IN THE PIMA COUNTY JUSTICE COURT

PIMA COUNTY, ARIZONA

STATE OF ARIZONA	)	
	)	
v.	)	
	)	No. TR07-016082
GUY KIRKPATRICK	)	

Tucson, Arizona

August 28, 2007

BEFORE JUSTICE CARMEN DOLNY

TRANSCRIPT OF PROCEEDINGS

TABLE OF CONTENTS

APPEARANCES

August 28, 2007

Judge: Carmen Dolny

For the State:

Bill Dickinson

Kerry Johnson

Witnesses:

None

For the Defendant:

Joseph P. St. Louis

Witnesses:

Janine Arvizu

Tucson, Arizona

August 28, 2007

(Justice Carmen Dolny Presiding)

EVIDENTIARY HEARING: (Continuation)

THE COURT: Okay. We're back on the record in the matter of State v. Guy Kirkpatrick, case number TR07-016082. Mr. Kirkpatrick was charged with driving under the influence of alcohol and some related charges back on May the 12th of 2006. This hearing is an evidentiary hearing dealing with the testing of blood related to this case. And when we adjourned at our last hearing we had witness Janine Arvizu on the stand. And her attorney -- her attorney's, I guess, Joseph St. Pat -- Saint --

MR. ST. LOUIS: St. Louis.

THE COURT: Thank you, had just finished direct examining her. And we're back here in court today for the county attorney to cross-examine.

So I guess, Ms. Arvizu, you can go ahead and take the stand. You were --

MR. ST. LOUIS: Your Honor --

THE COURT: -- previously sworn in. You can -- you're still under oath.

MR. ST. LOUIS: Just to keep things neat and --

THE COURT: Yes.

MR. ST. LOUIS: -- tight -- tidy, we're also taking

testimony that you're going to consider in Mr. Esposito's (phonetic) case.

THE COURT: Exactly. Thank you for mentioning that. And we have Bill Dickinson here on behalf of the State, along with a couple of his associates.

MR. DICKINSON: Actually Bill Dickinson and Kerry Johnson on behalf of the State.

THE COURT: Thank you. And Carrie Johnson on behalf of the State.

And, yes, Ms. Arvizu's testimony is going to be applied not only to the Kirkpatrick case, but also to Julio Esposito case, number TR07-005007. And I think with that, we're ready to proceed unless there are any other comments anybody wishes to make before we begin.

MR. DICKINSON: I don't believe so, Your Honor.

THE COURT: All right. So you had just concluded your direct examination, Mr. St. Louis, was that right?

MR. ST. LOUIS: Yes, Your Honor.

THE COURT: Okay. Mr. Dickinson then, cross-examination.

MR. DICKINSON: Thank you, Your Honor.

THE COURT: Sure.

JANINE ARVIZU, DEFENDANT'S WITNESS, PREVIOUSLY SWORN

CROSS-EXAMINATION

BY MR. DICKINSON:

Q Ms. Arvizu, let me see if I understand what your work situation is. If I'm clear on this, the last time you actually were actively employed doing laboratory work yourself would have been approximately 1982; is that correct?

A I, during the period when I worked as an operating contractor for the Department of Energy, I did laboratory work. I also managed laboratory work and QA work. So it's kind of all interspersed during that period. And I think that was through approximately 1991.

Q Okay. And during that period of time, what percentage of your work was actually doing analysis of samples versus the percentage which was management?

A Probably a minor percentage actually performing the analysis. It transitioned over time. Originally I was doing more analysis, and then as the laboratory grew and my responsibilities for data quality assessment increased it became less.

Q And let's talk a little bit about the nature of that, the analysis that you were both performing and supervising. Would it be fair to say that what you were interested in was identifying what samples or what substances were in a particular sample, as well as quantifying that?

A That's correct.

Q And so when you would get a sample, you may or may not have some idea of what was in that sample; isn't that true?
A Yes, yes.
Q And so what you're interested in doing then is identifying each of the various substances that you're interested in that may be present in that sample?
A It would really depend. Sometimes we were looking after one particular contaminant, sometimes a broad suite of components. So it really would vary depending on the intended use of the data.
Q So you're talking about contaminants, what you're looking -- this was a lot of EPA or DEM --
A A lot of environmental work, yes.
Q Yes. And so you're looking for things possibly like DDT. Would that be an example?
A That would be an example.
Q What other kinds of things would be common?
A The common suite of chemicals that are target analytes is what they're called, the things you're looking for --
Q Okay.
A -- in a sample. There is a suite of volatile organic compounds --
Q Okay.
A -- a suite of semi volatile organics, things like pesticides and PCBs.

Q Sure.
A Inorganic contaminants.
Q Uh-huh.
A Those types of things.
Q And were you involved in initially setting up the instrument in order to identify what those were?
A Yes.
Q And how would you go about doing that?
A There's a whole process involved in bringing a new piece of instrumentation online. During my tenure we pretty much bought analytical instrumentation for that entire suite. So there's a series of method validation and method verification steps to go through where you determine the performance characteristics of the instrument, its instrument detection limit. On a method specific basis you look at the method detection limit, you look at the accuracy, precision, sensitivity, reproducibility, all those kinds of characteristics, to understand the actual in your laboratory environment operating conditions, operating performance of that instrument.
Q And in your experience in labs, different instruments behave differently, don't they?
A Absolutely.
Q It's kind of like a car. You may have a car that has good acceleration, then you may have another one of the same model

which has bad or --
A That's a pretty good analogy.
Q As you work with a particular instrument, you become familiar with the idiosyncrasies of that instrument. Would that be correct?
A That's a fair statement, yes.
Q And as you're setting the instrument up at the beginning when you're trying to validate -- and I think is that the correct term for that?
A That is the correct term, yes.
Q What you are doing then is telling the instrument what known substances look like; isn't that correct? So, for example, you'll have a known sample of DDT and you run it through the instrument to determine what that sample which you know looks like; isn't that correct?
A Yes.
Q And in the instruments you were validating, how many substances would you run through on the validation process?
A Dozens.
Q And in the time that you operated the -- your instruments, did you ever have a substance identified -- or excuse me, show up in a run which you had not -- were not able to identify?
A Oh yes.
Q And how often would that occur?
A That would depend on the nature of the samples in

question. For example, if we were receiving and processing drinking water samples or deep groundwater samples, that was a very uncommon occurrence. But if we were processing samples from, oh, a hazardous waste site or a disposal pit, it was quite common.

Q And so there are things that appeared on the graphs which you just weren't able to identify at that point; right?

A Are we talking about gas chromatography here?

Q Yes.

A Yes.

Q Yeah.

A Yes, that's very much the case.

Q And your job was to identify what they were and to quantify them; isn't that true?

A Again, it would depend on the particular intended use of the data. In some cases that was the objective, in some cases it was not.

Q So if you had an instant where it was not, what would you do about that unknown substance?

A I'm not sure I understand the question.

Q So let's say that your assignment with this particular gas chromatography was to identify the amount of DDT, for example, in the sample. And you come up with some sort of other substance which doesn't come across on the chromatograph because you didn't calibrate it for that substance; right?

A So it --
Q It's an unknown.
A It alludes, I see the peak, but I did not calibrate for it.
Q Correct.
A Okay, I understand.
Q All right. So did that affect your finding with regards to the amount of DDT that you were or were not supposed to find in that particular sample?
A Okay, I think I understand. It may or may not. It really depends on the retention time and the characteristics and so forth.
Q Okay.
A In general, if other components were identified as being present but not qualitatively identified; that is, I saw something was present but I knew what it was (sic); it would be identified as such, an unknown compound alluded at a particular retention time. But if I was only interested in the one component, that would be how it would be presented to the data user.
Q Sure. And it's kind of a interest, you know, what was that, we're not sure what it is, but it wasn't what your assignment was; isn't that correct? The assignment --
A Yeah, yeah.
Q -- (indiscernible).

A If --
Q Yeah.
A If my quest was simply to identify DDT, yes.
Q That's correct. And it's your understanding that to properly put any of these instruments into service you have to go through that validation process; isn't that correct?
A That's an absolute requirement, yes.
Q And have you had an opportunity to review the documentation concerning the validation which was used to put the bread machine at the Department of Public Safety Southern Arizona Regional Crime Lab into service?
A I have not.
Q So that has never been presented to you?
A No.
Q So you really have no idea of what the substances were that that instrument was calibrated for?
A I can infer some of them from the reports that I've seen, but I don't have any idea of the entire scope of that validation, that's correct.
Q Or how many there were?
A That's correct.
Q Now you talked about the fact that specific substances come out at a specific time on the run in a particular column. Is that a correct statement?
A If sufficient variables are controlled, that's correct,

yes.
Q Okay. And if the instrument is being used properly within a fairly close variance, you should be able to know? And that's what the instrument is doing, is saying it's this time, we should be seeing this substance; isn't that correct?
A That's correct.
Q And so if the substance that you see coming out is not in the vicinity of the substances that you're looking for, it basically will not affect the result on the substance you're looking for. Wouldn't that be correct?
A Okay. Can you --
Q Sure.
A -- explain that to me again? I'm sorry.
Q Let me use your sample here that you have on --
A Okay.
Q -- on the board. And let's say that we'll add one more line, if that's all right.
THE COURT: And just take a different colored (indiscernible) --
MR. DICKINSON: No, we'll just -- this is fine the way it is.
THE COURT: All right.
BY MR. DICKINSON:
Q So let's say that the blue here is one run. Obviously we have an issue here. And if this is ethanol and this is

internal standard --

MR. DICKINSON: And can we mark this as an exhibit so that --

THE COURT: Sure.

MR. DICKINSON: (Indiscernible).

THE COURT: Diagram will be marked State Exhibit --

MR. DICKINSON: 2, I believe.

THE COURT: -- something or other.

MR. DICKINSON: Thank you.

BY MR. DICKINSON:

Q So just for the sake of discussion, let's -- figure which one comes out first. Pink?

A Ethanol before --

Q Ethanol, yeah. So let's call this one ethanol and this one internal standard, or IS. Okay?

A Okay.

Q Now as I understand the instrument -- and you're the expert, so I may be wrong on this -- this first peak here, which we have un -- not labeled on State's 2, should not affect the amount of area under the -- under this spike or the graph as to either the ethanol or the internal standard; is that correct?

A That's correct. As long as that peak comes all the way down to the baseline, it should not be --

Q Okay.

A -- a direct interference.
Q So --
A Correct.
Q -- you're able to exclude this as something that will interfere with either of these two?
A That's correct.
Q The work that you had done -- let me see if I'm getting -- kibitzing here. Let me read my notes here for a second.
(Pause)
Q Nothing in your prior experience when you were actually doing analysis was of a forensic nature; is that correct?
A That's correct.
Q And you have never been qualified in a court to testify forensically about the results of gas chromatography; is that correct?
A I'm not sure I know how --
Q You results.
A -- to answer that.
Q I mean let me state it that way.
A Oh, no.
Q Your results.
A That's correct.
Q And so your work with regards to forensics has basically been since you left, I guess it would be the naval --
A Yes.

Q -- contract; is that correct?
A Yes.
Q And would it be safe to say that all of that work has been done for the defense?
A That's correct.
Q As a matter of fact --
A In civil cases it's called something different, but --
Q Okay.
A Yes.
Q And that is an important distinction. Okay, so let me qualify it as criminally in forensic -- in your forensic work, all of it has been for the defense?
A That's correct.
Q All right. As a matter of fact, have you -- are you not a co-author of a publication concerning -- for defense attorneys on how to attack or criticize forensic laboratories?
A I authored an article in the Champion. When you say co -- that's the only written article. Now you may be referring to presentations where there were co-presenters. I'm not -- can you give me a little -- I don't think there's a --
Q I think I've run across --
A -- a secret publication.
Q -- something on the internet where --
THE COURT: Didn't know you were the author of a --
THE WITNESS: Didn't know I --

THE COURT: -- best selling book for defense attorneys --

THE WITNESS: Missed that one.

THE COURT: -- did you? Where are those royalties?

THE WITNESS: I'm missing.

BY MR. DICKINSON:

Q And I think somebody is making some money off you because they're charging 15 bucks for it. So you better talk to them.

A Oh, you know, I would guess then that that's NACDL, because I do lecture at these like CLEs for defense lawyers. I've lectured at one for appellate judges. And my understanding is that they own whatever the rights and can resell, I don't know if it's transcript or audiotapes or whatever. But they own it.

THE COURT: Of your presentation?

THE WITNESS: Of my presentations, yes. And that point was brought home to me when I was lecturing to a group of appellate lawyers, because one of the lawyers held up a copy of the article I wrote in the Champion and asked if I was the one that wrote it. And I said, "Yes, ma'am," and she said, "Well, somebody call NACDL and ask if we can get copies made at lunch," because she was asking for permission because they own the copyright, I don't.

BY MR. DICKINSON:

Q Okay.

A I didn't have the ability to give them --
Q Well, we'll go on.
A -- copies.
Q Mr. Johnson will try to locate that material and we can identify specifically --
A I can just tell you that as far as I'm aware, the only actual publication relevant to this that I've authored in the forensic discipline is that article in the Champion.
Q Okay. And just to follow up on it, you have never done head space chromatography on blood yourself in a laboratory; is that correct?
A That's correct.
Q As I think you had mentioned in your interview, you used other matrices or matrixes, but not blood?
A That's correct.
Q The -- and I guess while we're on the subject of expert testimony, how long have you been testifying as an expert in court?
A I would have to go back and look at my list of testimony to see the first date. I'm guessing it was probably around the year 2000, something like that. I would have to go look at the list to be sure.
Q Okay. And since 2000 then -- well, currently can you tell the Court what you're charging for testimony?
A I charge $150 an hour for my time, the same as it's been

for many years.
Q So you have any idea of how much the charges are to Mr. St. Louis so far in this case?
A I'm sorry, I don't. I would have to --
Q Any idea of how many hours you've done, I guess (indiscernible) on both Mr. Kirkpatrick's case and Mr. Espinoza's case? Esposito.
A I would have to go back and check my log. I don't have it right off -- I'm sorry. If you'd let me know I would have checked.
Q Okay. Well, I think we did kind of talk about --
A There was --
Q -- that at the interview.
A -- the trip earlier. And that I charged door to door essentially for travel.
Q Okay.
A And then this one this morning.
Q So, you know, it would be safe to say you've made a fair amount off this?
A Yeah.
Q And this isn't your only income; right? You have a -- basically a full-time position with --
A Yes.
Q -- New Mexico Public Service, or Power.
A Yes, the utility --

Q Is that correct?
A -- company.
Q And that is as a quality assurance manager; correct?
A That's correct, and helping them --
Q And --
A -- set up a quality program.
Q And it also involves teaching? Or I guess when I looked at your position outline it talked about the fact that you were also involved in training?
A Yes, I do conduct training, in the quality assurance discipline for the most part.
(Pause)
Q Now does this position involve supervision of the laboratory or any sort of --
A No.
Q -- analytical work? So what does it --
A No, it doesn't.
Q -- consist of?
A The principles of quality assurance are universally applicable. You'd indicated that you had some experience with it in the legal field.
Q Yeah.
A In the utility business it's really important that they get the measurements right on your meter for metering consumption and that your bill accurately reflect that. So

it's the same basic principles.
Q Okay. The -- so what percentage of your time then, or your -- of your time do you spend on the forensic or the expert witness testimony?
A Expert witness --
Q And preparation.
A -- testimony is --
Q And preparation.
A -- a very small part. And as you are certainly aware, only a minor percentage of the cases in which I review and conduct data quality assessments ever end up going to trial.
Q Okay.
A How much of my time is expert witness testimony, you can tell that from the list of testimony. Some years there's none, some years there's three or four or five. It's very highly variable.
Q Now let's talk about the kinds of cases that you have been allowed to actually go into a lab on. Okay? And I think in the interview you talked about three different cases where you actually were permitted to go into a lab to do an inspection.
A That's correct.
Q Is that correct? And I believe the first one was a case in New Mexico a number of years ago where it was a homicide?
A Yes.
Q Is that correct? And the --

(Pause)
Q That involved DNA testing?
A Yes.
Q And you were permitted to observe all of the DNA testing on that particular case that was conducted by the New Mexico State Laboratory?
A That's correct.
Q Correct? And so you were in and out of the lab a number of times observing this DNA testing?
A Over a course of many months, yes.
Q And I believe the second one you talked about in the interview was a situation in a criminal case where you were observing for the defense in a situation where the State had notified the defense that the DNA testing was going to consume the total sample; isn't that correct?
A That's correct.
Q And so your job at that point basically was to watch the procedures that were used in that particular case for purposes of determining whether the DNA testing was properly conducted?
A That's correct.
Q Is that correct? And the third one was a paternity case, again DNA, in a civil paternity action where again there had been a notice to one side or the other that the totality of the sample was going to be consumed by the testing; is that correct?

