see the same things in there?

A Yes.

Q And do we know what these are?

A No.

Q All right. You said that in addition to Mr. Marrama's sample, there was a -- a whole blood control that was run; correct?

A That was the seventh injection on --

Q In Exhibit C?

A -- that's in Exhibit C.

Q Do we have the same type of extra peaks appearing that?

THE COURT: Which one -- what are you looking at?

A This is an eye exam; right? This is -- these little bitty chromatograms are rough.

THE COURT: On page --

A This is page 8 of 20.

THE COURT: All right. 21? On page 21?

MR. ST. LOUIS: 8 of 21.

A 21?

Q Or is it 20?

A This one's 20. The procedure is 21.

THE COURT: Oh yeah. Page 8. And what are we looking at here?

A Yeah, right here. This is a whole blood sample.

Q The top column; correct? The top chromatogram?

A Yes.

Q Okay. Do we see the same type of extra peaks in there?

A The scales are different and I really rather have the scales to be the same to draw that kind of conclusion. The no -- the baseline looks a little nosier, but this is really an eye exam.

Q How about the larger samples in the second column?

A Oh.

Q In whole blood control.

A Oh, yeah. There I can actually see it.

Q But what page is it, please?

A This is page 9 of 20. Yeah, that's not quite as exciting as your actual subject sample; is it?

Q There are more peaks in the subject sample --

A Yeah.

Q -- than there are in the whole blood.

A Yeah.

Q Do we know what they are?

A No.

Q Ma'am, based on all of the issues that -- that we have discussed today, can we rely on the results obtained in this case?

A I would say that there are two -- two qualifying issues. One is the validity of the method used by the laboratory and its demonstrated inability to -- to resolve the volatiles of interest. And the second is the comparatively weak quality control implemented and applied through --

throughout both by virtue of the QC samples and blank and such incidences. So the first compromise is the validity of the method. Validity means is it appropriate for its intended use, the reference method that they reference emphasizes how important it is to successfully resolve this compounds. And the second is the reliability of can I -- once I get past the validity of the method, how reliable is the method. The big issue there is with regard to the representativeness.

Q So based on all that, is it your opinion that we can rely on the results obtained in this case?

A No.

Q Thank you. That's all I have.

THE COURT: Ms. Natividad, do you want to take a break for a moment?

MS. NATIVIDAD: No, Your Honor.

THE COURT: All right. Go ahead.

MS. NATIVIDAD: We want to go home on time. Brutally honest.

JANINE ARVIZU

testified as follows on:

CROSS EXAMINATION

BY MS. NATIVIDAD:

Q Good afternoon, Ms. Arvizu.

A Good afternoon.

Q You can all the way from New Mexico?

A Yes, ma'am.
Q Wow. How was the trip?
A There's a direct flight on Southwest now.
Q That's cool.
A So it's wonderful.
Q That's cool.
A But the flight home is a little rougher.
Q Yeah. Ms. Arvizu, what is ASCLD?
A The American Society of Crime Laboratory Directors. It's kind of a rough acronym, but it's essentially a -- a trade organization for forensic laboratories.
Q Okay. And isn't that -- ASCLD accredits the criminal laboratories all over the country?
A ASCLD has an organization called the Laboratory Accreditation Bureau. It's -- it's not ASCLD itself, it's sort of a -- a separate entity within it that does serve as an accrediting agency for forensic laboratories.
Q Okay. And ASCLD standards require that each laboratory have in place a comprehensive quality management system to ensure the accuracy of test results in all disciplines; is that correct? Including comparative analysis areas.
A That -- that does sound like their -- their objective.
Q Okay. And -- and policies and procedures as well as

objective proof of compliance must be -- must be maintained in a lot of areas. These laboratories have to comply with these rigorous standards such as examiner qualification, training and competency to be accredited by ASCLD; is that correct?

A I have a lot of experience with accreditation programs. And --

Q Okay.

A -- ASCLD is probably one of the weakest -- technically weakest accreditation programs that I've got experience with. The accreditation period is substantially longer than is typical. The accredited -- the time period between assessments is five years which in the world of analytical chemistry and the world of laboratory operations is a very long time. And under their Legacy program under which I understand that this laboratory was accredited, requirements are not requirements, they are -- they can be essential or they can important or they can be desirable. And -- and so it's, you know, I'd like to have you home by 11:00 o'clock, but there's no consequences if you're not. So I -- it's -- it's just my judgement that compared to -- compared to other accreditation programs, the ASCLD accreditation program is relatively weak technically. It's also my experience that in this country in recent years, in instances where there have been ASCLD -- there have been forensic laboratories that have had to actually be shut down because of either just poor

performance or actually fraudulent operations. Those labs held ASCLD accreditation at the time they were shut down. So ASCLD accreditation -- in fact, any accreditation should never be misconstrued as a guaranteed gold seal of approval that you can trust everything and you don't have to do due diligence. Accreditation simply is an independent body, in this case, crime laborator- -- other crime laboratory directors coming in and saying we -- we are attesting to the fact that you met our requirements. It's then incumbent on the data users to assess in any particular case and to do their own due diligence. It's -- it's a first step and it's a good first step for forensic labs, but it's not sufficient to ensure data users acceptable quality.

Q How about their ISO international standard?

A That's a step up and ASCLD is gradually making a transition to -- where they're moving their people from -- from the Legacy program to compliance with ISO. ISO is the standard that -- that I have been trained under and -- and operated under for sometime. It's a more technically rigorous standard, but again, it depends on what you put into it.

Q And you would agree with me that control and maintenance of standard procedure manuals and scientific protocols is something that ASCLD checks for; correct?

A That is my understanding --

Q I mean, policies and procedures.