A No. That was actually a criminal case involving an aborted fetus from an underage child.
Q Okay.
A So it wasn't a question of being insufficient sample.
Q Okay.
A It was just observing --
Q The --
A -- on behalf of --
Q And -- okay. So that was a criminal case where you had an opportunity in DNA testing to observe one -- the specifics of one case; is that correct?
A That's correct.
Q You have never been permitted to observe blood alcohol testing; is that correct?
A That's correct.
Q And yet that's what you're asking to do here today, or that's what the defense is --
A That's what the -- yes.
Q That's what they're asking you to do.
A Yes.
Q Okay. So let's talk about what that would consist of. As I understood your direct testimony, there are a number of things that would -- you would need to see or observe in order to fully be able to evaluate the completeness and correctness of the procedures used by the Department of Public Safety for

blood alcohol analysis; is that correct?
A Yes, sir.
Q And that would include such things as how the calibrators were created; is that correct?
A Yes.
Q And is it your understanding that the calibrators are created one time per year?
A That is my understanding. It's not just a question of creation, it's also the maintenance and use of those materials.
Q Okay. But in order to correctly evaluate it, you would have to go in at whatever time that they're creating the calibrators and observe that process; isn't that correct?
A I should clarify how the audit process works. In conducting an audit of a laboratory we don't expect a laboratory -- it's certainly unreasonable to expect a laboratory to be conducting the entire suite of everything that they do during the course of laboratory testing.
Q All right.
A That's obviously not possible or practical. And so what we're doing is assessing sort of the state of a quality system in the laboratory. And part of standard preparation is an assessment of the laboratory's good laboratory practices: do they have good practices for handling volumetric ware, do they have good practices for handling analytical balances. So those are the kinds of skills and practices that can be assessed in

other applications, and you draw the inference that that's the same standard of care that's applied to the preparation of reference materials.

Q So that is an inference or a conclusion you're drawing from what you're seeing?

A Certainly.

Q So --

A You can't watch every step of every process --

Q Okay.

A -- during an audit.

Q And you have been involved in laboratory audits in a non-forensic setting; isn't that correct?

A Yes.

Q And what types of lab audits have you conducted in a non-forensic setting?

A I'm not sure I understand your question.

Q What --

A What types of audits?

Q Yeah. What disciplines or --

A Oh, okay.

Q -- areas have you audited?

A I have audited laboratories that tested volatile organics, semi volatile organics, inorganics, classical testing techniques.

Q Okay. And was that all in one laboratory? How many of

these audits have you conducted?
A On the order of dozens of on-site audits.
Q Okay. And the process that you use typically is you go in and it requires significant attention of someone in order to answer the questions and provide the documents that you need; isn't that correct?
A Yes. It might be helpful if I describe that process?
Q Sure.
A Typically when you're going to go do an assessment of a laboratory facility the first step is to receive and review the documents that describe the scope of the laboratory's quality program.
Q Okay.
A So you would review their quality manual that describes their policies and practices for quality assurance in the lab, you would review their standard operating procedures for the types of testing that the assessment is being performed.
Q Okay.
A So, for example, if I was going to be auditing a lab only for volatile organics testing I wouldn't be looking at their inorganics operation or their classical operation. I would just --
Q Okay.
A -- be reviewing the procedures relevant to volatile organic testing. That's more than just the procedure for, in

this case, blood alcohol testing. It's also the procedure for how they prepare their deionized water, it's the procedure for how they maintain sample integrity. So it's all the procedures that have the potential to impact that sample performed for that analytical suite.

Q And when you -- first you look at the procedures; is that correct?

A Yes.

Q And then you need pretty much free reign of the laboratory to go where you need to in order to inspect this lab and determine what, in your estimate, is happening in a lab. Wouldn't that be fair?

A Yes, that's very much the case. Although as an auditor, we're always subject to local safety and security constraints. As somebody who managed a lab that handled radiologically contaminated materials, I would never have wanted anybody, you know, from the outside wandering unescorted through my facility, for example. So it does in fact require typically that there is an escort provided for the auditor to insure that we're able to comply with all the local standards and rules for practice.

Q Matter of fact, in a forensic setting you would be a little upset if there weren't an escort, wouldn't you?

A That would certainly be a finding, yes, sir.

Q Yes. And so for as long as you're on-site, then there's

somebody tied up with you conducting --
A That's correct.
Q -- whatever inquiries and answering questions, and providing materials and all of that sort of --
A That's correct.
Q -- stuff? And so typically it would be someone who has knowledge of blood alcohol testing; isn't that correct?
A Not necessarily, because a lot of what you're looking at doesn't -- isn't the actual processing of the sample but it's looking at the facility and looking at sample management practices and so forth. A lot of that kind of work can be assessed. Typically it's a staff person, filing person, somebody who has unfettered access to the laboratory that can provide that kind of escort service.
Q And so whether or not it was someone who was knowledge -- it would be more helpful to you to have someone who's knowledgeable?
A Yes, sir, it sure would. But as an auditor, you never rely -- that's sort of one of the principles, you don't just rely on the one person. You're trying to do a broad assessment, so --
Q Sure, but you probably would be upset if you never got to talk to any of the blood analysts?
A That would not be helpful if you'd never had the opportunity to speak with an analyst.

Q So how long is this audit process going to take in order for you to effectively evaluate the DPS Southern Arizona Crime Lab?

A It's -- I would estimate it's a sim -- it's a daylong exercise. When I've done assessments of full service laboratories that's consistent with that kind of a level of effort. If you have multiple auditors looking at multiple areas it can take more time of a full service lab, but with the constraint of it being simply for one type of testing, one day should be sufficient.

Q Okay. And so it would also be correct that if the Court permitted you to make such an examination, then certainly it would be logical that other people would be permitted to make such an examination too; isn't that correct?

A I would think so.

Q So arguably this could result in many days of people in auditing various aspects or whatever they wanted to do; isn't that correct?

A Well, I suppose it depend -- are there a line of people waiting to get into the lab? I don't know. For example, if you were to go in and witness operations in the lab, your level of review is going to be a little bit different than what my expectations are going to be. I don't think you would probably be as comprehensive in looking at all the various areas as I might be.

Q Certainly.
A So I don't know it would be as much of a pertubation.
Q But --
A I guess I don't understand the premise --
Q Well --
A -- of the question.
Q So my point is if we allow one expert in on behalf of these particular defendants to make an examination of the blood alcohol process, then other defendants who are similarly situated and who have similar claims may feel --
A Oh, okay.
Q -- that they're entitled to make yet another one day examination, yet another one day examination on behalf of their clients; isn't that correct?
A That actually feels a lot more like a legal question than an auditor's question. Although I, in my position as a laboratory manager, presented with such a thing -- because when I managed an analytical lab for Department of Energy I typically had an audit a week over the course of a year. It was a very common, normal sort of cost of doing business, if you will.
Q Okay. And it was a cost --
A And I --
Q -- of doing business, wasn't it?
A It certainly is. It absolutely is.

Q Okay.
A And --
Q I didn't mean to cut you off, go ahead.
A That's fine. I would always make available to anybody who had an interest in coming into my laboratory and looking at a particular area like a blood alcohol, I would have made available to them the records of past assessments that were relevant to that and see if that would meet their needs. If it didn't, then I'd have them in. I never said no to an auditor.
Q Okay. And the auditors that you were faced with weren't people who -- were people who were involved in the government and in the departments you were working for; isn't that correct?
A Yes, yes.
Q So basically your superiors were saying let this person in to do an audit or look at whatever?
A It was for a whole variety of different purposes. In the government you're subject to oversight from a number of areas. And so it's people who felt that, because they were using the results of the work product of the laboratory, felt they had a legitimate vested interest in due diligence. And --
Q Okay. Would this be the public?
A No, I --
Q You never had a consumer --
A I'm trying to remember --

Q -- a consumer group come in and you let them do an audit, did you?
A No. The nuclear weapons complex is -- it doesn't have much kind of public, as the consumer --
Q Or when you were doing the environmental stuff for the Navy?
A Well, we were the audit team. We were conducting the audits, we were not the laboratories.
Q Oh, so you -- okay. You were not doing the --
A We -- that's correct. We were actually conducting the audits of government labs and commercial labs.
Q At the request of the government?
A At the request of the government, that's correct.
Q So when you were working in Washington -- in Hanford or where, where was the --
A I chaired an advisory panel looking at characterization of the Hanford reservation, yes.
Q But all of that work when the audits came in, it was directed by governmental entities above you who wanted to see what you were doing, how you were doing it? Would that be a fair statement?
A That's probably a fair statement.
Q If I might, could you tell the Court -- give me the names of some of the labs that you have actually conducted audits on?
A Names are my worst thing. I --

Q I hate to do that to you, but --
A Okay. I have audited -- okay, what's a logical way to go about this? I know the locations better than I know the actual names. And a lot of these labs have changed hands over the years so the -- I'll start with some government labs. I've audited the U.S. Navy laboratories in -- at the Pensacola Naval Air Station, the San Diego Naval Air Station, someplace in Honolulu, Pearl Harbor.

I've audited commercial labs that either are doing or want to do work for the Department of Energy like the Morton Thiokol Laboratory in Utah that -- the same facility that constructed the Challenger, saw the booster tanks. I've audited commercial laboratories -- oh my goodness, all of -- everywhere from Broken Arrow, Oklahoma to the Los Angeles area, laboratories in Houston. I'm sorry, I'm better at locations than I am at names.

I've looked at the Lawrence Berkley Lab for Department of Energy. I've actually audited commercial labs also in Pensacola. If you'll look in some of these places, there aren't too many --

Q Okay.
A -- laboratories in those towns.
Q And let's start then with the Navy lab in Pensacola. What was the nature of the audit you were performing in that lab?
A All the Navy labs that I audited were under the auspices

of the Navy's quality assurance program. And so those were assessments that were being done essentially to qualify the lab to perform analytical services in support of the Navy's installation/restoration program, to receive samples from DOD sites that were scheduled for cleanup and during the course of the cleanup activities. So in general, the suite was that what I've described here earlier: volatile organics, semi volatile organics, inorganics, and classical testing techniques.

Q Okay. And again, environmental in nature?

A Yes. Samples ranging from very low levels to essentially bulk materials.

Q Okay. And --

(Pause)

Q I think what we were talking about was the type of audits you were doing for the Navy labs, and I just discussed the fact that it was environmental in nature. You weren't -- well, let me --

(Pause)

Q Let me talk for a moment about the nature of the process that was being used in the environmental arena. Can you describe for the Court the equipment that -- and this is gas chromatography; is that correct?

A That's one of the techniques.

Q Okay. Because I guess you were using -- you had samples which were solid or liquid also?

A When we were auditing we didn't have the samples. We were auditing labs that performed testing on samples that may have been solid, may have been liquid, may have been air.
Q Okay.
A Almost any matrix.
Q Sure. Well, let's talk about there was a portion of this which was gas chromatography; is that correct?
A Yes. Volatile organics were one of the most frequent types of --
Q Correct.
A -- analysis requested.
Q And so I suspect what you would do is you'd take the sample, heat it, expect that there would be gases that would come off, and very similar to what we've seen here, you sample the gas and run it through the gas chromatograph; is that correct?
A That's pretty good.
Q And the gas chromatograph which is traditionally used in this type of work, is it single or dual column?
A For the most part, dual column.
Q Is it inappropriate to use a single column?
A That's a difficult question because it depends on what the purpose of testing is. There's certainly applications where use of a single column GP is -- GC is entirely appropriate. In general, I'd say the vast majority of the work being done is

dual column, except in very specific, very targeted applications.

Q Okay. And -- well, give the Court some idea of what this testing looks like then. If you have a sample of a soil or something that you think may have this particular substance in it that you're trying to identify what's in it, how many times is that sample going to be tested?

A How many times is that sample going to be tested for --

Q Yeah.

A -- volatile organics?

Q Yeah.

A Just one time for volatile organics.

Q So you prepare one head space capsule or -- I forgot the terminology.

A Vial.

Q Vial. And then do basically one injection?

A Oh, okay. I understand. It may be prepared in duplicate.

Q Okay.

A You may prepare multiple al -- what they're called is aliquots, basically --

Q Yeah.

A -- different --

Q That was it.

A -- sub samples from --

Q Correct.

A -- bulk material and then they each go through a dual column injection. Is that what you're asking? I'm --
Q Yeah.
A Okay.
Q Basically. And so if -- and I suspect it would depend upon the substance that you're looking at as to whether you -- it was acceptable to use a single column or double; correct?
A It depends on the intended use of the data.
Q Okay. So when would it be acceptable to use a single column?
A In support of a lot of very specific processes, where you have a process flow of -- that's been well characterized and you're simply trying to take in process measurements, then a single column may be partic -- absolutely appropriate.
Q So it's --
A But if it's more an unknown situation, dual columns are probably the technique of choice.
Q So you basically suspect that there's DDT in the sample, you're just trying to confirm as DDT. So that's a single sample would be acceptable? You've got -- you've done this 50 or 100 times before, you just want to know if it's DDT in there because then you're going to have to do something with it?
A I hate to keep coming back to this, but it's going to be my stock answer.
Q Okay.

A It depends on the intended use of the data.
Q Okay.
A Because it's a fundamental precept of quality assurance that the level of quality control and the level of confidence that you need varies depending on the intended use of the data.
Q Okay.
A So I can't give you a blanket answer that's going to be applicable across the board.
Q Any GCs that you're aware of that use three columns?
A There's no reason they couldn't, but commercially the ones I'm aware of are for the most part dual column.
Q So dual --
A You know, there's no reason you couldn't --
Q Dual column is just --
A -- plumb it that way.
Q -- is basically state-of-the-art at this time?
A Yeah, that's a fair statement.
Q Yeah. And by running a particular sample twice, you would agree with me that you have the opportunity to determine consistency between two samples that have been run; isn't that correct?
A That's correct.
Q And that's one of the reasons why you run?
A Absolutely.
Q And as one of the quality assurance methods that you would

expect to see would be a degree of agreement between the two samples that are run; isn't that correct?
A That's correct. As I testified previously, that's the important precision measurement. It doesn't address accuracy, but it does address precision.
Q Well, that's one of the things that addresses precision. Isn't that true?
A Yes.
Q Because there are others also?
A Yes.
Q And so in the pursuit of accuracy, the fact that you have two columns that come within a percentage of agreement is important?
A In general, in most practices, under most analytical protocols, the accuracy determination is made off a single column run. They don't quantify off both columns. The second column is used for qualitative identification and -- well, first and second.
Q Sure.
A It's kind of arbitrary.
Q And that's what's --
A And the --
Q -- done by DPS?
A Yes.
Q But the second run, where you have two numbers to

quantify, allows you to compare the two runs, not in the different columns --

A That's correct.

Q -- but in the same column twice?

A For precision again, but not for accuracy. It's sort of the compelling story of analysis of unknowns, is accuracy is not something you can ever measure in an unknown sample.

Q Okay. But you would agree that the Department of Public Safety procedure requires precision between the two columns in the separate runs?

A It does. And that is a very good analytical practice.

Q And you're aware of the fact that the percentage of agreement which is acceptable in the Department of Public Safety lab is 5 percent, aren't you?

A I'd have to look at -- I know there are some things that are five, some that are three, some that are 10. I'd have to go look at the protocol, but that jives with my recollection.

Q Okay. And scientifically, that's an acceptable level of precision?

A I'll tell you again, it depends on the intended use of --

Q Well --

A -- the data, but --

Q -- the intended use here is for forensic purposes.

A That's not the kind of quantitative targets that are typically associated with setting data quality objectives.

Q And from the Department of Public Safety protocol, you're aware that the Department reports back to the lower of whatever the two runs are if they're in agreement in five -- within 5 percent agreement; isn't that correct?
A That's correct.
Q And that would give the benefit to a defendant because we're reporting a -- they're reporting a lower -- the lower number of the two. Wouldn't you agree --
A That's correct.
Q -- with that?
A That's correct.
Q So you are aware that the Department of Public Safety uses an eight -- .08 percent blood alcohol standard, isn't -- are you not?
A That's correct.
Q And that's a commercially purchased standard; isn't that correct?
A That's my understanding.
Q And that would meet your requirements for a commercially prepared known standard?
A I would have to see the certification records that demonstrate traceability of that material, but in general --
Q Okay.
A -- that's the means through which that's accomplished, yes.

Q And you don't need to do a laboratory inspection to see that material, do you?
A I don't need the -- I'm not sure I understand the question. I --
Q If those records -- if Mr. St. Louis or someone had asked for those records and presented them to you, you could examine those records independent of any sort of --
A Oh, certainly. The assessment of the records doesn't need to be done during an on-site. What's done during the on-site is addressing the storage, maintenance and use handling practices --
Q Correct.
A -- for that material.
Q So the issue of whether or not the .08 commercial blood sample is a valid blood sample really is a records search or review that you would have to do if you obtained the records?
A It is a records review. It also addresses whether or not, for example, the temperature storage logs are available for the refrigerator that it was stored in, because the --
Q Which is again a records review?
A Yeah. Yeah, for the period of time that the material was in storage.
Q Okay. Now correct me if I'm wrong, my understanding of the purpose of that .08 blood sample -- and in the runs that DPS has been doing in the Southern Arizona Laboratory, I

believe there's a whole blood sample every 10 -- between every 10 unknowns; is that correct? Is that your understanding?

A There are control samples periodically every 10 samples. It's --

Q And that's the whole blood we're talking about?

A It may or may not be. It's not always clear to me. The problem for me from a data review perspective is I have to go back and reconstruct it based on time sequence of individual data points like in the little packages that we've been reviewing. They don't produce -- I don't know whether they do it in the lab or whether it's not provided in discovery, but there's typically something called a run log or an injection log that gives you the start to finish sequence of everything that went through the instrument in date and time order. So you can tell very clearly the sequence. So I'd have to go back through data packages to confirm the actual injection sequences. I don't have access to a run log.

Q Okay. In -- and it's not in the protocol?

A No, it's not.

Q The purpose of the .08 blood standard though is the accuracy you've been talking about; isn't that correct?

A That is correct. It's good analytical practice to introduce a known control at whatever regulatory threshold or whatever criteria you're most interested in showing conformance to.

Q And so assuming that after the calibrators were run that the next thing that's run is a whole blood control, and every 10 -- after every 10 unknowns an additional whole blood control was run, that would be significant to you in your --
A That is certainly significant, yes, sir.
Q And the runs you have been provided basically had the calibrators at the beginning of the run; isn't that correct?
A Yes.
Q And then you would have each of those whole blood controls, the results of that in those -- in that run information; isn't that correct?
A Yeah. As it's described in the documentation provided by the laboratory, it typically identifies those control samples as control one, control two, control three, control four. From traceability perspective, I can't tell what sample that actually is. You made reference earlier in my earlier testimony to the fact that you couldn't -- you know, you wanted your packages to be identified because you couldn't tell what case they were from. That's the same problem I have in terms of traceability, that I can't always tell unambiguously. I have to make assumptions about precisely which traceable materials are in use at any given point in time. Under ASGLAD (phonetic) requirements, the laboratory is required to record a case number on every page of the data package. They don't do this here, so you have to assume that they're not mixing things

up.
Q Well, you can't report a case number on every page when you are running 40 cases at a time, can you?
A That is a quite typical analytical practice that you run samples from different clients and so forth in a single analytical batch. But when you prepare a data set to release to the client, that's the point at which you have the opportunity to uniquely identify that as associated with -- that that batch is correlated with that case number, if you will.
(Pause)
Q So let's take a look at Defense W. And this is a -- again, I picked out a run from 10/21 of '03, 18 pages. And --
A 10/23 of when?
Q Of 0 -- 10/21 of '03.
A Okay.
Q And just kind of run through this.
A Okay.
Q The first page, what is this?
A That's the results of the calibration curve.
Q And what does that mean?
A The instrument's stupid. It doesn't know what response give -- what known concentration should give what response. So you run known calibrator solutions through the instrument and you plot the response factor to hopefully get a straight line

from which you can interpolate unknown results.
Q Okay. And in this instance, there are, I think, six dots on the line or in the vicinity of the line; is that correct?
A I'm counting more than that.
Q You're right. See what happens when you put your glasses on. So one, two, three, four, five, six, seven; is that correct?
A It appears to be, yes.
Q Okay.
A At least there are 10 look like little hand drawn circles. Or seven little hand drawn circles around those points.
Q Are those hand drawn or computer drawn?
A You know, I can't tell.
Q Okay. And so what the analyst then is doing is determining whether or not the calibrators are within acceptable standards; isn't that correct?
A Yes. The set of calibrators have to achieve a straight line within a given tolerance.
Q Or reasonably -- within a given tolerance?
A Yes, sir.
Q And this is provided and each of the runs you have reviewed is available for your review; isn't that correct?
A Yes.
Q The --
A This is actually two separate calibration runs. It

appears that they ran -- I can't tell about this one. It may have been right on top of the other one.
Q Okay.
A You can't really tell. But there were two different solutions at .10 --
Q Okay.
A And two different responses at .20 and at .3. That's not required under the protocol. It may have just been an analyst deciding to do more.
Q So -- well, let's take a look at it and see what we have on the run information, because the next page is run number one, injection number one, is --
A Uh-huh.
Q -- what we were talking about; right?
A Yes.
Q And this is a .01 sample; correct?
A That's what it's identified as, yes.
Q And you can't go back and change this stuff in -- this header information in the computer later, can you?
A You mean after the run is out?
Q After the run, yes.
A Oh, I suppose you could get a good 12-year-old hacker in to do it, but, you know, it's not designed to do that. You set up your run information, batch information, right up front before the --

Q Correct.
A -- the run. In labs that have sort of done what I'll call dry labbing, performing results -- providing results without benefit of analysis, analysts have gone in and altered dates and times and reissued old raw data files with new sample numbers to make it appear they had run samples they hadn't done. So they do have the ability to do that.
Q Okay.
A But certainly --
Q There's no indication that that's occurred?
A Oh, absolutely no, no.
Q You're not -- because that's significant fraud in a forensic --
A It's the worst thing you can do, yes.
Q Yeah.
A We call that --
Q Cheating.
A -- cheating, on a major scale.
Q So this basically would be a .01 calibrator, which then would be one of the dots on the line --
A Yes, sir.
Q -- (simultaneous conversation); correct?
A And the reason I know it's used for calibration is under run mode here it's identified as such.
Q As calibration?

A Yes.
Q That was the next question I was going to ask. The second injection again is a .01 calibrator; isn't --
A Yes.
Q -- that correct?
A Yes.
Q And as you look at the variance or the difference between the two, you're looking at the bottom set of data; isn't that correct?
A Yes. Well, you can look at either.
Q But --
A You can look at retention time, you can look at area.
Q But what they're interested in is the value they're getting; right, the peak count?
A The peak air?
Q Is that what --
A Well, that's --
Q Isn't that what they're comparing?
A Yes, that's -- well, what they're doing is they're plotting each combination of the theoretical concentration and the area on one separate plot. So they're plotting this one and then they're plotting the next one.
Q Correct.
A .01. They're not taking the average of the two and plotting that.

Q Correct.
A Okay.
Q And in this instance, the peak count for the ethanol on injection number one was 11386 and on injection number two was 11879?
A Yes.
Q And that's pretty darn close?
A Not exactly a scientific term.
Q But as you're looking at the graph, is it properly graphed?
A Oh, certainly, it's properly graphed. I have not seen a lab in my experience adopt a practice of running replicate calibration standards for purposes of getting a calibration curve. What that does is it improves your chance of getting a good curve that meets criteria. It's not quite as rigorous and quite as demanding as saying just run four and tell me what you get. They're sort of hedging their bets by making sure they get as good a line as possible by running more samples.
Q So in this instance, running more samples is bad? Is that what you're saying, more calibrators?
A It's not bad. It improves their chances of getting a straight line that meets the criteria.
Q All right. My statistics is not that strong, so (simultaneous conversation) --
A Well, if you just look at it.

Q Okay.
A If you look at the way these little dots are drawn -- and I apologize, can you see down here --
THE COURT: I can actually --
THE WITNESS: Okay.
THE COURT: -- sort of.
THE WITNESS: Good.
THE COURT: No, I can see (indiscernible).
THE WITNESS: It depends in what sequence you run these things, because if you just ran four of them in a row the .1, the .2, .3, 0.1, .2, .3, it might give you a line that goes up here and down to this one, then up to that one. And you can see that that would not be as clean a shot as running through the middle of these two and through the middle of those two. Do you see what I mean?
BY MR. DICKINSON:
Q I understand.
A If you only ran --
Q Okay.
A -- just those four peaks, you might get a little more variability. It might tend -- but here I'm splitting the difference right down the middle. So it improves my chances of being able to get a curve that meets my criteria, which is typically .995.
Q And this is well within the 995 --

A Oh, yes, sir. It certainly is. That's a good calibration curve, yes.
Q And so if you were doing this, you would prefer only to see four calibrators?
A It really doesn't matter. I suspect that their practice has been they more frequently can get an in control line when they do it in this manner and that's why they do it. It takes extra time, it takes, you know, more up front time, but if they can get it in control there --
Q Well --
A -- they're (simultaneous conversation).
THE COURT: I guess the issue is if it's properly analyzing the controls, can you then infer that it's properly analyzing the unknowns; right?
MR. DICKINSON: That's where we're going, (indiscernible).
THE WITNESS: Yeah.
BY MR. DICKINSON:
Q Now the third injection is the --
A .10?
Q -- .10 --
A Uh-huh.
Q -- calibration?
A Yes.
Q Correct?

A Correct.
Q And the fourth would be another .01 calibration?
A That's correct.
Q And again, what they're doing is plotting the ethanol results on both of those two; in this case an 114874 on injection three --
THE COURT: And, Joe, if you want to come up here and join the party, you can.
BY MR. DICKINSON:
Q -- and a 108564 on injection four; is that correct?
A That's correct.
MR. ST. LOUIS: You're just going to keep me awake if I have to stand up.
THE COURT: (Indiscernible).
BY MR. DICKINSON:
Q And we do the same for the .20 injection, which I think (indiscernible) injection got cut off at the top of that one.
A It's an occupational hazard.
Q Yeah, sloppy copying. But the next one is a -- is -- run is injection six.
A Yes.
Q So these are calibrators. You're dealing with the calibrators again?
A Yes.
Q And then injections seven and eight, which are out of

order in this one, are .30 and calibrators; is that correct?
A Yes.
Q Injection nine, the next injection, is that mixed standard that Mr. St. Louis was talking about last week?
A Yes.
Q Which has all of the various substances in it that they typically run on this; correct?
A Yes. As we discussed earlier, I would expect that there's method validation data on file --
Q Uh-huh.
A -- for each of these components.
Q And then injection 10 is the blank. We've talked about that. Starting with injection 11, you then have controls. And think we've cut it off.
A This run mode is analysis.
Q Is it? Okay.
A So it's not calibrating anymore.
Q No.
A It's running this as if it were a sample and providing you with a concentration that's computed by measuring the raw area counts against this curve and --
Q Correct.
A -- and interpolating what the concentration --
Q Correct.
A -- (simultaneous conversation).

Q And so in this instance, we should know and we do know from the original page 1 of this exhibit, Exhibit W, is -- well, this is a refereed -- would that be correct, laboratory, where a number of laboratories --
A Well, if you --
Q -- run the same sample --
A -- if you call --
Q -- to determine the --
A -- them refereed labs. They are just des -- they're just essentially getting a consensus value. There's no special status for these labs. It's just they're getting a consensus value of this --
Q And so --
A My concern --
Q Okay.
A -- from a traceability perspective, what I described earlier, is I have no objective way, in the absence of somebody telling me, that this control one sample can absolutely and unambiguously be correlated with this. Control one, I -- I mean I've seen a bunch of these forms --
Q Uh-huh.
A -- over a long period of time from the laboratory and they're all called control one. Over a period of years and years they're all called control one.
Q Well, actually that's not correct.

A Well --
Q Well --
A The first time --
Q -- you have control --
A -- it's run it's called --
Q Yeah.
A -- control one. The second time it's run it's called control two, the third time it's run it's called control -- it's basically called control and then with a numerical appendage that describes --
Q So --
A -- how many times it's been run.
Q -- as you look at the DPS protocol, doesn't it tell you that that's the same whole blood control that's being rerun periodically throughout the run?
A That does not document traceability in a laboratory environment.
Q I think we're dealing with Defense Exhibit P, which is the forensic alcohol analytical protocols for the Department of Public Safety Crime Labs dated October 2002. And I think Mr. St. Louis showed you --
A Yes.
Q -- Defendant's P --
A Yes, sir.
Q -- before; is that correct? So you're familiar with this?

A That is.
Q You've had a chance to review it?
A Yes.
Q And on page 6 it talks about validation of the whole blood controls. And that's what this first page of W is reporting; right, is this validation process. Is that your understanding?
A Presumably this is the results of validation, yes.
Q And so you would want to see additional documentation of this process to verify it?
A No. What I'm trying to explain is that over the period of time, the laboratory has in its possession a number of different lot numbers, different, you know, from -- of these controls.
Q Correct.
A And they call them -- they always call them the same thing, control and then dash one, dash two, dash three, dash four.
Q Well, in each run they'll call it the same thing because it's the same --
A How am I going to help --
Q It's taken --
A -- you understand this.
Q It's taken from the same lot?
A Right, but how -- I should not have to assume which lot it was from. There -- if you go to a lab that has good

traceability documentation --
Q Right.
A -- in place, it will have a unique identifier for that control --
Q So would you --
A -- that unambiguously correlates to this one, which correlates to the certificate of compliance provided by the manufacturer. So that there's a unique ID linking all those things together, both the --
Q So you want that on this run document is what you're saying?
A Not just that I want it. That's a traceability documentation expectation --
Q Is that an ASGLAD requirement?
A Traceability is an ASGLAD requirement, yes.
Q Specifically on each of these? And by this I'm pointing to the control --
A The principle --
Q -- runs.
A -- of traceability is universally that you --
Q (Simultaneous conversation) --
A -- unambiguously -- it's like an unbroken chain that links the standard reference material that's traceable to the NIST all the way down to the control used in your run.
Q Understand that. So --

A But --
Q -- is this -- isn't the control that's used in the run identified on page 1?
A But I can go get you three or four other different ones that look just like this that have different controls. And how do I know which one went with this, other than there's a staple stick holding this one together?
Q Well, so --
A You see my --
Q I --
A Do you see what I'm --
Q I see what you're --
A -- trying to explain?
Q It looks kind of like you're picking a nit. You know, you want this control number, I guess whatever's on each sheet?
A That's -- I will tell you that's conventional practice in analytical labs across the --
Q Okay.
A -- country in every discipline, that you assign a unique standard identifier so that I can check the parentage. I can check the lot numbers. It's just like how we can check whether or not a batch of beef is contaminated because all the lot numbers are unambiguously identified.
Q I understand your point.
A And being picky is a occupational hazard.

Q Of an auditor.
A Yes.
Q (Indiscernible). I've got that already. And so continuing on in W -- and I think we've got it. We talked about control one, which was injection number 11, and then control 2 is, in this run, injection number 14; is that correct?
A Yes.
Q And again, from a quality control standpoint, what you're interested in is the amount of agreement on the ethanol, and I guess thee propanol, in the internal standard between those two runs; isn't that correct?
A That's one of the things, yes. It -- the absolute number isn't --
Q Correct.
A -- as important as the relatives.
Q As the relationship or the --
A That's correct.
Q -- the ratio between them. And then I guess this is a short one that I picked because we then go to --
A I can't tell. I can't tell what that number --
Q I'm not sure what injection this is, but injection 16 is a .10 cali -- it wouldn't be a calibrator. It's a --
A Here's your cheat sheet.
Q -- verifier.

A Verifier, yes, sir.
Q So this is the conclusion of a rather short run?
A Of a batch, yeah, a very small batch.
Q Okay.
(Pause)
Q Are you familiar with an organization called the Society of Forensic Toxicology?
A SOFT, I believe, is its widely used --
Q Correct.
A -- acronym? Yes.
Q And with the American Academy of Forensic Sciences?
A Yes.
Q And are you familiar with the fact that both of those organi -- and what is the American Academy of Forensic Sciences?
A I'm not a member, but my understanding is that it's a professional organization of practicing forensic scientists.
Q Yeah. You recognize both of those as valid professional organizations?
A Sure.
Q And would you be surprised to know that both of those organizations recommend that as a good laboratory practice calibrators be run in duplicate?
A No. Most laboratories that do that do it as separate calibration lines rather than together.

Q Do you have any idea of the number of blood alcohol analysis the Department of Public Safety Southern Arizona Crime Lab runs per year?
A I have seen that statistic, but frankly, I don't remember it.
Q Any estimate?
A It's in the thousands, but I just don't remember, I'm sorry. It was in one of the documents that I've read.
(Pause)
THE COURT: All right, folks. We're going to take a break at this time, a short break. Why don't we take five --
MR. DICKINSON: Okay.
THE COURT: -- or so minutes, (indiscernible).
(Recess from 11:13 to 11:21 a.m.)
THE COURT: And we're back on the record. All the parties are present. Mr. Dickinson with -- and Cary Johnson on behalf of the State; Joe St. Louis here on behalf of defendant Guy Kirkpatrick and also Mr. Esposito. Testimony of Janine Arvizu, who's on the stand at this time being cross-examined by Mr. Dickinson.
MR. DICKINSON: Thank you, Your Honor.
BY MR. DICKINSON:
Q I'd like to show you two exhibits which were, defense exhibits, which were entered Friday when we had our hearing. They're Defense EE and FF. I believe you've had a chance to

review both of those?
A Yes.
Q And neither of those -- that has to do with a criminalist named Curt Rinebold (phonetic), I believe, Curtis Rinebold?
A Yes.
Q And this is part of the documentation of the ASGLAD laboratory examination; is that correct?
A Yes.
Q And this was one of the complaints that was -- or one of the issues that was identified by the ASGLAD committee when it came through; is that correct?
A Yes. This is documentation in response to one of the findings.
Q Correct. And the finding has to do with Mr. Rinebold and an analysis of a biological sample; isn't that correct?
A Yes.
Q And it has nothing whatsoever to do with analysis of blood alcohol; isn't that correct?
A That's correct.
Q Or with gas chromatography; is that --
A Completely different technique.
Q And completely different discipline?
A Yes.
Q Thank you.
MR. DICKINSON: These are in evidence, Your Honor,

THE COURT: Thank you.

(Pause)

BY MR. DICKINSON:

Q Like to show you what's been marked as Defendant's Q. And if you would turn to (indiscernible) what I believe is numbered as page 10 of Q, which is the 30 percent calibrator.

A Yeah, the .3 percent calibrator?

Q .3 percent, I'm sorry --

A Uh-huh.

Q -- calibrator. And it -- the injection was cut off. And on that report -- go ahead and take a look. This was one of the areas that you testified about Friday as being a problem area; isn't that correct?

A It was a problem that was addressed by the analyst at the time.

Q Okay. And that's the point I wanted to make. The next page isn't -- well, the note on here appears to be by the analyst; isn't that correct? It's a handwritten note.

A It seems to be, yes.

Q And (simultaneous conversation) --

A It's hard to tell from copies, but it seems to be.

Q Yeah. And the next page appears to have corrected that issue; isn't that correct?

A Yes.

Q And so there wasn't a report out that was improper or

incorrect on this. It was identified and corrected; isn't that true?