A -- that that is something that they have on their list that they can check for. I've read -- I've read quite a number for ASCLD inspection reports and it's not always possible to tell exactly what the scope of their inspection was, but that is on the list.

Q Are you aware that TPD Crime Lab is -- has been accredited by AS -- by ASCLD and it's in the process of getting its certification with international ISO standard Legacy?

A Good for them.

Q You've not been a member of -- of ASCLD or have you -- are you a member of ASCLD?

A No, ma'am.

Q Or have ever been a member of ASCLD?

A No, ma'am.

Q Have you participated in any of the ASCLD lab inspections and assessments?

A No.

Q Have you ever worked in any forensic crime lab like the FBI crime lab for instance or the drug enforcement agency or a gun/firearms agency, any of those agencies?

A No.

Q You've worked with the Department of Energy I -- I take it from -- from your curriculum vitae?

A Yes.

Q Okay. And wouldn't you agree with me, Ms. Arvizu, that the Department of Energy deals more with environmental science versus forensic science?

A They also deal with forensics in some cases, as I'm sure you're aware, they've had their own -- their own issues with respect to some -- some analytical work that ended up in court. From a -- from a quality assurance perspective, forensics versus any other discipline, forensic science in -- in my opinion is really not truly another science. The sciences that are practiced within the forensic field are sciences like chemistry and biology and physics. And those are scientific disciplines that have applications in the forensic -- or in the legal community, but there's not anything different about quality assurance in a forensic arena than in any other. The principles are still the same.

Q Have you ever audited or evaluated the TPD crime lab, you know, as -- as -- you know, the whole lab --

A No, ma'am.

Q -- instead of this particular case?

A No, ma'am. Just -- just limited to this particular case.

Q Okay. So you haven't even seen the TPD crime lab?

A I drove by it today.

Q Oh, okay.

A I was looking for the stacks on the roof and I

couldn't see them.

Q So you do not know what the setup is, you do not know --

A No, I do not.

Q You have not set foot in it. Okay.

A I'd be happy to though. My flight doesn't leave until 6:15.

Q Have you ever worked as a criminalist?

A Have I -- no.

Q So you have not, you know, tested blood on a regular basis in your past life maybe?

A No, ma'am.

Q No. Okay. Have you ever operated a gas chromatograph -- chromatograph on a regular basis?

A For -- for a period of time, but it was one of many instruments that I was operating.

Q Okay. And are you aware that the gas chrom- -- chromatograph is --

A GC.

Q -- being used -- yeah, GC is being used all over the state and -- and all over the country?

A I would certainly expect that to be the case. It's one of the most robust, widely used instruments. It -- it may be one -- it may be the most -- it's very, very widely used. Very robust, well understood technique.

Q And so you don't have problems with the GC?

A Absolutely not.

Q Okay. Okay.

A No, this is a very --

Q Okay.

A -- powerful and effective technique.

Q Okay. Okay. You -- you did though say and -- and I already got that -- and I'll quote you here. You said that the instrument is stupid and that the method -- and I wrote it down here somewhere. The GC method is not working in the method -- in the way it is intended. How -- how would you -- how would you reconcile that with -- with GC being the gold standard, if you will, and you questioning -- you're questioning methodology?

A And I -- I didn't say it was a gold standard. It's widely used and well understood.

Q Okay.

A The -- but I will stand by my lay explanation that the GC is stupid. The GC simply is not a structural elucidation technique. It is not a technique that you put a compound in and it comes back and tells you what the compound is. There are techniques that can do that, but GC is not one of them. So it's stupid in the sense -- and that may have been a poor choice of words on my tar- -- part trying to explain it to a lay audience, but it's stupid in that it only

knows what you tell it. So if you tell it that this is ethanol and I'm really sure this is ethanol because this is a traceable standard and if I know all of the conditions that I run ethanol in, it should come out -- and it comes out right there, then that's an indication to me that it's ethanol. So I can enter that in and say I think this one's ethanol. And then it'll come up and label that peak as ethanol. But it -- the only way it knows to do that is if I as the analyst tell it and I have collected some empirical data to support that conclusion. So it doesn't have any innate ability to take any sample and say it's isopropanol. You can't do it.

Q Okay. Wouldn't you agree with me, Ms. Arvizu, that one of the goals, if you will, of ASCLD is to make sure that there's proficiency testing on the part of criminalists that work in crime lab and that's --

A Yes.

Q Okay.

A Yes.

Q And wouldn't you say that if the criminalists are not doing, you know, what they're supposed to be doing in testing a -- a sample, that they would not be passing their proficiency tests?

A Okay. So here's the thing about proficiency samples. They're intermittent probably in this lab. And I don't have -- I haven't seen the data to support it, because I

haven't seen that part of their quality manual, but at least annually, they're running proficiency samples. Sometimes there are state requirements that require them more frequently. The proficiency samples run under this lab's accreditation requirements are what's called open proficiency samples. They're not blind to the laboratory. When you receive those samples, you know you're being tested. You know they're proficiency samples. It is -- it's not just sort of common sense, but there's actually been some very effective empirical studies to demonstrate that laboratories who know they are being tested consistently and predictably do better on proficiency samples than when those samples are received blind to the lab. That is, they just come in as another blood kit from the field and they don't know any difference. It -- so proficiency samples met -- represent the best possible performance for the lab, because they know they're being tested. And it's one of the things you look at when you do audits, is how much special attention do proficiency samples get in relation to regular samples. But it should never -- never again be misinterpreted as a guarantee. It's good. If you do well in proficiency samples, that's good. And if there are proficiency samples, clearly that's an indication of an issue. But it's not a guarantee that there are no problems.

Q How about validation of test procedures? Isn't that part of what ASCLD looks for as well?