A Yeah, that's correct. The issue here is really just clearly documenting for an independent reviewer as to which result was actually used for purposes of testing. Indicates "See next chromatogram." Well, we've already seen that that can sometimes become an issue if you can't see the sequence. What's typical is a notation as to the nature of manual integration, if this was manually integrated by the analyst. I presume that that's what was done. She didn't say that. She or he, I'm not sure --

Q (Simultaneous conversation) --

A -- in this case.

Q -- I believe was the testimony.

A Okay, thank you. That what's generally expected, especially for a manual integration because that's something that has the, again, the possibility of being misused by analysts. Generally, manual integrations are always documented by the analyst and the reason. In this case, she's indicated the reason something had to be done, but not the fact that she actually manually integrated.

Q But if there was deceit or something of that sort, you would expect not to see that page at all; right?

A Oh, ab -- there's no suggestion that there was deceit here. That's correct. It's good practice that she included

this page.

MR. DICKINSON: What we're talking about is --

THE COURT: Uh-huh.

MR. DICKINSON: -- this, which I think resulted in -- let me show Ms. Arvizu that.

BY MR. DICKINSON:

Q The -- what we're talking about here is the internal standard; is that correct?

A Yes.

Q And so the area under the peak before it was adjusted was 200273; correct?

A Uh-huh.

Q And after the adjustment it was reduced to 134785?

A Yeah. Again, the absolute numbers are not as meaningful as the relationship --

Q Well, the --

A -- but yeah --

Q The point is that the area which was below the line here --

A Correct.

Q -- was removed from the calculation?

A Yes.

Q Which is appropriate?

A Appropriate, yes.

(Pause)

Q And this is not a contamination problem; is that correct?
A That's correct.
(Pause)
Q I think on Defendant's S, Mr. St. Louis had shown you run number 2, which is a .10 calibration; is that correct?
A .01.
Q (Indiscernible) .01. Little dyslexic today. And you had testified that the notch that was below the line at the end of the run was a concern; isn't that correct?
A Possibly.
Q And there's nothing that would indicate that this is contamination, is there?
A That's correct.
(Pause)
THE COURT: What could cause a notch like that? I mean that's a negative reading; right?
THE WITNESS: It is.
THE COURT: Rather than a positive spike, however small.
THE WITNESS: Yeah. And, for example, in that other case it could have been caused by simply an electric interference or a surge of power going through, because the instrument is just setting its baseline. And if you were to magnify it hugely, you'd see little lines like this (indicating). It would look like a little field of grass. But

when we scale it up it looks like a straight line. Any number of electronic interferences can cause such a -- what appears to be a negative concentration, but clearly that's not what it's reflecting.

THE COURT: If there were a surge of power --

THE WITNESS: Yeah. It's --

THE COURT: -- you said?

THE WITNESS: If you don't --

THE COURT: Would it affect --

THE WITNESS: -- have nicely --

THE COURT: Would it affect any of the other readings on there, the spikes, the --

THE WITNESS: If --

THE COURT: -- positive --

THE WITNESS: Well, that's an interesting question.

THE COURT: -- values as well as --

THE WITNESS: If in fact --

THE COURT: -- the negative values?

THE WITNESS: -- you had a -- something like that going on while it was responding, while it was reading a peak, yeah, it certainly could.

BY MR. DICKINSON:

Q Think Mr. St. Louis had discussed with you Defendant's T, which is the run from June 16th of 2006. Make sure I get the right one.

(Pause)
Q And showing you the .20, I believe this is a verifier, on the -- on column two at the bottom, at approximately just short of one minute.
A Uh-huh.
Q You had identified an area of disturbance in the baseline as a problem. Do you recall that?
A Yeah. An area of disturbance is probably a fairly good description of it.
Q Okay. And there's nothing there to indicate that this is contamination, is there?
A No. And it's really hard to tell with the resolution of this display exactly what that might be.
Q And if you would point out to the judge the area you're talking about.
A Yes. This area right here (indicating).
Q Again, that could be electrical surge or something of that sort?
A They're usually not quite that broad. They're usually more intense. They will usually look straighter than a normal peak, but it could be any number of things.
Q That would be a concern if it was under the peaks we're looking for, either the internal standard or ethanol, wouldn't it?
A Yes.

Q But there's no indication that there's any disturbance in the baseline under the peaks that we were looking at. I guess we could give you back --
A You never can actually see the baseline under a peak. That line that you see there is the one that's drawn in by the instrument if it's automatically integrated or manually integrated by the analyst. So that the baseline under the peak is not something that you capture. It's just the signal responding to the material coming through. So if there's sort of a baseline, something that would cause a baseline interference on top of it, it's essentially carried under that peak.
Q Okay. So if you had that issue, that problem, it would then be important to look at all of the data in the run; isn't that correct?
A In general, you always want to look at all the data --
Q Sure.
A -- in the entire batch, yes.
Q But if you have something that is skewed significantly -- for example, what we're talking about here is a .20 verifier; right?
A Yes.
Q So it would be important to go back and take a look at the .20 calibrators?
A That would be an appropriate thing to do.

Q Okay. And what you would end up doing then is making the comparison between the internal standard and the ethanol on the .20 veri -- calibrators and comparing those to the .20 verifier; isn't that correct? Isn't that what the procedure would require?
A That's the discrete criterion that they're evaluating when they look at verifiers. If you sort of take off those blinders and look at the whole data set --
Q Okay.
A -- that's the point at which you see that -- lose my place here. The place where this, you called it a baseline disturbance is showing up shortly before one minute.
Q Uh-huh.
A Is kind of the same place you have something going on here --
Q Okay.
A -- in the initial run.
Q And you're --
A Again, this --
Q -- looking at the point --
A The point --
Q -- 20 calibrator?
A -- 20 calibrator. And this is the .20, presumably the same analytical sample run again at the end of the run. Again, it's very hard to tell with the resolution of this display what

might actually be going on.
Q Okay. But you would agree with me that nothing at the one minute injection should affect the results on either the internal standard or on the ethanol, which come out at approximately 1.9 and 3 minutes; is that correct?
A That's correct.
MR. DICKINSON: -- know if you need to see that again or not.
MR. ST. LOUIS: There's actually a version you can see on Exhibit N at pages 20 and 21.
MR. DICKINSON: N.
THE COURT: Exhibit what?
MR. DICKINSON: N.
MR. ST. LOUIS: N.
MR. DICKINSON: The slide show. And basically that --
THE COURT: Okay.
MR. DICKINSON: -- may help the Court, because that's what I'm doing is going through the slide show.
THE COURT: Okay.
MR. DICKINSON: So if you wanted to kind of keep track, I can give that one back to you.
THE COURT: I wonder if I have one here.
MR. DICKINSON: Yeah, you do.
THE COURT: I'm not sure I do. I don't think I do

have that.

(Pause)

MR. DICKINSON: And where I'm at right now is on page 21.

THE COURT: Hmm. No wonder you were --

MR. DICKINSON: And --

THE COURT: -- following it well over there.

MR. DICKINSON: And if the Court would like another copy of that to make notes on, would you -- would that help you?

THE COURT: Okay. Is this your copy though? Oh, this is in evidence.

MR. DICKINSON: That's --

THE COURT: Okay. This is the -- yeah.

MR. DICKINSON: But I can provide the Court with another copy that you can take notes on, scribble on.

(Simultaneous conversation)

(Pause)

THE COURT: Page 29?

MR. DICKINSON: 21.

THE COURT: 21?

MR. ST. LOUIS: 20 and 21.

MR. DICKINSON: Again, on page -- I'm on page 22 now, Your Honor.

THE COURT: Uh-huh.

BY MR. DICKINSON:
Q Again, still referring to T. And we're on the sixth injection, the .20 sample of calibration. Okay? I think you'd indicated in your testimony on --
THE COURT: Friday.
BY MR. DICKINSON:
Q -- Friday --
MR. DICKINSON: And this is the bottom of page 22, Your Honor.
THE COURT: Uh-huh.
BY MR. DICKINSON:
Q -- that you were concerned with the foot or the area on the right side of the peak that extended out; is that correct?
A Uh-huh.
Q And that does not affect significantly the area or the calculation of the volume of that spike, does it, that little foot?
A The area of that peak? That kind of chromatography makes it more difficult for the automatic integration programs to work, because essentially you can see that you've got a pretty straight peak on one side --
Q Correct.
A -- and that tailing on the other.
Q Okay.
A That's the kind -- you want those essentially to be a

mirror image of each other for the integration to work.
Q Okay. So let's take a look at that. So on State's 2, let me do it in green. I'm going to put an X through some other things that are in green that we're not talking about now, couple X's.

So let me see if I can do this. We'll put a baseline in; right? And then we can put a peak like what you're talking about. And I guess is -- that's not correct, is it? This is --

A Yeah. That gives them the benefit of better chromatography than I think you're actually seeing here.

Q Okay. Would you like to draw it then?

A (Indiscernible).

Q Use green, because that's what I --

THE COURT: Yeah, but you want to separate your --

THE WITNESS: I want to --

MR. DICKINSON: Okay.

THE WITNESS: -- be able to see.

THE COURT: -- marks from hers.

BY MR. DICKINSON:

Q Then try red.

A Okay, we'll try red.

(Pause)

A That's --

Q So --

A -- much more of a -- approaching a 90 --
Q Okay.
A -- degree angle on this.
Q So you've indicated in red a mark which makes the left side of the peak more abrupt; is that correct?
A Yes.
Q And we can use that proportion right there. So the area between the green line on the left, the baseline and your red line, is that a significant percentage of the volume of this spike, of this peak?
A Depends what you mean by significant. Our job as analytical scientists is to try to optimize the chromatography so that we can have as much confidence as possible in the result. This is simply an example where the chromatography wasn't as precise as you'd like it to be.
Q You would agree with me that the percentage of area that's within that portion of the peak is very small, wouldn't you?
A It is.
Q And -- I'm going to leave that one alone.
THE COURT: I think you testified on Friday that one area of great significance was that baseline between where the spike part touches that baseline.
THE WITNESS: Yes, ma'am.
THE COURT: So --
THE WITNESS: And because -- it's the way that the

integration programs work from the instrument, because they're -- they have a -- sort of a peak picking routine that sets those boundaries. And so when -- if the green peak was the peak in question, you'd want to know was it picking it here and all the way out here --

THE COURT: Uh-huh.

THE WITNESS: -- or is it -- I think the one we were looking at when I testified earlier had a little line drawn. So that's where it's kind of hard to tell on these. You kind of need an expansion a little to tell what exactly is going on to know what point on that baseline it's choosing for purposes of integration, because there's a lot of counts here, you know. If you look at actual area, there are a lot of counts there that would proportionally bring this down.

MR. DICKINSON: I'm not sure what page we were on. I'm on page, frankly, at the top at this point.

THE COURT: Okay. You were on 22 just --

MR. DICKINSON: Yeah.

THE COURT: -- now.

MR. DICKINSON: No, I --

THE COURT: But now --

MR. DICKINSON: (Talking to self)

(Pause)

MR. DICKINSON: I'm not sure what exhibit that came from. It wasn't properly labeled at the top of the page on 23.

MR. ST. LOUIS: It's Exhibit U.
MR. DICKINSON: Okay.
(Pause)
BY MR. DICKINSON:
Q So on the top of page 23 of the slide show, which was --
MR. DICKINSON: What was that exhibit?
THE COURT: Defense Q, was --
MR. ST. LOUIS: N.
THE COURT: Oh, it's --
MR. ST. LOUIS: N.
THE COURT: N?
THE WITNESS: N.
MR. DICKINSON: Defense N.
THE COURT: Okay.
MR. ST. LOUIS: The PowerPoint slides are in.
MR. DICKINSON: Yeah, they are.
MR. ST. LOUIS: Page 23 --
THE COURT: I think everything's in.
MR. ST. LOUIS: -- is the .20 calibrator that was the sixth item that was run on October 9th, 2003. It's Bates page 8 --
MR. DICKINSON: Correct.
MR. ST. LOUIS: -- of Exhibit Q.
BY MR. DICKINSON:
Q This, I believe, is the exhibit that Mr. St. Louis had

blown up to show -- well, I'll show you my copy of it. These disturbances on the baseline?

A Yes.

Q And I believe they're approximately -- we're talking about both the -- both columns?

A Yes.

Q And they occur just before one minute and just after, I believe four minutes?

A Uh-huh.

Q Or almost five minutes.

A Uh-huh.

Q Is that correct?

A Yes.

Q And I believe it was your testimony Friday that you're not sure what they are; correct?

A That's correct.

Q But you would agree with me that they do not affect the results of the -- either the internal standard or of the ethanol reading?

A That's correct. That distance away they do not directly interfere with those peaks.

MR. DICKINSON: Think what we're talking about is these areas here (indicating).

THE COURT: Is there a significance to them being there than, or the -- do they not matter in the context of

which this hearing is being held?

THE WITNESS: Yes, ma'am. The real significance is the fact that your calibrators and your controls are supposed to be these clean, highly protected samples that absolutely have nothing else in them. And it's evident in some of the other cases -- those are very large peaks in those positions -- that the integrity of those reference materials has been compromised. That volatiles somewhere during the processing or handling of those reference materials, they were handled in such a manner that another volatile got in, and got in in very significant quantities.

What that tells me is that they have an uncontrolled processing environment, that they have an environment where the analysts -- and I can't tell without going to observe it, but for whatever reason, things that are supposed to be protected from contamination are not being; that that's clear evidence that a standard reference material has a contaminant present in it, and they keep using it.

The problem is that that means that their processing systems, the physical environment and their practices are such that they don't know when contamination is getting into their samples. And the problem is that that creates an -- I mean it's kind of like going to a restaurant when you know they had e. coli contamination and saying their practices were such that they let it happen, but I don't have to worry about salmonella

because I don't know.

Well, their practices, if their practices let one kind of contamination happen it's the same kind of exposure, it's the same kind of practices that let ethanol contamination in. And the problem is if it's your contaminant of interest, you'll never ever know or be able to know whether or not it's contaminant or whether it was originally present in the sample. I just worry about their whole processing scheme given that they're able to such -- have a long-term chronic problem with contamination of the reference samples, which are supposed to be the cleanest most pristine things in the laboratory.

THE COURT: Is it unusual for you to find this type of evidence of possible contamination, or in your words I guess it is contamination, in gas chromatographs based on --

THE WITNESS: Volatile --

THE COURT: -- all the work you've done, or is it a fairly common thing that --

THE WITNESS: It's --

THE COURT: -- shows up?

THE WITNESS: It really is very hard to do volatile analysis and control the contamination. I don't -- and it's, I'm sure, only exacerbated by the difficulty of the facility that they're trying to operate in, because volatiles are one of the most difficult things to prevent contam -- circumstances in the lab to prevent contamination from occurring. I've never --

I don't recall -- I don't want to say never, but I don't recall seeing an instance where there was chronic contamination in a reference sample before, because frankly most labs, immediately upon seeing a contaminant presence in a -- present in a calibration standard would stop the analysis and go back and prepare fresh calibrators, and recognize that there was a con -- something happened to contaminate the integrity of the sample.

It's like you said, there's a little glass vial -- it's like going through the glass. It's happening at some point when the -- that sample is being exposed to the environment. And if that's happening for the reference samples, I worry about it happening for the unknown samples, because it's happening over such a long period of time and in so many different samples. That's a clear indication of a chronic contamination exposure that they've largely left uncharacterized.

You know, if they'd gone through some rigorous attempt to investigate gosh, where's that toluene coming from, how could it have been introduced, was it when I was doing this kind of an operation and therefore I got to stop doing that, you know, when it's over a temperature of such and such in the lab. You know, if they'd actually gone in and investigated and figured out what was causing it and stopped whatever practice was causing it, it would give me a lot more comfort. But the

tendency in this lab seems to be just ignore it as long as it's not on top of my ethanol. Well, if it is on top of your ethanol you don't know it. You'll never know.

That's why you have to control exposure to volatiles throughout the analytical process, because that's an indication. That's like a little red light saying warning, warning, you have contamination; volatile organics that aren't supposed to be in your sample are getting in there.

THE COURT: Is it possible that the samples are contaminated in their preparation manufacture in whatever lab they come from?

THE WITNESS: The calibration samples?

THE COURT: Uh-huh.

THE WITNESS: That's certainly a possibility. I have seen that occur. It's a absolutely critical failure for a manufacturer, because they're certifying the purity of those reference materials. Now under the lab's own protocols, when they receive new materials they're supposed to analyze them and verify that they're clean and of -- at the time, before they ever put them into use for analyzing unknowns (indiscernible) data. But I presume that the lab does that because they say that they do.