A I've actually read some correspondence regarding that particular issue in other cases and ASCLD doesn't always go to the extent of actually verifying the completeness and efficacy of those validation files during the course of their inspections. Validation files are quite voluminous. Let's see, the last one that I looked at for blood alcohol was about eight binders, each of them was about this thick. So it's a lot of data. So they may pick a method to go look at it, but it's not reasonable to expect that ASCLD has ensured that each of their accredited laboratories has valid methods in every arena. That's simply beyond the scope of their assessment.

Q Which agency shuts down a -- a crime lab if it does not comply with all of its standards? Is there any agency that -- that shuts it down?

A I'm not sure I understand the question. Would --

Q If -- if there's this crime -- criminal laboratory for instance and it's just so shabby, you know, there's contamination --

A Okay.

Q -- all over, is there an agency that shuts it down?

A No.

Q Because --

A There is no -- there's no super agency. And actually that's one of the issues addressed in the National Academy of Sciences report. You're good. You should read

that, because you're going to see some things you're --

Q Okay.

A -- going to recognize. But in the cases where it's happened, it's been essentially the chain of command for the laboratory. So the most recent one I think was in Detroit. There was some in West Virginia, there's some in Texas. And it -- I -- and just from knowing what little I know about it, I think it's just the chain of command of whoever that laboratory reports to. ASCLD has no legal authority to go in and shut anybody down, for example. That's not at all within the scope and the responsibility of an accrediting agency.

Q You indicated, Ms. Arvizu, on direct examination that there's not sufficient detail in -- in the standard oper-- operating procedure of TPD crime lab; is that correct?

A In this particular one, yes.

Q Okay. And you talked about the reagents for instance and the supplies.

A Uh-huh. (Affirmative)

Q And the -- the report shows though that it -- it came from a reputable company, I think, it's -- is the word. So -- so when it says reputable vendor, that does not -- that -- that's not detailed enough for you?

A No. Quality -- quality assurance programs, basically one of the most important elements of a quality assurance program is that you control the quality of your

incoming materials for critical parameters. These are obviously critical components of this testing. And so just saying a reputable -- a reput- -- I don't know what reputable means, you know? What, they don't get -- how many Google hits or something? I -- you know. What it needs to address is things like they have to be this degree of purity. They have to provide traceability documentation, certificates of analysis so that we can demonstrate the traceability of our materials. Those kinds of things.

Q Now let's talk about the samples being in the same refrigerator. Are you saying that there's a problem with that?

A Yes. That's not a good practice.

Q Okay. Well, what about the fact that they are sealed, the vials are sealed and -- and, you know, are you saying that there's a possibili- -- possibility of cross contamination despite the fact that -- that the vials are --

A Yes, ma'am. That's exactly -- it's simply what you do when you're looking to prevent contamination is you look at the entire process and every place my sample is going to be and you say, well, how can I protect at every step of the process. And keeping analytical samples or unknown samples separate from reference materials and standards and controls is a real foundation element. Frankly, I'm surprised they're not doing it not just on the blood alcohol lab in every

section of the laboratory.

Q So is it your testimony then that there should be a separate refrigerator for every sample, for every substance --

A No.

Q -- for every, you know --

A No, ma'am. That's not what I'm suggesting.

Q What -- what are you suggesting then?

A That there would be separate refrigerators, separate storage for subject samples, unknown samples if you will, to be tested and for -- (sneeze in background) -- God bless you -- for the reference materials and control samples, the standards, the calibrators, the meat (phonetic) solutions that have to be refrigerated.

Q Is it your testimony that -- that the fumes from -- from these can --

A That --

Q -- you know, cross contaminate?

A That is precisely how it happens in the case of volatile organics. That -- and here's the deal. If you have them in separate refrigerators, you've eliminated the potential. It's -- so it's an element of quality control.

Q So this -- this -- the fumes alone could subject samples to cross contamination?

A Yes, ma'am.

Q Okay.

A When I ran our volatiles lab, we had to enforce people not wearing aftershave and perfume. And when visitors came through, we didn't let them go into the volatile lab, because you have no control over their use of smelly accouterments.

Q And now you have not done -- or -- or tested the -- the other blood sample design for -- for defense or, you know, defe- -- well, let me just rephrase that. There are two -- if I tell you that there are two blood samples in this case. One was tested at the TPD crime lab. There was one that's specifically for the defense and they want to have it retested, have you --

A I've seen a photograph.

Q Have you retested that?

A No, that would be incompatible with my role as an auditor as I indicated.

Q And you don't have any reports that you reviewed the test and retested?

A No.

Q So you do not know if there's an actual discrepancy in the -- in the independent testing of the second sample to the sample done, that was done by TPD?

A No, I don't.

Q Okay. So in other words, your testimony is just attacking, if you will, the -- the standard procedure manuals

and scientific protocols of TPD, but it does not specifically relate to the blood test results in this case in the sense that it was not retested to show any discrepancies?

A That's correct.

MS. NATIVIDAD: I don't have anything further.

THE COURT: Redirect.

JANINE ARVIZU

testified as follows on:

REDIRECT EXAMINATION

BY MR. ST. LOUIS:

Q Ms. Arvizu, have you testified in court as an expert concerning a forensic science result?

A On dozens of occasions, yes.

Q State courts?

A Yes.

Q Federal courts?

A Yes.

Q Concerning laboratories, in how many states do you think?

A Oh, dear. That's hard. Pretty much coast to coast and internationally.

Q Not to mention federal laboratories?

A Federal, correct. Yes.

Q Okay.

A DEA, FBI and federal cases in --

Q Okay.

A -- Philadelphia and --

Q And you told us that you had been ordered by a judge to be allowed to go in and observe a DNA test being given.

A Yes.

Q Have you --

MS. NATIVIDAD: Objection, Your Honor. What's the irrelevance. We're talking blood tests, blood analysis. We're not talking DNA.

THE COURT: I think he's probably talking credibility of the witness.

MR. ST. LOUIS: Well, outside it is.....

THE COURT: Well, maybe. I'll find out. We'll find out the relevance is. If it's not relevant, I will not listen to it. I'll forget it.

MR. ST. LOUIS: Okay.

Q Have you -- have you done DNA tests --

A No.

Q -- in a laboratory?

A No, I have not.

Q So do you have to have done the actual -- do you have to have worked as a criminalist in a crime lab to know whether or not there are problems with the way the testing was done that affect the reliability of the results?

A No. The principles of quality control and quality

assurance are universal.

Q Okay. Are there two sta- -- I mean, is there more than one standard in -- in science, one for obtaining results used in a criminal case and one for other types of ca- -- obtaining results in other -- to answer other questions?

A Sadly, from my personal perspective, the -- the bar and criminal cases seems to be significantly lower than I'm accustomed to encounter in cases involving labs that test environmental samples, food samples, pharmaceutical samples, things where the decisions are being made to make what is to those companies or to those agencies very important decisions. They set the bar pretty high. I -- I see them much less frequently in the forensic arena.

Q Okay. If -- when you were running the laboratory that produced the results that -- that the Department of Energy used -- was it the Department of Energy?

A Yes.

Q Okay. I -- in your opinion, would they have paid for the results that -- if they were the results that were obtained in this case?

A I think the direct answer I'm going to give you is -- is Navy work where I actually was making such a recommendation to the agency to the -- to the Navy. And I have recommended that they not pay for many hundreds of thousands of dollars worth of analytical work because of the

problems. And yeah, this lab would be doing some remedial action before the work would be received.

Q Okay. Ms. Natividad asked you questions about how labs get shut down if they comply with ASCLD. Do you recall that?

A Yeah. I'm not sure I understood it real well, but --

Q Okay. Isn't -- well, to your knowledge, has ASCLD ever shut down any laboratory?

A No, as I indicated, that is neither their role or responsibility. They have no such authority. As an accrediting agency, that would be completely inconsistent with their role and responsibility.

Q Okay. Even in laboratories in -- in Texas and West Virginia and Michigan where there were -- were real problems, these were labs that were accredited by ASCLD?

A They had active accreditation at the time they were shut down.

THE COURT: And what do you mean by being shut down?

A I mean, they stopped. They closed the doors and they locked them. They stopped them from receiving samples. They subcontracted everything out and went in to go do a massive overhaul of -- of the operations in the laboratory.

THE COURT: Okay. Thank you.

Q And the only way that happens is if -- if somebody

who gets arrested, like Mr. Marrama, hires someone like you to take a look at what's going on in a laboratory and brings a motion like we have today. Isn't that true?

A I don't know that's it's necessarily somebody like me. I think -- I wouldn't be surprised if there's cases where just a lawyer all on their own has managed -- and I know one of them -- has managed to uncover such egregious performance on the part of the lab -- terrible performance on the part of laboratory, that it actually came to light.

Q If in fact there is a two year old sample of Mr. Marrama's blood that is available, would that mean that fatal errors did not occur in the -- the testing that happened in this case?

A No.

MR. ST. LOUIS: Thank you. That's all I have.

THE COURT: Ms. Natividad, do you want to ask her anything else as she's leaving?

MS. NATIVIDAD: No, Your Honor.

THE COURT: All right. Any additional witnesses? You may step down. Thank you very much.

A Thank you.

(Witness excused)

MR. ST. LOUIS: No, Your Honor. Defense rests.

THE COURT: Ms. Natividad.

MS. NATIVIDAD: Yes, Your Honor. The State calls

Ms. Conley.

THE COURT: Oh. That's probably why she's here.

(Witness summoned)

THE COURT: Good afternoon. Do you swear or affirm that any testimony you give will be the whole truth and nothing but the truth?

MS. CONLEY: Yes, I do.

THE COURT: Thank you very much. You may be seated.

MR. ST. LOUIS: Judge, do you mind if -- if Ms. Arvizu and Mr. Marrama trade places so she can assist me?

THE COURT: It doesn't bother me if it's fine with you.

MR. ST. LOUIS: Mr. Marrama's a gentleman. He doesn't mind.

THE COURT: We can bring another chair up or we can grab one out of the jury box if you all want to --

MR. ST. LOUIS: Do you want to sit up, Mike?

THE DEFENDANT: It doesn't matter. I sit back here. That's fine.

THE COURT: All right.

THE DEFENDANT: Thank you.

MS. NATIVIDAD: May I proceed, Your Honor?

THE COURT: Yes, you may.

MS. NATIVIDAD: Thank you.

CLAIRE CONLEY

having first been duly sworn in, testified as follows on:

DIRECT EXAMINATION

BY MS. NATIVIDAD:

Q Ms. Conley, can you state your full name and spell your last name for the record?

A Okay. Claire Conley. C-O-N-L-E-Y.

Q And what is your title?

A I'm a senior criminalist.

Q Can you -- with what agency?

A Tucson Police Department Crime Lab.

Q Could you explain your function and duties as a senior criminalist?

A I'm assigned to the toxicology section and in that -- in that section, I test blood samples for alcohol concentration and I maintain breath testing instruments.

Q And how long have you been a criminalist with TPD?

A Since December of 2006.

Q Okay. And describe to us, Ms. Conley, your educational background and experience.

A As regards to being a criminalist, I have a bachelors degree in chemistry and a masters degree in chemistry.

Q Do you have any prior lab experience?

A Yes, I do.

Q Can you tell us about that?