That's one of the things we look at during an on-site, that you don't just take it and put it into practice and start running unknowns. You actually run it through the

instrument and make sure yeah, it's really clean.
BY MR. DICKINSON:
Q And if there was a -- and you kind of mixed terms, I think. You were talking about calibrators and standards, and they're really different things. When we're talking about calibrators we're talking about the -- those percentage solutions that are used at the beginning of the run to calibrate and at the end of the run to verify. When we talk about the standards we're talking about the whole blood .08 standard that's purchased from the outside lab; is that correct?
A That's the terminology used here. When I was referring to standards, standard reference materials are the source of the calibrators. Those are --
Q Okay. But they --
A -- typically prepared --
Q They are diluted by the criminalist at the laboratory to the appropriate --
A They can either be diluted by the criminalist at the lab or they can be prepared and purchased as diluted solutions.
Q And your understanding (indiscernible) believe that the Department of Public Safety prepares their own?
A My understanding is that they prepare their own.
Q Correct.
A Which is an indication that it's their processing

practices that are compromised.
Q Okay. So let's deal with those two issues separately for a moment. The first issue you talked about or that I want to talk about is that whole blood standard that's purchased from the outside.
A Okay.
Q If that was contaminated, you would expect to see the same contamination in each and every run; isn't that true?
A That's correct. If you purchased it in a state when it was not in fact pure .08 alcohol, if there was another component present, you would expect to be able to detect that every time you analyzed that sample.
Q And have you taken the time to analyze the data to determine within particular batches, because you had the batches on the front of each -- the lot number, let me use the terminology correctly -- whether or not there is consistent problems with that 08 blood standard within lots?
A As used during analysis as a control sample, it doesn't appear to be the case. It doesn't appear to be the case that they purchased essentially a defective control.
Q And so I think there was one instance where there was something in the whole blood standard which appeared not to belong there?
A My recollection is that the laboratory's explanation for a peak that was appearing after they analyzed the whole blood

control was attributing it to being carryover from the whole blood sample. So it wasn't showing up in that spectrum.

Q Correct.

A It wasn't showing up in that chromatogram. It was showing up in a subsequent chromatogram.

Q And --

A And the analyst --

Q -- do you understand what they're saying on that?

A I -- yeah, I think so.

Q Is that plausible?

A That's certainly possible, yes.

Q And does that compromise the run because that particular issue appears?

A See, I think you're kind of expecting that there's sort of a critical failure that impacts one sample, and that its occurrence in one sample is enough to cause you to call that a fail. And certainly in some cases, and I described one of them on Friday, that is the case. But more -- in this case, in this laboratory, what I'm seeing is not a critical failure on one sample, but sort of a chronic fever, if you will, that's extending over a long period of time, fever of unexplained origin; that I have contaminants that come and in reference samples and analytical samples that tell a very compelling story that the laboratory has unidentified, uncontrolled sources of volatile organic contamination that are compromising

both control samples and unknown samples during the course of analysis.

So it's not a line drawing, it's a multi-color picture that paints a -- and tells a story that there are significant technical issues that merit attention in this laboratory. It's not that there's one critical failure in one sample, although that certainly can occur. It's with -- it's the context of the big picture, if that makes sense.

Q And so in your work as an analyst back at the beginning of your career, didn't you encounter these types of problems and issues?

A Oh, absolutely. Not these very specific examples, but when you practice analytical chemistry in a production lab part of what you're trying to do is to get a handle on these, what I'll call intermittent kinds of occurrences, which requires that they be documented and monitored. So that if something does reoccur you have the information that you need as a scientist to go back and investigate its origin, its scope, the nature that it's affecting.

Because, for example, if what I find out is that an analyst who's working at the bench top, in the hood, who's processing unknown samples, if I find out that their failure to use good lab practices and contamination control practices is such that it's compromising reference samples, I have to conclude it has the potential to also compromise unknown

samples. And so I'm going to put in place control. I'm either going to retrain them or force other materials to be handled in a different facility at a different time to prevent that from happening, you know, variety of control mechanisms you can put in place.

But if you don't document those -- these kinds of sort of spurious events, it -- in quality assurance in a laboratory environment it's called corrective action reports. You identify these things and then you look at the holistically, you look at them systematically to see -- to try to understand how can this be, what is it about the way I'm processing samples that I'm letting volatile contaminants into samples where they shouldn't be.

Q And so at this point your assumption is that process is not in place and isn't occurring?

A From reviewing the data, it's appear (sic) that the contamination is still a chronic problem. From reviewing the testimony of the analysts in the lab, I've got no indication that they've instituted such an investigative process.

Q So you simply can't tell at this point because you may not have sufficient information?

A I sincerely hope they're back in the laboratory today investigating it. That would be good news.

Q But if they had done investigations on a number of these issues and there were reasonable answers and reasons for

this --
A There could have been subsequent to the testimony that I read.
Q Yeah.
A I've read testimony over a period of time. But certainly they might have investigated some of these things after that testimony. I haven't seen any data. I -- or reports or corrective action reports.
MR. DICKINSON: Now where do you want to go at this point? Want to go for another hour, two hours here, then take lunch?
(Unrelated conversation not transcribed)
THE COURT: All right. Why don't we break.
(Unrelated conversation not transcribed)
THE COURT: What time do you want to be back?
MR. DICKINSON: 1:30.
THE COURT: 1:30. All right. And if you wish to leave all your stuff here you may, but the place -- the courtroom will be locked.
MR. DICKINSON: Think we'll leave all of the court exhibits here.
THE COURT: Okay. And -- okay. I thought we had agreed on continuing on September 10th.
MR. ST. LOUIS: That's what I have.
MR. DICKINSON: Yeah, we have.

THE COURT: But --

MR. DICKINSON: At 9:30 by the way.

THE COURT: Yeah, but -- yeah, right. But I still have two juries there. So we're going to have to see --

MR. DICKINSON: Joe and I can do a jury --

THE COURT: Oh, but you --

MR. DICKINSON: -- in the morning --

THE COURT: -- were going to clear --

MR. DICKINSON: -- or in the afternoon --

THE COURT: -- them out. Yeah, right.

MR. DICKINSON: -- in addition to this.

THE COURT: Okay, that'd be --

MR. DICKINSON: That's not a problem.

THE COURT: -- great. All right. So you can step down and we'll all convene back here at 1:30.

(Recess from 12:03 to 1:30 p.m.)

THE COURT: All right, we're back on the record after noon break. Mr. Dickinson and Cary Johnson here on behalf of the State; Mr. Joe St. Louis on behalf of defendants Guy Kilpatrick (sic) and Julio Esposito. And we have on the stand Janine Arvizu, and Mr. Dickinson is going to continue his cross-examination at this time.

MR. DICKINSON: Thank you, Your Honor.

THE COURT: Sure.

BY MR. DICKINSON:
Q Think early this morning I was trying to find an internet entry we talked about, a publication that you had available, and I found it in my file during lunch.
THE COURT: Wow.
BY MR. DICKINSON:
Q I'd like to show you State's 3 for identification and ask if you recognize that.
A I do.
Q And what is shown in State's 3?
A I'm sorry, what is shown in State's --
Q Yeah. What --
A -- 3?
Q What is this?
A Oh. It looks like it's off of the NACDL web site, a summary of a presentation that I gave with Cynthia Orr.
Q Okay.
A And it's for sale for $15.
Q And this is the one that you were talking about this morning?
A That's one of them, yes.
Q And I guess the title of it is "Warriors for the Defense, A New Strategy. Crime Labs, How you can Trust Them?"
A I think that the Warriors for the Defense was sort of the overall contents title. I believe that particular talk was

crime labs, can you trust them.
Q Okay.
MR. DICKINSON: I would move the admission of State's 3.
THE COURT: All right. Any objection to the admission into evidence of State's 3?
MR. ST. LOUIS: No, that's fine.
THE COURT: State's 3 is admitted without objection.
(State's Exhibit 3 received)
BY MR. DICKINSON:
Q I'm not sure, do you have N?
(Pause)
Q Showing you Defense N, which is the PowerPoint presentation. Like to have you go back to page 13, which was the portion of the presentation dealing with the negative peak that Brook Hornonie (phonetic) corrected and we talked about this morning.
A Yes.
Q And you take a look at that. I believe that issue is covered in the PowerPoint on page 13, 14, 15, 16, 17; is that correct?
A Yes.
Q Then on page 18 there's a slide at the top of that page that starts out "But they fixed this problem in 2003; right." See that?

A Yes.
Q And then they go on to discuss -- the presentation goes on to discuss the Exhibit S, Defense Exhibit S. And on page 18 and 19 it talks about a problem they say is the same problem as the one identified in the earlier exhibit, Exhibit Q. Are those the same problem?
A They may or may not be.
Q Well, Q deals with the negative peak below and the fact that you had a correction; right?
A Well, the correction is not the problem. The problem is the negative peak and the fact that the doc -- manual integration was not appropriately documented. So it's really -- it's subtle, but that's an important difference.
Q Okay. And this negative peak was significant because it potentially affected -- I forget which one it was. I believe it's the ethanol, isn't it?
A Isopropanol.
Q Okay, the interim standard.
A Yeah.
Q And that's --
A And propanol.
Q That's significant; correct?
A It's significant that the laboratory's con -- operating conditions are such that they're experiencing what they attribute to be electronic spikes during the course of

analysis. It was in this particular instance apparently appropriately addressed by the analyst, but it's simply evidence of the electronic issues in the laboratory.

Q All right. So that's what -- and did you help prepare this, this exhibit?

A I did not, no.

Q Okay. You would agree with me that the spikes shown on -- or the negative spikes shown on page 19 are not in any area that's affected either by ethanol or internal standard?

A That's correct.

Q Now in --

(Pause)

Q Now in Defense U, which is a run from October 9th of 2003, the -- and we're talking about page 24 of the -- of Exhibit N at this point. In the second column you had testified before concerning the appearance of acetone in that column; is that correct?

A Yes.

Q And that in your opinion, that was an automatic disqualifier for that run; is that correct?

A Yes.

Q In that packet of documentation did you have the second run for that sample?

A Yes.

Q And did the acetone appear in the second run?

A No, I don't believe it did.
Q That, I think was --
A I might check.
Q -- a page before 97.
(Pause)
Q With injection 97?
A No, it did not.
Q Now can you take a look at the ratios of both internal standard and of ethanol in injection 97 and 98?
A I can do that in 97. I can't do it accurately in 98.
Q Okay. At the bottom of 98 is there an indication in the listing at the bottom that gives you the ratios?
A That's a --
Q Or the figures.
A -- default integration performed by the instrument, I presume, since it's not annotated as being anything different. That's the description of the situation that's happened that you've X'd out here, where you have two peaks that are not separated. So there's really no way to know how much of the contribution is from one component and how much of the contribution is for the other.
Q And -- okay.
A Doesn't mean that the instrument can't get an answer.
Q Yeah.
A Doesn't mean the instrument can't apply its standard

processing algorithm and get a result. It just means you can't rely on that result.

Q But you agree that there's no appearance of acetone in injection 97?

A That's correct.

Q Would you -- are you confident that what's shown in 98 in fact is acetone?

A No.

Q Why not?

A It's consistent with that, but it's not conclusive.

(Pause)

Q We're on page 25 of Defendant's N. Injection -- I'm not sure what injection it is. It's page 12 of the exhibit, page 12 on N.

A Uh-huh.

Q So we're dealing with a blank; is that correct?

A Yes.

Q And I think what you've identified or what has been identified is, in both columns, a peak just before one minute and just after four minutes on the first column, on column 1, and again, just before one minute and just after four minutes on column 2; is that correct?

A Yes.

Q The result again in this instance does not affect the areas where you expect either internal standard or ethanol to

come out; is that correct?
A Those particular peaks do not come out of the same retention time as either of those targets.
Q Thank you. And on page 26 they're talking about a series of problems in -- or the problem in what's been marked as Defendant's W in evidence. And again, they're talking about injection number 10, which again is a blank; is that correct?
A Yes.
Q And again, the peaks that are on -- and I think there's a peak on the left side of each column just before one, and on column number 1, there's a peak between three and four; is that correct?
A Yes.
Q And neither of those peaks would be interference with either ethanol or the internal standard; is that correct?
A That's correct.
Q And showing you Defense M, and at this point we're on page 28. And what we're discussing, I believe, is injection 5 of a 20 percent --
A .20, yes.
Q (Simultaneous conversation) .20, .20 calibrator. And on both columns just prior to one minute there's a peak which is unlabeled; is that correct?
A Yes.
Q And in neither, that peak will not interfere with either

ethanol or with internal standard; is that correct?
A That's correct.
(Pause)
Q On the next injection, injection 6, again you have what appear to be similar peaks to injection 5; is that correct?
A Yes.
Q And this again is a .20 calibrator?
A Yes.
Q And again, this would not interfere with either ethanol or internal standard?
A That's correct.
(Pause)
Q And again showing you M. And this is injection number 123, which is .10 verification. And I believe what was pointed out on column 2 is a peak shortly before five minutes on the chromatograph; is that correct?
A That's correct.
Q And again, this wouldn't interfere with either ethanol or internal standards, would it?
A Not if it's alluding at that position.
Q Have you had an occasion to do an analysis of all of these various issues and problems?
A I'm not sure I understand your question.
Q Well, have you taken the data and looked at all of the data over a period of time and for the types of issues you're

seeing that concern you?
A Certainly I've seen all this -- the time spanned by the chromatograms that we've had introduced into evidence. And I recognize that that does not represent the totality of work performed by the laboratory --
Q All right.
A -- during that period, but have -- to the extent that it's possible from an independent review of the data, have reviewed it. That's not to say that's the type of analysis that could be done in a laboratory; I'm not obviously in a position to do. And as an auditor, that's not really my function. That's really the lab's responsibility.
Q Well, but -- so you've notify -- you've noticed a number of different types of problems; right? You have noise on the baseline; correct?
A Yes.
Q You have negative peaks; correct?
A Yes.
Q You have peaks after the time that you would have ethanol coming out; correct?
A Yes.
Q You have peaks that are -- you can't explain in blanks and in controls and in calibrators?
A Yes.
Q You have peaks before the areas of interest?

A Yes.
Q Have you done anything to analyze and determine whether there are any patterns in those peaks or errors?
A Given the fact that I have access to only a limited subset of the data, that would, from a practical perspective, that would not be meaningful.
Q So you haven't done it?
A No, that's --
Q Okay.
A That's what you do in a lab.
Q And again on M, page 27, injection 124, again you have a peak in both columns prior to the one minute marker, right on the one minute marker in one case; is that correct?
A Yes.
Q And those peaks would not interfere with the ethanol or the internal standard?
A No.
(Pause)
Q Now I'd like to show you Defense AA, which is the run of 3/23/04. And this is page 36 on (indiscernible). The first column, I think, shows an indication of toluene, as does column 2; is that correct?
A Yes.
Q And in your review of the material that you were given from Mr. Ruskin (phonetic) concerning this situation, is it

your understanding that he identified the issue of toluene contamination in this -- I believe it's a .30 --

A .30 calibrator.

Q -- calibrator.

A I don't remember if it was in this particular case, but I remember reading his testimony regarding this.

Q And isn't it true that what he did then was discard that calibrator and reconstitute it or make a new one?

A That was his best recollection. Apparently that particular corrective action was never documented in the lab.

(Pause)

Q And on page 13 of the same exhibit, which I believe is a blank, injection number 10; is that correct?

A Yes.

Q Okay. And I think in both columns it was your conclusion in testifying that there was toluene in the blank; is that correct?

A Appears to be the case, yes.

Q Is that labeled --

A It is not.

Q -- in any way? So isn't it true that the significance of not being identified by the instrument is that there's not sufficient amount of it to -- for the instrument to register?

A That depends on how the instrument operating parameters were set --

Q Okay.
A -- because it's not simply a matter of how large it is. You've seen examples just recently of barely significantly sized peaks that are not identified. That's -- it just depends on how you have your operating parameters set.
Q Well, is it your understanding that the operator -- operating standards are set to include toluene?
A That's not what I'm referring to. I'm referring to essentially --
Q Sensitivity?
A Yeah, print threshold essentially. You can -- and I don't -- I'm not familiar with the operating system used by this particular instrument --
Q Okay.
A -- model of instrument, but typically the instrument operator has a lot of control over how long you go and how wide -- how -- over what retention time span you report, and so forth. So it just depends on how they're set.
Q So unless the instrument tells you what it is, you're speculating (indiscernible) the fact this is toluene?
A Yes, sir. Yes.
(Pause)
Q On page 46 of Exhibit N there's a slide that talks about client's blood tests, April 21/22 of '06; is that correct?
A Yes.

Q And are you familiar with when it is that Mr. Kirkpatrick's blood was taken?
A I would have to review his file.
Q Is that what we're talking about here, or not?
A I can't see this. It's too small, I'm sorry.
THE COURT: You want to borrow my glasses?
THE WITNESS: I might need to.
MR. DICKINSON: Well, let me --
THE COURT: (Indiscernible).
MR. DICKINSON: It's CC --
THE COURT: These are just magnifiers. They're not --
THE WITNESS: Actually these are pretty good.
BY MR. DICKINSON:
Q Showing you State's CC. Does that appear to be the same exhibit? And it would be 130 -- or injection 34 --
A 4/21/06. Yes, thank you.
Q So you would agree with me then that we are not discussing either Mr. Kirkpatrick or Mr. Esposito's case when we talk about the client's blood test; is that correct?
A That's correct.
Q It's a person named Joy Jacobs apparently, from the cover of CC?
A Yes.
Q And --

A I'm sorry.
Q No, that's fine. If you would, take a look at injection number 34. This is on page 47.
A Thank you.
Q And again, on both of the baselines there are a number of very small peaks; is that correct?
A Yes.
Q Okay. And none of these peaks would interfere with either the ethanol or the internal standard, would they?
A No.
Q And on the next page, on injection 35, if I'm on the right one. Let me make sure.
A It's on page 48 of this one.
Q Yeah. There again are a number of small peaks on the baseline; correct?
A This one actually has a new broad peak appearing on the BAC 2 column that was not in the previous replicate analysis.
Q Okay. Other than that one, which is at approximately four minutes and -- maybe four and three-quarters minutes. Would that be fair?
A Uh-huh.
Q Other than that, the small peaks that you see on the baseline would not interfere with either ethanol or internal standard, would they?
A That's correct.