A I worked in the Tucson Police Department Crime Lab as a crime lab tech- -- technician for I think it was 20 months in 1994 and '95. Did not do blood testing there. Actually, I have no other experience that has to do with blood testing. I have other lab experience, but it isn't relevant to the kind of work I do now.

Q Okay. Have you read or studied any scientific literature specific with blood alcohol analysis?

A Yes. When you hire to the Tucson Police Department Crime Lab, as probably all crime labs, you go through a specific training program for the area that you're working in. So for the toxicology section, I attended a course in Indiana University on blood and breath alcohol analysis and testimony. And I underwent a fairly thorough literature review and learned to do the testing of the blood samples as was required -- as is required by the Department of Public Safety.

Q Could you explain the general procedure you use in analyzing blood?

A We used headspace-gas chromatography. Chromatography is the separation science. We separate mixtures into individual components and then attempt to quantify the ethanol in the -- in the samples.

Q What is the significance of your results you receive when you do your analysis?

A I'm not sure I understand the question.

Q Well, let's strike that. Are you a certified blood analyst?

A Yes.

Q From what agency do you hold -- do you hold a permit to test blood?

A The Arizona Department of Public Safety.

Q When did you receive your permit?

A I don't remember the exact time, but it was in the spring, I believe, of 2006. And then there's an annual renewal each year which I've always successfully completed.

Q What if any are the requirements -- if there any requirements to -- to obtain a permit?

A Well, the basic requirement is to have a bachelor's degree in a natural or physical science with 18 -- I think it's 18 units of chemistry. It might be 15. You -- then you take a proficiency test and you apply. You take a proficiency test. You have to pass their -- you're given four samples. You have to pass the proficiency test and then you have to pass annual renewals.

Q Do you need to be re-certified?

A Yes. Annually.

Q What's the presence of certification -- did -- did I ask you that?

A Yes.

Q Okay. Did -- what was there ever a time that were decertified?

A No.

Q Were you certified to test blood on -- look at the date here, November -- I mean, August 30th, 2007?

A Yes.

Q On that day, did you test blood from a tube that had indications that the blood had been drawn from a person by the name of Michael Marrama?

A Well, I tested a blood sample on the 28th of August 2007.

Q Okay. And did that belong to a person by the name of Michael Marrama?

MR. ST. LOUIS: I'm going to object to the form of the question.

THE COURT: All right. You can go ahead and answer it.

MR. ST. LOUIS: Foundation.

THE COURT: Okay. You can still go ahead and answer it.

Q You can go ahead and answer it.

A Okay. Thank you. I -- I didn't understand what you said, Your Honor.

THE COURT: Go ahead and answer.

A Okay. Yes, it was from Michael Marrama.

Q Okay. And how do you know that it was from -- from him?

A Several ways. First of all, I -- there's a -- there's a chain of custody program that the Tucson Police Department Crime Lab uses called BEAST. It has a -- it's a bar coded system. It has a case number, an item number. And I have a chain of custody report here that gives me details. It gives me Michael Marrama's name. I have a picture of the inside of the blood kit. It has the case number, which refers back to Michael Marrama. And I have no reason not to assume it is his blood. The case number matches the -- the name that is on -- is in the BEAST.

Q Okay. What instrument does your lab use to determine the amount of alcohol in a person's blood?

A Well, it uses a gas chromatograph. We use headspace-gas chromatography.

Q Was this the instrument you used in this case?

A Yes. It's a -- it's a variant 3800.

Q Is the method -- is this -- is the method accepted by the scientific community as a reliable method of determining alcohol concentration from blood?

A Yes.

Q As a criminalist, how long have you been doing this?

A Well, I started doing -- learning the method when I came to work in the crime lab at the end of 2006, beginning of

2007. I went through a training program before I was certified by the state. The training program consisted of doing a hundred blood sam- -- analyzing a hundred blood samples from old cases and comparing the results just to -- to familiarize myself with the method. And then since then, I've been doing the blood analyses for the last what two years.

Q Okay. What, if any, does the DPS or DHS have, what role does it have, if any, in -- in blood analysis?

A Well, it regulates blood testing for the state of Arizona. The Department of Public Safety.

Q Okay. Do you know what that -- that regulation entailed?

A Well, it -- it is the regulation that -- that certifies analysts. It -- it sets out a -- a preferred -- it sets out a method to -- to be used there. There is an al- -- there is a met- -- there is a procedure for using an alternative method, if you like, and it maintains a certification and a proficiency testing program.

Q Okay. Describe briefly how the -- how the GC works.

A Well, it's essentially an oven with two long columns inside. They're designed to separate mixtures into individual components that pass through. You -- you identify -- you teach the instrument to identify the components by the time it takes to pass through to the detector. And the instrument can also be taught to quantify a substance. For instance,

ethanol.

Q Okay. How -- how long does it take to run a tray of samples?

A Depends on the size of the tray. Each sample takes about nine or 10 minutes to run.

Q Where -- where are the samples kept?

A It's -- the blood kits are kept usually by the evidence section. They're -- they're put into the evidence section, stored in their refrigerator. When it comes time for us to do an analytical run, we'll take the samples into the laboratory. I'll prepare individual samples from each blood kit. They'll go in the gas chromatography. Once the run's finished and I'm satisfied with the results, I'll throw the vials into the biohazard trash. I'm not sure which part of the process you're interested in.

Q Okay. Well, we'll -- we'll talk more about that. Describe what chain of custody procedures are followed by -- by TPD Crime Lab to assure that the sample tested belong to the Defendant.

A Well, again, I -- I had referred to a bar coded evidence tracking system. It's called the BEAST. When a -- when a sample is collected, it goes into a blood kit. The kit is sealed with tape that would be -- it would be easy to see if it was -- it was tampered with. In this particular case, the officer wrote the case number on the blood tubes inside

the kit, sealed the kit, and then on the outside of the kit had a bar coded label that had the case number, the item number, the subject's name and probably several other bits of information. But -- but definitely those -- those bits of information.

Q Ms. Conley, you were seated beside me when Ms. Arviz- -- Arvizu took the stand. And she talked about a unique sample ID number.

A Yes.

Q And she was talking about that in -- in correlation with confusing a particular sample, blood sample, with other blood samples. Is there a safeguard -- does TPD have a safeguard against that?

A Well, the Varian, the software for the Varian, when -- when you're setting up a sample list, there is a field for comments or information on each individual sample. So for instance for -- for sample 29, it will say -- it will give the case number, the item number and the person's name and whether or not it's -- it's sample A or sample B. And if you -- it -- it prints out a sample list at the end of that. So I'll have a list that will say sample 29, case number such and such, item number such and such, name such and such. That's not disclosed.

Q Is that sufficient to -- to ensure that you're not confusing Mr. Marrama's sample with other samples?

A Well, that's one -- that's one of the safeguards we use. Once I've made up that sample list, I'll make up my -- I'll -- I'll create my tray of sample vials and each sample vial will have the sample number, say 29. And it will have the last four digits of the case number and an A or a B. If there's more than one sample from the same case number, then I'll have a further identifier on there to tell sample 1C say from sample 2C. Something like that. We go to great lengths to make sure that we don't confuse samples.

Q How about access to refrigerators? Can you tell us about that? Who has access to the refrigerators where the sample are kept -- where the samples are being kept?

A Well, officers put the refrigerators -- the samples into a locked refrigerator at one of the substations. It's essentially a one way door. You put the sample in. Nobody -- the only -- it can only be open from the other side so an evidence technician would have to take it out. I couldn't walk in behind some -- you, if you would put a blood sample in, and take your blood sample out. It would have to be an evidence technician from, as I say, the other side of the refrigerator. Once it's entered into that refrigerator, it's been entered into that chain of custody tracking system. It's moved from one -- from the substation refrigerator by one of the evidence technicians or other to their central refrigerator where they store all of the blood samples. And

then procedure at this point I think was that we went up to the evidence section and checked the samples out. Now they have moved and they delivered the samples to us. But in any case, they take the samples out of the refrigerator and hand them over to us. We then take them down into the laboratory and put them in our locked -- our evidence refrig- -- we have a locked toxicology refrigerator that's only accessible by the people in the toxicology section.

Q Are there any seals on the evidence envelope?

A Yes. There's -- there's evidence tape, which is -- it's -- I wouldn't say tamper proof, but it's very tamper evident. It's very, very friable. Breaks very easily. You can really tell if it's been tampered with. It's just a bear to work with.

Q What if -- what if any other procedure -- procedures exists to -- to prevent tampering that you could think of?

A Well, the kit's sealed. I only work at one -- with one kit at a time. So I can't switch tubes.

Q Okay.

A It's always in a locked refrigerator. Very limited access. And I don't know. No particular incentive to want to do it.

Q Okay.

A I don't know. I can't think of anything else.

Q Okay. Did this case -- did this case involve the

use of a blood kit?

A Yes.

Q Okay. What is a blood kit?

A It's a cardboard box about what, six inches by four inches? I'm -- I'm not the world's best gauger of sizes. It has a plastic box inside of it that cradles two blood tubes that are like -- they're vacuum container type tubes like that you'd -- like you would see at a doctor's office.

Q Who prepares it?

A Who prepares what?

Q The blood kit?

A We buy them commercially and they're given to officers to take to either -- for -- to be used by phlebotomists, either officers who are phlebotomists or -- or hospital emergency rooms.

Q Do you know where -- where DTP buys it from? Is it from reputable vendors?

A Yes. I don't -- I don't get involved in buying the blood kits.

Q Okay.

A When we get individual batches of blood kits, when -- when they come into supply, we test them to make sure that there's nothing like an alcohol residue inside one of the blood tubes.

Q Okay.

A But I don't see the blood tube until it comes to me full.

Q Okay. What -- what is in each -- in each kit?

A I'm sorry. What is a what?

Q What is an each -- each --

A In each kit. Okay. Okay. You've got an outside cardboard box, an interior plastic box that has a -- it kind of forms two cradles for two blood tubes to fit into. Two blood tubes that contain an anti-coagulant and a preservative. And it has a -- a needle that can be used for drawing blood which I've never -- I've never really seen a kit used. I'm -- I'm squeamish. I don't want to know. There are also a number of different kinds of labels and seals inside the box.

Q And so these -- these kits are -- are labeled; is -- is that correct?

A Once the kit is -- is used, the officer creates a label before he puts it -- he or she puts it into evidence.

Q Okay. In each tube, is there a preservative?

A Yes.

Q And -- and -- an anti-coagulant?

A Yes.

Q What's the purpose?

A It's to preserve the blood as -- as best it can be for testing. The words are pretty self explanatory. We would prefer that the blood not clot.

Q Okay.

A We would -- would prefer that -- and it's just -- the preservative is yet another way of making sure the blood is -- is as fresh as possible for testing --

Q Okay.

A -- along with refrigeration.

Q Okay. Did the preservative and anti-coagulant, do -- do they contaminate the sample or do they --

A Well, they're additive to the sample, but they would -- they're not volatile, so they wouldn't show up in gas chroma- -- gas chromatography.

Q Okay. If there is a problem with the preservative or the anti-coagulant, would you be able to determine this when the test -- when you're testing the blood?

A Probably not in the time frame that we're talking about. Usually, we test the blood within a week or two of when it's -- when it's taken and it's been refrigerated all that time. That wouldn't be long enough for us really to see an effect.

Q Okay. Did you analyze a blood specimen for Michael Marrama?

A Yes.

Q When?