Q And I guess I can kind of cut this short. Would you agree with me that virtually all of the baseline noise that we're seeing away from the ethanol and the internal standard peaks would not interfere with those results?
A The peaks that are sufficiently removed to be able to be resolved do not directly interfere with either the quantitation of the ethanol or the absolute peak of the propanol. The problem that it raises is the fact that processing techniques in the laboratory allow introduction of other material.
Q Okay. So let's talk about -- that's yours. Are you familiar with how blood is obtained by the police?
A In general.
Q Have you ever seen the items that are used to collect blood by the police?
A In some jurisdictions, not necessarily this one here.
Q And what's your understanding of what that consists of?
A Of what the local jurisdictions use?
Q No, what's generally used.
A Oh. There are a whole variety of commercially available blood draw kits from a variety of different manufacturers. There -- they come prepackaged and in -- with packing material and so forth all included.
Q And --
A Typically accommodate replicate sample collection.
Q Okay.

THE COURT: Are you going to not object to the admission into evidence of that particular exhibit?
MR. ST. LOUIS: I don't object. That's fine.
THE COURT: Okay, so it's admitted.
MR. DICKINSON: And --
THE COURT: What's the number of it though?
MR. DICKINSON: Number 1. So --
THE COURT: State's 1?
MR. DICKINSON: State's 1.
(State's Exhibit 1 received)
BY MR. DICKINSON:
Q If you'd take a look at it and examine the contents of State's 1.
A Do you want me to describe it as I'm --
Q Sure.
A -- going through?
Q Sure. Well, I was going to let you look at it first and then we'll --
A Okay.
Q -- talk about it.
A Okay.
(Pause)
A Okay.
Q And so State's 1 consists of an outside cardboard box; is that correct?

A Yes.
Q And then there's a plastic Ziploc bag; correct?
A Yes.
Q And then there's a plastic internal container; correct?
A With a foam liner leaving spaces for the tube.
Q And --
A Collection tube.
Q -- there are two collection tubes and what I believe is referred to hove, which is a needle to collect the blood.
A Uh-huh.
Q Is that your understanding?
A That's my understanding.
Q Okay. And do you know what the preservatives are that are normally in these tubes?
A Well, there again are quite a variety of preservatives available. Oft times you can look up a color code list, although there is some duplication or differences between different manufacturers. They may include things from citrate, EDTA, quite a variety of different preservatives.
Q And the collection tube is actually inside a plastic tube; isn't that correct?
A Yeah. The glass tube is inside a plastic tube.
Q So there's a glass tube with what, a gray top stopper on the top; is that correct?
A In this particular case, yeah.

Q And is there any significant that you're aware of to a gray top?
A I wouldn't assume it. I would look it up under the manufacturer's specifications to -- but typically, as I indicated, they're coded with a gray top to assume a certain concentration and type of preservative's present.
Q And the preservatives are designed to prevent clotting; isn't that correct?
A That's one of the reasons, yes.
Q And to insure preservative, so that it stays liquid -- I mean liquid and a preservative; is that right?
A Yes.
Q Now the way this is packaged then when it's in evidence -- are you familiar with how the police package these?
A Not locally, no.
Q If I were to tell you that the standard practice is for the collection tubes, two collection tubes of blood to be put back in these plastic containers inside this plastic box and sealed, and then inside the cardboard box and sealed, would that agree with what your knowledge of standard practice of police is for collection of blood?
A Yeah. Little bit more than that. Some labeling and --
Q Yeah.
A -- so forth, yeah.
Q As far as sealing it.

A Yeah.
Q Because there's labeling with the name, there's labeling with the case number?
A Uh-huh.
Q That has nothing to do, typically, with contamination, does it?
A Depends.
Q I guess if you licked the top of the tube or something.
A Well, if you have potential contaminants present on your hands at the time you're doing the work, that dramatically increases the potential for cross-contamination.
Q Okay. And so one of the things that the officers -- are you familiar with how officers are trained on this?
A No, I'm not. That's outside my area of expertise.
Q Okay. Once it's packaged and sealed with the tape in place, would you agree with me that it's unlikely to become contaminated?
A I will have to say it's unlikely, but it's not impossible based on my experience. I could show you scenarios where vials were shipped from sites under similar kinds of circumstances, placed in refrigerators, and con -- blanks that were shipped along with those actually demonstrate, using volatile free water, actually demonstrated the presence of contaminants.
Q Okay.
A So --

Q So if you --
A -- there's nothing to --
Q If you had that then, you would expect to see some damage to the --
A Not necessarily.
Q -- packaging?
A Volatiles -- this is not an impervious barrier to --
Q Okay.
A -- to a volatile --
Q And you're indicating --
A -- organic transport.
Q You're indicating the cardboard?
A Yeah, I'm indicating the cardboard.
Q And you're indicating then that the plastic is not impervious?
A No. This is --
Q And you're indicating that the plastic tube inside is not impervious?
A To -- certainly what we'd like to assume is that it's going to be liquid tight, that the blood inside is not going to get out.
Q Right.
A But liquid tight and gas tight are two different things. What you'll often hear about in blood samples is things like an incomplete draw.

Q Okay.
A That's a reflection of the fact that this, what is purportedly a gas tight seal with this gas stopper, one of the explanations is that seal has been compromised and there isn't as much of a vacuum inside that tube as at the time it was originally prepared. Now, you know, how can that happen? Well, it just does, because there's a certain failure rate associated with these types of things. And it's not a perfect vacuum in there and it's not a perfect world out here. And so there is the potential for gas transport across that barrier. That's the reason environmental programs ship blanks along with samples and in the refrigerator, so that we monitor for contamination at all those points in the process.
Q So you would expect to see then some annotation on the criminalist's notes that that had occurred, that there was a less than complete vial, that it was only partially --
A That would -- if that was the scenario, certainly. Also things like, if I might -- boy, I can even read this so it must be a pretty big font. This particular one expired in 2002, 03.
Q Uh-huh.
A So that's one of the receiving inspections you would expect to be done in the laboratory, a notation of precisely -- because what that's doing is the manufacturer's telling you I'll certify this to be sterile and appropriate for its intended use, specifically a blood draw, only until that period

in time. I'm hoping this is an old case you've got here.
Q Actually it's not a case. That's why they gave it to me.
A Ah, there you go.
THE COURT: Had it in his desk for the last three years.
BY MR. DICKINSON:
Q So I guess what you're telling us is that even inside all of this sealing, you believe that it's possible for contamination to occur?
A You know, I wish I could have you come experience life in a volatile organic laboratory for a while. The kinds of things that are significant enough to cause problems in an analytical environment are so much less than what you're used to thinking and seeing about in terms of dirt and physical, you know, actual gross quantities of material. For example, if you go pump gas in the morning and you're physically the one that gets out and pumps the pump, gosh, you know, that could be the source of the toluene, simply because it's -- it has that much volatility. It has that much potential to transport between my clothing and the sample that I'm in the process of handling.
Q Okay. Well, let's take a look then at the options for one of these tubes. Oops, got to get it open.
A (Indiscernible) it's on the side.
Q Can you --
(Pause)

Q So the lab gets two tubes of blood; right?
A Uh-huh.
Q (Indiscernible). And they're going to pick one, whichever one they want; right?
A Yeah.
Q And the other one is for the defense if they choose to analyze it; right?
A That's their protocol. I don't know.
Q Okay.
A I don't know what they --
Q Now whether the --
A -- want two for.
Q -- defense chooses to or not is up to them.
A Uh-huh.
Q But they'll take this tube and then analyze it; right?
A Right.
Q And whatever the result is is whatever the result. You agree? Whatever happens?
A The result that they get is the result that they report.
Q Now with re -- and if there's contamination in this one, some problem with it, you're going to take the lab to task. That's a problem, that's an issue with this tube; right?
A Certainly.
Q Okay. With regard to determining number one, whether the blood alcohol in the two tubes match, you would agree with me

that the best test to determine is to go to tube number two and test that tube; isn't that true?
A Well, the problem that I've got is I don't, because of the way blanks are done, here.
Q Uh-huh.
A I don't know at what point in the process the contamination was introduced to this tube. Was it --
Q Okay.
A -- introduced to the tube when they were being transported together, or --
Q Okay.
A -- was it after these tubes were separated while this one was being processed?
Q Okay.
A And so, you know, you can't just make sort of an assumption that these are identical.
Q Okay. So let's work with that assumption.
A Okay.
Q All right. So our choices then, on 2/2, are that the results with tube 1 are the same, same BA, same contaminants; right? That's the choice?
A Yes.
Q You have a choice of the same BA.
A Uh-huh.
Q Different contaminants.

A Uh-huh.
Q You have a choice of the same BA, no contaminants; right, if there were?
A Uh-huh.
Q And then you have the same choices, different BA and the same three choices?
A Yes.
Q Any other choices that are possible?
A Not that I can see.
Q So same contaminants, different contaminants, no contaminants; right? Now if you have the same blood alcohol in both of these two tubes and the same contaminants, what does that tell you?
A I'm not sure I understand what you're --
Q Okay.
A -- asking me.
Q You would agree with me that whatever happened to tube 1 with regards to contamination happened to tube 2, because it was tested by a different laboratory; right?
A That's consistent.
Q And we're not saying where it happened. It could have happened in the street with the cop --
A Sure.
Q -- could have happened in evidence, could have happened in the lab when one was being con -- was being tested?

A Uh-huh.
Q Could have happened -- no, it couldn't have happened afterwards. Could not have happened any --
A It's implausible that it happened afterwards, yes.
Q Well, with the same contaminants at the same level?
A Very unlikely.
Q Very unlikely. If you had different -- same blood alcohol and different contaminants, it means that at some point tube 2 was contaminated in a different way; right?
A Uh-huh.
Q And if you had the same blood alcohol and there were no contaminants in the second --
A We've seen a lot of examples of this just in replicate analysis in this laboratory.
Q Okay.
A So two samples that purportedly were handled in precisely the same way had this experience.
Q Well, except you haven't, because you've only been dealing with tube number 1.
A Oh, I -- yeah, but I mean in the data we've been looking at there have been replicate analysis of the same sample --
Q But --
A -- even just --
Q -- they are replicate analysis --
A From one tube.

Q -- from one tube.
A But I'm getting --
Q Not from the second tube.
A But I'm getting different contaminants. So it's an indication that -- the contamination can be very spotty. It can show up here but not here.
Q Okay.
A So that's not a, for replicates from a single --
Q Right.
A -- different (indiscernible) from a single tube or in single samples from two different tubes, that's not an unexpected scenario.
Q Okay. The point I'm making is with tube number 2 you have the ability to test and exclude a number of the possibilities here; isn't that true?
A I'd have to see the data.
Q No, it's a logic issue. It's not a data issue.
A Yeah, it is, because my ability to have confidence in any laboratory's result, you can come to me and say the result says the answer is .12 and I have no other contaminants. Quite frankly, I have to look at the entire data package to know --
Q Okay.
A -- how much confidence I can have in the .12 --
Q Tab --
A -- result.

Q Lam -- or tube number 2 was analyzed by a totally different lab.
A I understand.
Q So if you have a totally different lab doing tube number 2.
A Okay.
Q Doing the analysis of tube number 2, and you had contaminants in the first one and you have no contaminants in the second one.
A Uh-huh.
Q Then you can conclude that there is somewhere, either individually or in the lab, problems with tube number 1; right?
A Yeah, but in terms -- what you're trying to do is, frankly, is a little bit oversimplify the situation, because this is precisely the kind of analysis the laboratory should be doing to try to pinpoint the source of their contamination to try to determine at what point in the process it's happening. But the problem with drawing sort of across the board conclusions is that it's not that predictable. Just because two samples are pulled from the same tube at the same time and taken through the same instrumental process doesn't mean they exhibit the same contamination, as we've got ample evidence to show.
Q But you never --
A So you can't over --

Q -- never know --
A -- interpret the results.
Q You never know until you test tube 2, do you?
THE COURT: Then you'd have to know about the lab that test -- tube 2 was tested in.
MR. DICKINSON: That assumes --
THE COURT: (Simultaneous conversation) --
THE WITNESS: Yes, ma'am.
THE COURT: -- showing up certain contaminants that actually exist because --
MR. DICKINSON: That assumes that there --
THE WITNESS: Yes, ma'am.
MR. DICKINSON: -- is contamination. You don't know --
THE COURT: Yeah.
BY MR. DICKINSON:
Q -- until it's been tested. And at the point where there -- it's tested and there's some difference, either in the blood alcohol content or in the contaminants, then you have cause to question the results of tube 1.
A The reason I question the results of tube 1 in this laboratory in this case is because they can run replicate samples from one tube and have contamination show in one and not in the other.
Q It doesn't answer the question of if we test tube number 2

do we get a valid blood alcohol --
A But which one do I compare it to? Do I compare that result to the one where I showed contaminants or not? That's what I'm trying to give you a sense for, just how variable -- it's not that if I run the same tube --
Q So basically your position is --
A -- three times --
Q -- it doesn't --
A -- I'm going to get the same result --
Q It doesn't matter what this lab does, they're not going to win. They're going to lose, in your --
A No, absolutely --
Q -- estimate?
A They could put the quality control program practices in place. It's just not apparent that they have done so.
Q And having another lab check, verify, and come out with a similar result doesn't mean anything to you?
A It's certainly additional information, additional context, but the -- it doesn't change my concern about the reliability --
Q Okay.
A -- of this one.
Q And I'm --
A If you will.
Q Appreciate your concern about the reliability, but let's

say that we have a blood alcohol of .20 by the first lab and we have another lab that has a .201 out of the second blood tube. You have contamination in the first, you have none in the second. Does that mean this blood alcohol is of no use, it's unreliable?

A That's an example of what I gave you the other day. I have two measurements that are precise. Precision does not drive accuracy.

Q Okay.

A So it's what the judge was in reference to. I have to know the accuracy of the whole measurement system in order to say whether it's meaningful that I get the same number two times, because I can get the same number way off of the target.

Q But you would agree with me that the poss -- probability that two independent labs coming up with a significantly similar number is highly likely?

A If the measurement systems are in control, that's sig -- that's dramatic support for the conclu -- for that result, yes.

Q And --

A If the measurement systems are in control.

Q And the best way to know that is to test that second tube?

A My concern is that this measurement system's out of control.

Q Okay. So let's assume the second tube comes back and says it's a .002.

A Uh-huh.
Q Now we have evidence that it's out of control; right? We've got significant difference.
A Yeah. The precision is not there.
Q Is not there.
A Can I tell you where the problem is? I really can't.
Q But when you have two results that are highly similar, basically your testimony is that any time that you're not satisfied with the lab procedures, out it goes. You're not going to accept that result; isn't that true?
A No. I simply caution the users of the data as to the limitations and the reliability, and how much reliability you can place in those results. Close really doesn't count in analytical chemistry. Our expectation is to have a fully documented system that quantifies all the sources of uncertainty in a measurement.
Q Okay.
A And that's really where the problems are with this laboratory. And precision is a wonderful thing. We -- it's very comforting analytically when you get the same number two times in a row. But you'll just never get me to agree that precision and accuracy are --
Q I'm getting that feeling. So let's talk a little -- so you wouldn't even bother sending out the second tube for testing if it was your blood that had been taken in a DUI?

A I would submit that that's dramatically outside my area of expertise. I think there's all kinds of other factors. Me as an analytical chemist, I would want my sample to be analyzed with a laboratory with a very strong quality assurance program.
Q So you found that laboratory. You're not going to send the tube, second tube out?
A If it was a lab that I had audited and had a lot of confidence in, huh-uh.
Q You wouldn't?
A Science works, it really does. If all the measurement systems in control, and if there's documentary evidence, I'm going to sit here and tell you that that's as much confidence as we as scientists can have in an analytical result.
Q So you're questioning the validity of the first lab, you don't believe that they do good work. Would you send it out to a second lab if it was your personal situation?
A I wouldn't send it there in the first place.
Q Wasn't up to you where it got sent.
A I'm an auditor. This isn't my world. That's sort of me as a person. I --
Q Yeah.
A My area of expertise is the assessment of results provided by labs. Would I personally? You know, I'm sort of an interested bystander in this process. When I, for example, had a drug urine test not too long ago, I was simply appalled at

the sample handling practices of the young lady that was responsible. And I documented them. That's what I do. I documented all the deficiencies in the way in which she was collecting the sample and tran -- moving it between multiples. So I just documented it.

Q Okay.

A I figured if anything ever came back, I'd just pull out my documentation that demonstrated the deficiencies in the sample collection process.

Q So back to the question.

A Doesn't mean I -- I didn't have control over what she was going to do as an -- but as an auditor, I can sort of exercise my own due diligence.

Q So back to your -- back to my question. If you didn't have confidence in the state lab, or whoever it was that did the first sample, and you had the opportunity to have a second sample independently tested, would you have that done?

A I can tell you if I knew about the integrity of that sample in the interim -- because if that sample has been compromised during its storage before I send it out there's nothing I can ever do that'll reconcile that. So if I know -- I got two samples that were collected from me. One of them went to this laboratory and I have concerns about the results. This other one that whole time was sitting in a package in the refrigerator in the laboratory and then I'm going to come along

later and say I want that sent to another lab.

I think, frankly, you get into this problem of people think that precision lends accuracy to results. If I don't know the integrity of this sample that hasn't yet been processed, I'm shooting myself in the foot by allowing it to be used as a representation of my blood alcohol at the time that sample was collected. So if it's been stored inappropriately, if the tube wasn't sterile, if it was expired, if it didn't have the right amount of preservative, if it was stored in a refrigerator where the power went off over the weekend and nobody ever noticed because they didn't have a 24-hour log on the refrigerator, all those kinds of uncomfortable things that can go on.

So if that sample was compromised in the interim and I send it off and get another result that agrees, that doesn't mean that that was the concentration of blood alcohol in my sample at the time it was collected and I'm not doing myself any favor. Now if I can demonstrate the integrity of that sample and the storage conditions and so forth, I'd want to make sure it was a lab I had a lot of confidence in.

Q So what happens if -- would you make the same decision if you could have that sample, that tube number two, and you could analyze it, and you didn't have to tell the other guy what the results were unless you liked them. Would you do it then?

A I'm an analytical chemist, sir. The results are --

Q You're also --
A -- what they are.
Q -- a person.
A Yeah, but I don't drink so I don't worry.
MR. ST. LOUIS: I do think this is getting beyond the scope.
THE COURT: Well, yes. It's really not relevant what she would do as a person in these circumstances. I think we're trying to extract some expert testimony here about the practices of this lab and what the testing procedures that are in place here, and the documentation procedures and so forth.
MR. DICKINSON: I have no further questions, Your Honor.
THE COURT: Redirect then.
MR. ST. LOUIS: Sure.
THE COURT: Unless you need a break.
MR. ST. LOUIS: May I have the exhibits please.

REDIRECT EXAMINATION

BY MR. ST. LOUIS:
Q Ms. Arvizu, Mr. Dickinson asked you some questions about the whole blood controls used in the laboratory. Do you recall that?
A I do.
(Pause)
Q I'm going to show you what's been admitted as Defendant's

Exhibit Q. You've seen this before. This is what?
A This is work done on the 15th of January 2003 data package.
Q Also want to show you Exhibit U, and if you would tell us what that is please.
Q This is a data package from October 9th, 2003.
MR. DICKINSON: I'm sorry, what was the first one?
THE WITNESS: The first one was Q, which was --
MR. DICKINSON: Okay, thank you.
THE WITNESS: Okay.
BY MR. ST. LOUIS:
Q So there's information on the whole blood ethanol controls in those documents?
A Yes.
Q What sort of information?
A This is a document --
MR. DICKINSON: Which one are we talking about now?
THE WITNESS: Each of these exhibits, Q and U, both include a page entitled Whole Blood Ethanol Control Data Sheet. Looks like this (indicating).
MR. DICKINSON: Okay.
BY MR. ST. LOUIS:
Q And what sort of information is included on them?
A This is information prepared by the laboratory. I presume for that sample they call control, control dash one, two,

three, four, five. And these are purchased reference materials, purchased by the laboratory. And so for the three levels that they purchase they report a lot number, an expiration date, units, and the expected range, analytical range of results as provided by the manufacturer. So in this case, level 1, lot number 11, I think that's an 871, has an expected concentration range of between 72 and 91 milligrams per deciliter.

Q Okay. And when we talk about a lot number, is that something that's recycled over the years?

A No. Lot numbers -- an inherently necessary quality for a lot number is that it be unique.

Q Okay. So in the January 2003 sample, which is, I believe Exhibit Q?

A That's in Exhibit Q.

Q All right. The lot number -- well, let's do this. 1/15/03, is that the correct date?

A Yes.

Q We have a lot number and you said there's an expiration, yes?

A An expiration date.

Q Okay.

A The expiration dates are determined by the manufacturer. And that represents the date beyond which they cannot certify that reference material as appropriate for its intended use.

Q Okay.
A Like a shelf life on milk.
Q Yeah, that (indiscernible). Okay. So on January 15th, what was the lot number that -- I guess there are three of them; right?
A Yeah. Level 1 is 11871.
Q And what's the expiration date?
A July '03.
Q And the level 2 lot number?
A 11872.
Q Okay. The expiration date?
A July '03.
Q And the level 3 lot number?
A 01713.
Q And the expiration?
A July '03.
Q Now if you would take a look at Exhibit U please. That is 10 -- what's the date?
A 10/9/2003.
Q Thank you. Okay. (Indiscernible) same thing. All right. What is the lot number that was used now in October of 2003?
A 11871.
Q And the expiration date that's listed?
A July '05.
Q The level 2 lot number?

A 11872.
Q The expiration date?
A July '05.
Q And the level 3 expiration date?
A 01 --
Q I'm sorry, lot number.
A This is level 3.
Q Okay.
A Lot number is 01713.
Q And the listed expiration date?
A June '04.
Q How can that be?
A It's very, very troubling, because when they're provided by the manufacturers these are provided with a certificate of analysis with a expiration date assigned by the manufacturer. Presume -- some of the possible explanations are that the manufacturer made what would be considered a critical error and they prepared a new batch with the same lot number. Clearly that's a extremely serious error for a manufacturer of such materials and would effectively disqualify them from further provision of such materials.
Q Meaning if you're a lab, that happens, you start buying your stuff someplace else?
A Exactly.
Q Okay.

A Another possible explanation is that as they approached and exceeded the expiration date of these materials around about July and in the summer of 2003, the laboratory may have somehow made the decision to change the expiration dates of their certified reference materials.
Q Is that kosher?
A No.
Q In addition to that information, is there something about reference laboratory mean values on these whole blood ethanol control data sheets?
A Yes.
Q What is that?
A They call them reference lab. Basically it's a consensus result when purportedly, if I understand the way this is presented, for the level 1 sample, which is the only one for which we have data, the -- this lot number, samples from 11871, were distributed to the four laboratories listed here in Arizona.
Q And tell us what those are, if you would please.
A The Arizona Department of Public Safety CRCL, Arizona DPS SRCL, the Mesa Crime Laboratory and Scottsdale Crime Laboratory.
Q So all four of those labs get some of this whole blood control?
A Uh-huh.

Q Is that yes?
A Yes.
Q And then what happens?
A I assume that they tested it, got a result, submitted it to some centralized authority or some central location. This should be without knowledge of the others, so this is something that should be done purely independently of all the participants. And the data were compiled, resulting in a target value for this particular solution of zero -- .0820.
Q All right. So each of these labs gets some of the whole blood control, tests it on their gas chromatograph one or more times, and then reports the value that they receive?
A That would be my understanding.
Q Okay. They report it to what place?
A That's not clear from this.
Q How many -- after the decimal, how many places are in --
A That's a little problematic. You see we have a little mixing of units going on here.
Q Okay.
A If you notice. The expected range from the manufacturer is 72.0 to 91.0.
Q Does that mean that the whole blood control that's used in all of these blood cases, if a lab got anywhere from what were the numbers you gave me?
A 72 to 91.

Q .72?
A No, it's reported in different units.
Q All right.
A It's reported in milligrams per deciliter. So it's 72.0 to 91.0, which would be .072 to .091 the way we're accustomed to seeing data.
Q So if a lab was using this whole blood control, a negative value of anywhere from 072 to 091 is a pass?
A Under the manufacturer's specs, that's correct.
Q That seems like a pretty broad range.
A That's as much as the manufacturer can certify to.
Q So -- all right. So when the labs, the reference labs I guess we would call them, test the sample, they repoint it to how many spaces beyond the decimal point?
A Well, they don't report their units.
Q Okay.
A Which is also a particularly unappealing practice for a laboratory. But they report .0820. So it's one decimal beyond where you have it right here.
Q Okay, and let's do this. For the lot that expired July of 2003 that was used on January 15th of 2003, you said the first lab was, I think, the Central Lab, the Arizona Department of Public Safety CRCL?
A Yes.
Q And what was the result that they got?

A .0822.
Q Okay. The second was, I think, the Southern Regional Crime Lab?
A .0820.
Q The third was what, I'm sorry?
A .0817 is, I'm sorry, Mesa Crime Lab.
Q And the last one?
A Scottsdale.
Q What's Scottsdale?
A .0820.
Q All right. So now for the lot with the same number that expired two years later, because you said the only ones they report values for is level 1; correct?
A Yes, that's correct.
Q Okay. Is the first lab again the Central Regional Crime Lab?
A It is.
Q And what do they get this time?
A .0822.
Q The Southern Regional Crime Lab second?
A .0820.
Q Is the third one Mesa?
A It is.
Q What did they report?
A .0817.

Q And is the fourth one Scottsdale?
A Yes, it is.
Q What did they report?
A .0820.
Q What does that mean?
A It appears that the laboratory did not perform the required ref -- under their own protocol, required reference laboratory testing of this new control sample, assuming of course it's a new control sample. Frankly, there are so many problems there are problems piled on top of problems, so it's hard to get to it. However, I can tell you that experimentally, it's simply implausible to suggest that four laboratories would run samples over a period of many months later and get precisely the same results.
Q Is that kind of like me rolling an 11 of the craps tables 25 times in a row?
A I'm sure that given enough time and a calculator I could actually compute the probability.
Q Not too likely?
A Not very likely. In fact, this -- that kind of congruence is, repetitive data, is sort of a hallmark indicator for dry labbing, not doing the work.
Q Mr. Dickinson asked you some questions about what you would need and what the inspection of the laboratory you're proposing would consist of. Do you recall that?

A Yes.
Q And you -- I think you told us you could do it in one day?
A Yes.
Q Would you sort of take us through a one day lab inspection and kind of describe what you would do?
A Sure. Generally as an auditor on behalf of a third party, I always extend an invitation to the -- whoever I'm doing the audit for to accompany me on the audit. So presumably that would mean Mr. Dickinson would be welcome to attend, you would be welcome to attend. Your Honor would be welcome to attend. Anybody --

THE COURT: (Indiscernible).

THE WITNESS: -- who's using the data I think would find it extremely interesting. Arrive at the appointed time, first thing in the morning, generally get a quick orientation to the layout of the laboratory. It's not a casual tour, just get a quick orientation to the layout of the laboratory. I've -- at this point I already read all the procedures, so I'm pretty familiar with how they say they do things.

I would have a hardbound laboratory auditor's notebook in hand that I would be making copious notes in of all my observations. And I would start typically by behaving as -- essentially as if I was a sample. I would approach the laboratory and approach in the receiving area, and assess how samples are received, who does it, under what conditions, ask

about the outliers of what time of, you know, if it's during normal business hours, if it's after business hours, all the aberrations that can cause problems with processing.

And I would both view the operation, the physical facility and the physical environment in which that was conducted, as well as how it's practiced by the people in the laboratory, and ask questions about sort of the outlier conditions. Any time somebody tells me that's how we do it, ask for documentary evidence of that fact. It's, you know, people have -- and it's not intentionally malicious or an intent to deceive, but people tell you the way it's supposed to be. I want an assessment of how it is in point of fact and in practice. So people can tell me we always check our controls on receipt as required in the procedure, but the documentary evidence indicates something different.

So it's the same thing during viewing. So I would see how the samples are processed; see in this case how the blood alcohol samples are received, how they are evaluated upon receipt. Typically that's not a scientist that's doing that initial receipt. Typically that's a sample custodian, a sample management person. Look at their operation, all of their records, the physical facility; go into the storage location and assess the actual storage conditions, review things like the temperature logs. Look for things that cause problems.

Being so familiar with what causes contamination

control problems, I'd be looking for every opportunity for the physical environment or the operations to present the potential for contamination. So I would follow it through, I would see how analysts are notified that they have samples essentially in their queue, in the -- that they need to get analyzed, and then I would essentially follow it completely through the analytical process.

For example, when you're preparing these solutions in the procedures it says you use deionized water. Okay, I want to know where they're getting it from, how they know that it's volatile free at the time they're pulling it out, how often is that tested, is it tested or they just assume it's free of volatiles, the water that they're making their blanks out of and that they're making their samples. So it's everything that touches the sample throughout the process, everything that they talk about in their procedure, and looking at the facility and how it happens in practice.

So I can essentially, without being there when your samples are processed, have a good understanding of how it happens in point of fact. So that I can see if the people are using the pipetters properly. The accuracy of a quantitative determination depends on whether or not people use those volumetric devices carefully and appropriately. It's a technique. It's as much an art as a science.

So I'm watching and making copious notes, so that at

the end I can write a pretty comprehensive assessment for the data user as to what their risks are, the scope and magnitude of any risks, what they're doing well and what they're not, the areas where they're clearly not compliant with their own procedures or with national quality standards.

Q Okay. Is that different -- is what you've just described, the process of doing an inspection, different than you have done it in the cases in which the Court has ordered that you be allowed to conduct an inspection in a laboratory?

A It is different in some cases, yes, because it's more comprehensive. In the -- in one of the DNA cases, for example, I was literally told where I could stand. And so that's where I stood. Didn't cut down on the number of notes that I took, but there were certain constraints associated with it.

Q Okay.

A Also, when I was witnessing testing in those cases I was watching testing of a particular sample set from a particular case. That's not the nature of an audit of a lab's ability to do volatoric (indiscernible). You don't just follow one case and only look at what might be involved in that one case. You're looking at the overall system and control, the efficacy of the laboratory's quality system.

Q Okay. So then when you have been hired by the federal government to come in and audit their laboratories, is that the -- did you do it in the manner you've just described for us?

A Yes, exactly.
Q When you've gone in on these DNA cases you've had a chaperone?
A I have -- let's see. I had a chaperone in one lab. I had an armed state police officer who stood there beside me. Apparently he didn't present any inherent contamination threat; I had to give a DNA sample but he didn't. In the case in Indianapolis, any member of the laboratory staff could escort me. And that was handled very easily in their operation. You know, they'd hand me off between somebody if somebody had to step out of the room.
Q You know, we sort of --
A In the commercial lab I did not require an escort.
Q You indicated, I think, that you have -- the laboratory that you ran tested volatile organics, inorganics, and performed classical testing procedures?
A Yes.
Q Where does head space gas chromatography fit in there?
A I should have been more clear about that. Volatile organics is the broad designation of which alcohol is one example. So volatile organics is typically performed by head space gas chromatography.
Q Okay. And before I move on to another subject, the odds that your presence is going to screw up a test result, is that greater in the case of a blood alcohol analysis or DNA

analysis?
A Well, quite frankly, I hope I'm an experienced enough chemist and experienced enough at visiting a variety of laboratories that that would never present a problem. But certainly the potential is much greater in the case of DNA than it would be in the case of a blood alcohol analysis.
Q I mean sort of if your hair blows off into where they're testing the DNA, that can present a problem?
A Or you sneeze or what -- any number of primary, secondary, tertiary transport mechanisms. That why I gave a DNA sample, so that they would have one on file in the event that they identified some unexpected DNA present in a sample, which incidentally they didn't, at least not from me.
Q You have been allowed into labs to witness examinations that are more prone to contamination by the presence of an individual than a blood alcohol analysis?
A In my laboratory, we handled radiologically contaminated materials. And I learned a great deal about contamination control in that environment. And I carried my most precious and beloved daughter to term; I carried her -- that pregnancy to term while I was working in that laboratory because I had the utmost confidence in my ability to prevent contamination from becoming a problem.
Q What did we agree to call her, the finest female child ever born?

A Yeah. There are those of you who have male children who will not accept that she's the world's most perfect child.
Q Mr. Dickinson asked you some questions about making money in regard to this case.
A Yes.
Q What time did you get up this morning?
A I got up about 4:00. I left my home about 4:15 this morning.
(Unrelated conversation not transcribed)
BY MR. ST. LOUIS:
Q I guess that's my question. Being an expert witness, it's not the easiest way to make money?
A I'm confident that that's the case. I do not enjoy travel. I do it a lot, but I do not enjoy it.
Q And anybody tell you what to say here?
A No. Well, even if they did I -- wouldn't make much difference.
Q When you get paid $150 an hour, what are you being for?
A I'm being paid for my time and my expertise, the accumulated wisdom of the decades of laboratory experience.
Q You ever have cases submitted to you where you evaluate the work from the laboratory and you end up not spending a lot of time on the case?
A Frequently.
Q What sort of cases are those?

A Across the board. Almost any kind of analytical work: toxicology, DUI, DNA, gunshot res -- well, most of the gunshot residue ones have been pretty bad, but across the board. There's no expectation that it's going to be terrible.

Q And in fact are there some occasions in which you call the defense attorney and say the work looks pretty good in this lab?

A Quite commonly, yes.

Q I can't do much to help him?

A Yes.

(Pause)

Q Given what you've seen in the chromatograms you've looked at, ma'am, are there records, additional records we could obtain that would eliminate the need to have an on-site inspection?

A Given the nature of the issues in this laboratory, the scope and magnitude of the issues simply cannot be assessed through a records review.

Q Okay. You still have Exhibit Q in front of you; correct?

A Yes.

Q And that is the January 2003 run?

A January 15th, 2003.

Q Okay. I don't want to spend a lot of time on this. Mr. Dickinson asked you some problems with Ms. Arnonie (phonetic) -- I'm sorry, some questions about whether

Ms. Arnonie had corrected the problem by re-integrating the peak so that instead of the dog leg from the negative peak it went to the baseline. You --

A Yes.

Q You recall that? Is that the only issue in that run?

A No. There really are a couple of issues, one of which is the existence of that negative spike, and the other of which is the analyst's failure to document manual integration when it was apparently performed.

Q And I think you testified on direct, although that was last week, that in your opinion it may have something to do with an electrical problem?

A That would be consistent with an electrical problem. And certainly I've read evidence of the ongoing electrical problems in the laboratory.

Q Okay.

A And seen pictures.