A On the 28th of August 2007.

Q Where -- where did you obtain the blood sample?

A Thinking back that far, it doesn't specifically say. I -- I obtained it from Rebecca Judd (ph) who's one of the evidence technicians. At that point, I believe the evidence was still located on the floor above us, so I would have gone up to the evidence counter and gotten it there.

Q Okay. How was the blood package when you first obtained it?

A Well, it was in a standard blood kit. I've got a picture of the interior of the kit. I don't have any notes that indicate to me that there was anything unusual about the packaging. The -- I -- from the picture I can see the standard plastic box and it looks like a normal kit.

Q Okay. No -- no signs of tampering or anything like that?

A I wouldn't have accepted it if there had been tampering.

Q Okay. Were all the seals intact when you obtained the blood?

A Yes.

Q Let's see here. And you -- you have that with you right? The -- this one; right?

A Yes.

Q I think the court has a copy of it. So what color are the tops of the tubes; do you remember?

A Gray.

Q Was the blood in your possession from the time you removed it from the blood -- blood refrigerator until the time you analyzed it?

A Actually yes, because I'm looking at the chain of custody. Sometimes, we'll -- we'll get the blood and put it in -- store it in our refrigerator overnight. In this case, I picked it up the morning that I -- that I created the samples. So yes, it would have been in my custody the whole time.

Q What time did you analyze the blood?

A Well, according to the printout, I -- the sample was -- the sample ran at 6:37 p.m.

Q How much blood is used during -- during the analysis?

A A quarter of a milliliter per sample. So -- so half a milliliter.

Q How does the analyzing process work?

A Let's -- I'm trying to think where to start. I prepare a blood sample by drawing out, as I say, a quarter of a milliliter of blood. And then it's flushed into a sample vial with 10 times as much water, an internal standard. That's sealed, placed on the gas chromatograph and then run as part of an analytical run. Would you repeat the question? I'm not sure I answered it entirely.

Q It's -- it's okay. Once the instrument is set up, do you have -- do you have to do anything further during the

analysis process?

A Well, once the run starts, it pretty mu- -- it's pretty much automatic. We create reports at the end, but the instrument has a -- has the procedures set -- set into its software.

Q I'm going to show you, Ms. Conley -- if I know where it is. Do you have your blood -- yeah, here. Which is State's --

MR. ST. LOUIS: Ms. Natividad, I believe that is the last page of Exhibit C. That's already been admitted.

MS. NATIVIDAD: Okay. Thank you. I'm just going to -- we're just going to refer to it then.

Q Did you generate your result of your blood analysis in -- in this case, Ms. Conley?

A Yes.

Q And based on analysis, what was the Defendant's blood alcohol concentration?

A It's 0.165 grams of ethanol per 100 milliliters of blood.

Q Okay. Describe to us how the results are recorded by instrument and on your report.

A I'm not -- I'm sorry. I'm not following the question.

Q Okay. So you -- you do the testing; right?

A Yes.

Q And then you generate this report?
A Yes.
Q Correct? Okay. And you include this together with the chain of custody paperwork and your --
A My blo- --
Q -- blood alcohol analysis notes; correct?
A Yes.
Q Okay. Is -- is this -- is TPD, Ms. Conley, recognized or certified by any national organizations?
A Well, yes. It's as we discussed earlier ASCLD Lab. It's been -- it's certified by ASCLD Lab. It has been since 1993.
Q Do you know if it has ever been decertified?
A No, it has not been.
Q Do you know if TPD crime lab has ever been shutdown at all?
A No, it has not been.
Q Is it a member of the International Or- -- International Standard, the ISO; do you know?
A No. We're --
Q The Legacy programs?
A -- we're certified under the Legacy program. We're working on certification in the international program.
Q Okay.
MR. ST. LOUIS: Your Honor, I apologize for interrupting.

It's 10 to 5:00 now. It's apparent to me we're not going to finish this in the next 10 minutes.

THE COURT: What gives you that?

MR. ST. LOUIS: Huh?

THE COURT: What gives you that conclusion?

MR. ST. LOUIS: A hunch. Wild hunch, Judge.

THE COURT: Are you going to have any other witness, Ms. --

MS. NATIVIDAD: No, Your Honor. Just Ms. -- Ms. Conley.

THE COURT: Obviously, you're going to have cross examination. Are you anticipating recalling anybody from New Mexico or any place?

MR. ST. LOUIS: But my -- my -- no, I'm not anticipating that.

THE COURT: Okay. So what we need to do is finish the direct, the cross and the redirect; is that correct?

MR. ST. LOUIS: Yes.

THE COURT: Okay.

MR. ST. LOUIS: And argue.

THE COURT: I would assume, yes, if we do anticipate leaving around 5:00 o'clock, that's probably not going to occur. Of course, I can stay longer.

MS. NATIVIDAD: I will make it quick, Your Honor. I just have a few more.

THE COURT: Oh, no. I -- but we -- we probably do need to reset some time so Ms. Conley can come back and finish her testimony. So probably we can break after your re- -- after your direct when we can come back for an hour or so some other time in the future. You don't antici- -- how long do you anticipate your --

MR. ST. LOUIS: Hey, I was thinking we -- if we set it for an hour, my -- my issue -- and I know that you kicked another trial that was set for today out of here, but I've -- I've got to get Ms. Arvizu to the airport.

THE COURT: And continue this -- it took -- as you may recall, it took us about eight months to get to this point today. And I was here every day. You know, Officer Smith, we delayed it so he could be here and he's --

MS. NATIVIDAD: And he's not here.

THE COURT: Yeah.

MS. NATIVIDAD: I told him that we're going to go anyway, Your Honor.

THE COURT: All right. But anyway, you have my list of dates, so we'll be working on that. But why don't you go ahead and finish and as we get a little bit closer to five we'll try to work out a date we can get back.

MR. ST. LOUIS: All right.

MS. NATIVIDAD: Okay.

Q What is being done to keep the certification at

ASCLD?

A Well, as Ms. Arvizu said, there's a five year inspection, outside inspection. And then their annual internal audits that are performed.

Q Does the -- the -- does TPD have internal quality assurance policies and procedures?

A Yes.

Q Can you tell us about that?

A Well, there's an overall quality assurance program for the -- nice picture. There's an overall program for the laboratory. And then each individual section has their own quality assurance proc- -- procedure, things -- processes that they follow.

Q How often is that done?

A There's an annual inspection and an annual self audit.

Q And those are reviewed by whom?

A Well, they're internal. And then at the end of the five years, I assume they're -- I am not a quality assurance manager. It's my understanding that they are reviewed by the outside agency that will do the auditing.

Q Okay. Now do you know if the TPD Crime Lab has ever been written up for, you know, substandard practices or anything similar to that?

A Toxicology section certainly hasn't. I can't -- I

can't speak for the other sections. I don't know of anything.

Q Okay. Drawing your attention back to quality assurance, Ms. Conley, what quality assurance procedures did you use when you ran the test of the Defendant's blood?

A Well, first of all, we calibrated the instrument. We -- each time we do an analytical run, we calibrate the instrument. And I used a number of controls, blanks, standards. We buy them from a variety of laboratories. EMD Chemicals, Cerilliant. They come with certificates of qual- -- quality, different in- -- information on the -- on the quality control procedures they've been through.

And we test them before we put them into use. Ditto with the internal standard. We -- every time we make a batch or every time we make a batch of the mix, we test it before start using it. It goes through a quality assurance process.

I -- the equipment that I use -- go -- it has outside contract preventive maintenance on it, at least once a year. In addition, we keep a maintenance log and we do weekly, monthly and quarterly preventive maintenance. Different -- different kinds of things in the laboratory.

I -- as I say, I -- we -- we calibrate the instrument, we run a blank immediately afterwards, which we might want to talk about later if you'd like. We use whole blood control. We use a different standard to -- to check to -- to make sure the instrument is still working correctly.

Then we intersperse controls to controls every several cases during a run and then -- then again at the end. The -- the results have to meet certain standards. There's an administrative and a technical review that the cases go through.

Q Okay. You mentioned some vendors that you get these things -- these things from. That's not on -- on your report; is it? I mean, not on the --

A Well, the name of the vendor and the lot number and the expiration date and the concentration is.

Q Okay. Okay.

A It's on the calibrators and controls package. It isn't -- it isn't part of the individual case notes, because --

Q Okay. Well, let's just talk about the things that Ms. Arvizu testified to. The -- the procedures used by -- well, Ms. Arvizu indicated that the SOP, the standard operating procedures of TPD Crime Lab -- let's see what she said about that.

THE COURT: Okay. Why don't we break right here?

MS. NATIVIDAD: It -- it is not -- I'm sorry.

THE COURT: Why don't we try to reset and we're coming back and then when we come back, you can then deal with that as sort of a collective matter so --

MS. NATIVIDAD: Okay.

THE COURT: -- it won't be broken up in her response. Mr. St. Louis, you personally are scheduled to be here on July 22nd at 9:00 a.m., previously with Mr. Arseno (phonetic).

MR. ST. LOUIS: That is true.

THE COURT: Any chance we can perhaps do this at around 10:00 o'clock? Assuming the availability of Ms. Conley.

MS. CONLEY: I'm thinking, Your Honor. I got a vacation in July.

THE COURT: Oh, no.

MS. CONLEY: I'm sorry?

THE COURT: We can't do that.

MS. CONLEY: Oh.

THE COURT: Oh, okay. Well, we'll try to accommodate your --

MS. CONLEY: I'm just -- may I stand up and look at the calendar?

THE COURT: Yes.

MS. CONLEY: The 22nd will be fine.

THE COURT: Is that okay, Mr. St. Louis?

MR. ST. LOUIS: I'll be here.

THE COURT: All right. We'll do that.

MS. CONLEY: Okay.

THE COURT: So we'll do that. And so you can finish

your direct and we can do the recross and any redirect as necessary.

MS. NATIVIDAD: Okay.

THE COURT: I am thinking, Mr. St. Louis and Ms. Natividad, when we finalize this -- my previous experience in judging the quality control of various criminal laboratories or forensic laboratories is fairly limited. And you've made a number of points, some of which may -- I mean, I'm sure you're going to direct -- or address a number of these in your examination of Ms. Conley that may or may not be significant to me, but it strikes me as the factual matters in this matter are going to be fairly important.

So you might want to be prepared to tell me what facts that you think have been established or are going to be important --

MR. ST. LOUIS: Okay.

THE COURT: -- for me. I mean, I see some nice little -- actually, very little jumps on grass which may or may not be important. (Indiscernible) tell me that it's important and I -- so far I guess I'll accept that for what it is.

But -- and then I have, you know, one of them that may be an air blip. So sum it up, put all this in perspective as to why that -- that's where you want to end up being. Thank you very much.

MR. ST. LOUIS: Thank you.

MS. NATIVIDAD: Thank you, Your Honor.

MS. CONLEY: Thank you, sir.

(Court recessed)

4:58:58

C E R T I F I C A T E

I, KIMBERLY C. McCRIGHT, CET, certified electronic transcriber, do hereby certify that the foregoing pages 1 through 116 constitute a full, true, and accurate transcript from electronic recording of the proceedings had in the foregoing matter, all done to the best of my skill and ability.

DATED this 4th day of August, 2009.

_____
Kimberly C. McCright, CET
Certified Electronic Transcriber