Q All right. Is that something you're going to be able to get more information about if you go and you inspect the lab?

A Yes.

Q Tell us a little bit about this presentation you gave that people apparently are paying 15 bucks a pop for.

A I have made joint presentations with Cynthia Orr on a couple of occasions, and so I frankly don't remember which particular occasion this may have been. I've done it in Texas

with her, I've done it in Alabama with her. It's basically the same presentation, to present the issue of quality assurance in a laboratory environment, what it means in the forensic discipline, what the comparative immaturity of forensic QA systems means in terms of data users. The people who put these conferences on, they all come -- they always come up with the names. I'm frankly not creative enough to come up with those clever titles.

So like when I gave the talk to the group of appellate judges they called it Judging Science, and when I did this one they called it Can -- Crime Labs, Can You Trust Them? They're better at coming up with cute titles than I would be, because laboratory quality assurance just doesn't, you know, it's not catchy.

Q Let me show you what's been admitted as Defense Exhibit B. This is a blood run from October 20th, 2003. Would you take a look at the blank please.

A Okay.

Q Mr. Dickinson asked you some questions about whether the placement of the contaminants in that blank -- I don't want to put words in your mouth. There's contamination in the blank?

A There's contamination in the blank.

Q Okay. And he asked you a question about whether the additional peaks would interfere with an ethanol or isopropanol --

A That's correct.
Q -- peak? Is there a problem beyond whether they would interfere with those two peaks?
A Yes.
Q And what is that?
A The problem is that this is evidence that what -- when the laboratory prepares a sample that they believe to be free of volatiles and they process it presumably hopefully in the same manner as their analytical samples, volatile organic contaminants are in fact introduced. What that means is in any subsequent analysis I really have no objective basis for saying I'm sure that there's no interfering contaminant on top of my propanol or on top -- that's interfering with my ethanol. I know that their processing allows contaminants into the samples.
Q What about the fact that we have contamination in the blank. Is there some significance to that?
A That's very, very important. That's telling you that your system is out of control, that you have a problem.
Q What does it do to the validity of that reference sample?
MR. DICKINSON: Objection. That states a fact not in evidence. We're not dealing with a reference sample.
BY MR. ST. LOUIS:
Q Is a blank a reference sample?
MR. DICKINSON: No.

THE WITNESS: It's a control sample.

THE COURT: Sustained.

BY MR. ST. LOUIS:

Q What does it do to the validity of that control sample?

A What -- the purpose of a control sample is to tell you whether your measurement system is in control or not. This is evidence that it is not.

Q Let me show you what's been marked as Defense Exhibit M. Or I'm sorry, admitted as Defense Exhibit M. I'll tell you that's a run from January 21st, 2004. If you would turn please to -- I guess it doesn't matter, either six or seven, the sixth or seventh injection.

A Okay.

Q This is the .20 calibrator; correct?

A Correct.

Q And this is the one that has the large third peak to the left in both columns?

A Yes.

Q All right. And again, Mr. Dickinson asked you if the placement of this particular peak would interfere with either the ethanol peak or the isopropanol peak.

A It does not interfere because, from that previous picture, those are resolved peaks. So it's not interfering directly with the ethanol. But it is absolutely as clear as you can make it that this laboratory lets -- has -- its processing

allows significant quantities of volatile organics that have no business in there into those samples.

Q If there was something interfering with the ethanol peak as well, would we be able to see it?

A You absolutely would not.

Q Does the fact that we have one contaminant in there in a controlled sample such as a calibrator, and we don't know what it is and we don't know where it came from, does that call into question the reliability of the ethanol readings in the unknown sample?

A Yes. I believe the analyst, SR -- I think we're --

Q Seth Reskin (phonetic).

A Seth Reskin. In his testimony acknowledged that if there was a contaminant present in a calibrator that it should not be used.

Q Okay.

A That that's, again, a critical failure.

Q Okay. And would that be true of the verifier, injection 123 in that run as well?

(Pause)

A 124 is the better example.

Q Okay. And what is that?

A That's a -- the .20 standard run for verification purposes at the end of the batch.

Q And that also has the two peaks in the far left side both

columns?
A Yes.
Q 123, I guess, is the 10 verifier that has just a single peak on the right-hand side in the bottom column?
A Right. It's a broad hill looking peak.
Q Okay. Again, nothing about the placement of the peaks in either injection 123 or 124 that would directly interfere with the ethanol or isopropanol reading in and of themselves?
A That's correct.
Q But do they present a larger problem?
A Yes, they do.
Q A larger problem that calls into question the reliability of the ethanol readings in the unknown samples?
A The reliability of volatile organic readings in general, of which ethanol is the example in this case.
Q And would that be true at the time that Mr. Esposito's blood and Mr. Kirkpatrick's blood samples were tested as well?
A Certainly Mr. Kirkpatrick. I don't remember the date Mr. Esposito's samples were tested, I apologize.
Q That's okay.
(Counsel confer)
Q Do you have II up there, Ms. Arvizu?
A No.
THE COURT: Mr. Esposito's arrest, I think, occurred February 7 of 2007. So that would be a pretty recent one.

(Pause)

BY MR. ST. LOUIS:

Q Let me show you what's been admitted as Exhibit II. That has Mr. Esposito's blood sample.

(Pause)

A These look very familiar.

Q Okay. All right. I think the question was would it be true that the pattern of contamination you've seen in the blood samples calls into question the reliability of unknown samples at the time that Mr. Esposito's blood was tested?

A Yes.

Q That's why you need to do an on-site inspection?

A Yes.

Q Thank you.

MR. ST. LOUIS: I have no further questions.

THE COURT: Recross?

MR. DICKINSON: Thank you. Guess first I need to admit a couple things.

THE COURT: Sure.

(Pause)

MR. DICKINSON: I'm marking the discussion of the tubes as State's 4 and we've already marked the --

THE COURT: Ethanol peaks?

MR. DICKINSON: -- ethanol peaks as State's 2. I would move the admission of all State's exhibits that haven't

been admitted at this time, which would be --

THE COURT: Okay. Any objection, Joe?

MR. DICKINSON: -- 2, 3, 4, I believe.

THE COURT: That would be the --

MR. ST. LOUIS: What do we got?

THE COURT: Two diagrams.

MR. DICKINSON: Two -- actually just the two diagrams, because 1 was the blood kit, which is admitted.

MR. ST. LOUIS: Which is in.

MR. DICKINSON: And 3 is the articles you have on the desk, which is already admitted.

THE COURT: Okay. Yeah, this --

MR. DICKINSON: This is admitted. So it's 2 and 4.

MR. ST. LOUIS: Yeah. You know, I don't have a problem with 4. I don't think -- I think pretty much it was things that Mr. Dickinson wrote. I don't think Ms. Arvizu agreed with most of them, so I don't think there's sufficient foundation for 4.

MR. DICKINSON: And I think what it does is, for the record, flesh out what was being discussed. And without it, a lot of the transcript --

THE COURT: I'll allow --

MR. DICKINSON: -- will not make sense.

THE COURT: -- them in --

MR. DICKINSON: Thank you.

THE COURT: -- to, yeah, illustrate the testimony or the cross-examination of the parties, and the responses to that --

MR. DICKINSON: Thank you.

THE COURT: -- by the witness.

(State's Exhibit 2 and 4 received)

RECROSS-EXAMINATION

BY MR. DICKINSON:

Q Now in the discussion of what level the whole blood ethanol control data sheets would show you talked about Mr. St. Louis with, specifically Exhibits V and U. I don't know, has the Court seen those?

THE COURT: I haven't seen them, but I did see that they were with the blood run documents --

MR. DICKINSON: Yes.

MR. ST. LOUIS: Think it's actually Q --

THE COURT: -- from January --

MR. ST. LOUIS: Q and U, I believe.

MR. DICKINSON: No, it was V and U.

THE COURT: Oh, V --

MR. DICKINSON: They're right here.

THE WITNESS: These two are the same. It's --

BY MR. DICKINSON:

Q But that was the point, except at different dates; right?

A This is the one with different dates, which was --

Q Okay.
A This is Q.
Q Q, all right. So the Court can see what we're dealing with. And --
A That one's a little -- a couple weeks after that other one.
Q But basically it's the same --
A It's -- this is the same information as on the one from earlier in the month of October.
Q Correct. And you can take a look at this, and I think answer the question.
MR. ST. LOUIS: I'm sorry, I'm lost. What are -- what is Ms. Arvizu looking at?
MR. DICKINSON: She has V. The Court has U and Q.
THE COURT: U being whole blood ethanol control data sheet.
MR. DICKINSON: And Q being the second page of the same, which is this. And so what we've been talking about, so the Court's clear now, is comparing these two pages. And what I believe Mr. St. Louis was squabbling about was the expiration dates --
THE COURT: Uh-huh.
MR. DICKINSON: -- that are listed on the -- the fact that they are different.
THE COURT: U, the whole blood ethanol control data

sheet, which has levels 1, 2 and 3, lot numbers, 11871, 11872, 1 -- 01713, with the expiration --

MR. DICKINSON: Yeah.

THE COURT: -- dates. And then on --

MR. DICKINSON: And that's shown on Mister --

THE COURT: Q --

MR. DICKINSON: -- St. Louis's --

THE COURT: The other one that you --

MR. DICKINSON: -- chart.

THE COURT: -- don't have marked. And you might -- I don't know, it's --

MR. ST. LOUIS: Yeah. I guess --

THE COURT: -- the lowest sheet.

MR. ST. LOUIS: -- (indiscernible).

MR. DICKINSON: Basically this discussion.

(Pause)

THE COURT: Same lot numbers with different expiration dates.

(Pause)

BY MR. DICKINSON:

Q And so here's my question. Are you familiar with a manufacturer ever extending the expiration date of a control such as this whole blood control?

A That's certainly theoretically possible.

Q And if the lab were to have documentation in the form of a

letter from the manufacturer extending that date, then do you have a problem with use of that control to the extended date?
A Not as long as the material was stored in accordance with the specified conditions.
Q Okay. And basically my understanding and your discussion of Mr. St. Louis with the -- about the lab inspection, it's your practice to allow whatever third parties may have an interest in it to accompany you on the audit; is that correct?
A That's correct.
Q So if you were hired by 5 or 10 defense attorneys to do this, you'd have 5 or 10 defense attorneys along with you?
A Clearly that's not going to be appropriate. There --
Q Well, let's say that they --
A There's not a lot of room in this facility.
Q So let's say that they got together and decided that, you know, you're their person to do this audit. They're paying the bill collectively. You're going to invite them, aren't you?
A I generally extend an invitation. I have never, I guess, had it exercised for more than one party to accompany me on a audit. Clearly when space is an issue, as it is in this laboratory, that would not be practical. So if you and Mr. St. Louis and the judge all wanted to accompany me, that might create a problem. In which case I would suggest that you each take part of the day, somebody take the morning and somebody take the middle of the day and somebody take the end

of the day. That's probably as much of it as you could --
Q Yeah. Now --
A -- stand anyway.
Q -- as -- I don't know, we've been doing this for a long time.
THE COURT: Well, like she said --
MR. DICKINSON: Our pain threshold's pretty high.
BY MR. DICKINSON:
Q In your review of the data sets you've taken a look at, you've looked at run times; isn't that correct?
A Yes.
Q And on a full run, the bread instrument that you're focusing on here, as well as the techniques and personnel to go with it, normally run overnight; isn't that correct?
A Yes. There's frankly no value added to be served by watching the auto sampler do injections all night long.
Q But you would expect then to go back and take a look at how the run was being processed and how the data was processed in the following morning?
A No. I'm sorry if I didn't make this clear. I don't need to watch the entire sequence through an entire sequence, all components thereof. For example, when I would come in in the morning and start the assessment, the analysts would be processing data that they had run the night before. So --
Q Well, that assumes that you hit it at a time when a run is

in fact finishing and another one's starting?
A That's correct.
Q And --
A Most production laboratories pretty much run all day, every day.
Q Except in this instance you're dealing with two analysts; isn't that correct?
A Yeah. It would certainly -- there's certainly a degree of coordination required to insure that I'm there on a day when the people responsible for that kind of testing are present. It's not that I just show up unannounced one morning.
Q Because unfortunately, from --
A There's no attempt to be secretive.
Q -- from time to time these folks do get called to court?
A So I've heard, yes.
Q And to defense interviews?
A Yes.
Q And training and things of that sort. So --
A Yes.
Q -- that could come as a constraint also, doesn't it?
A Yes, it certainly does.
THE COURT: And occasionally vacation.
THE WITNESS: Oooh, we give them --
MR. DICKINSON: They are not allowed to take vacations.

THE COURT: Oh, okay.
MR. ST. LOUIS: I didn't hear actually.
THE COURT: I said and occasionally vacations, but Bill corrected that. It's like (indiscernible) they're not allowed to take --
MR. DICKINSON: They're like --
THE COURT: -- vacation.
MR. DICKINSON: -- police officers, no vacations.
BY MR. DICKINSON:
Q So the reality is this would be your first forensic audit of the scope that you're talking about doing here?
A Yes, that's correct, in a forensic laboratory.
Q You talked about the need to evaluate the electronics -- or the electrical system in the lab. You recall that?
A Yes, that that is one of the concerns in this lab.
Q Do you have any special training or expertise in laboratory electrical systems over and above a normal lab --
A I certainly --
Q -- director or person?
A -- do not.
Q And so are you able to read electrical blueprints, that sort of stuff?
A I'm a lay reader. I -- that's not the level at which the assessment would be done in any event. That would require subject matter expertise if that was a particular -- a very

specific scope assessment. The kinds I can -- things that I can look for are the kinds of things any laboratory manager could look for.

Q And so --

A The kinds of things pointed out in the video that was shown last week.

Q Well, in fact one of those that was cited as an electrical problem in fact was computer cables coming down from a drop through a ceiling, wasn't it?

A I couldn't see it well enough to tell, quite frankly.

Q You haven't had a chance to review that before?

A I can't -- oh yeah, I've seen it before, but on my computer screen, with the picture about three inches square, I can't tell what kind of a cable it is. I could certainly tell the one shot where they show a lot of instrumentation, wiring, all sort of going be -- I couldn't really tell if it was behind the bench or whatever, but a lot of wiring on a small number of circuit.

Q Well, there was a power strip back there and a --

A Yes.

Q -- number of things plugged into it?

A Yes.

Q Could have been computers, could have been lights, could have been --

A Could have been any number --

Q -- the microwave.
A -- of things. Oh, only if it's a laboratory microwave. We try to keep food out of the laboratory at all times.
Q You would agree with me that for a contaminant to affect the readings of either ethanol or the internal standard, that whatever the contaminant was would have to fall within the range where the instrument is reading that; isn't that correct?
A That's correct.
Q And you would agree with me that the -- one of the purposes of the two columns, which are made of different material, is to sort out materials at different times; isn't that correct?
A That's correct.
Q And you would agree with me that there's a very high probability that if there was a contaminant that in fact elevated a reading on one column, it would not come out at the same time on the other column; isn't that correct?
A That's quite likely correct.
Q And in none of the chromatograms that you have reviewed or shown us have you shown any instance where there was a contaminant in one column -- or excuse me, a contaminant in one column that would come out at the time of ethanol or the internal standard on the other?
A I would never have been able to tell that.
Q Even though in the second column it should come out at a

different time; correct?
A I would never have been able to tell that though. We have instances with contaminants in one column and not the other. I would have no way (indiscernible) of knowing what that contaminant was and whether or not it would co-allude with ethanol in the other column.
Q Would a review of the documentation that was -- of the proceedings or procedures that were used to set the instrument up at the beginning give you additional information which would be of assistance in determining that?
A It would certainly help me understand the scope of the validation employed by the laboratory. I think it's probably unlikely that it would give me the kind of information you described though.
MR. DICKINSON: I have no further questions.
THE COURT: Anything else?
MR. ST. LOUIS: I'm done.
THE COURT: Okay.
THE WITNESS: Can you believe it?
THE COURT: I think you can step down. May this -- well, I don't know if you're going to excuse her or not. She's excused by the Court, I think, if there's no reason for her to stay on.
MR. DICKINSON: That goes to the clerk.
THE COURT: Okay.

MR. ST. LOUIS: I don't know if we're going to bring her back on September 10th or not.

THE COURT: Okay. So thank you very much, and --

All right. We want to just confirm that September 10th date. There are a couple of other matters there that will be handled by -- very capably by Mr. Johnson, I'm sure.

MR. DICKINSON: Actually he's not --

THE COURT: Ms. Cornejo then?

MR. DICKINSON: You have your new deputy county attorney.

THE COURT: Oh, Erica Galindo (phonetic) with Mark Resnick (phonetic). And the other one that's still on the docket, because I checked yesterday, is Davis, a jury trial, Davis with Brad Thrush (phonetic). Now he had moved to continue and then I show his motion to continue was withdrawn. And I don't --

UNIDENTIFIED SPEAKER: Think that's --

THE COURT: -- know the status.

UNIDENTIFIED SPEAKER: -- going to be a State motion to continue. Judge, that's going to be a State motion to continue.

THE COURT: Okay.

UNIDENTIFIED SPEAKER: He didn't have any objection to that.

THE COURT: Oh.

UNIDENTIFIED SPEAKER: Because I believe he has one the next day.

THE COURT: Okay.

UNIDENTIFIED SPEAKER: He didn't want to be two back to back down there.

(Pause)

THE COURT: Okay. So I will need those files, or at least the Davis file.

(Counsel and clerk conferring re: exhibits)

(Proceedings Concluded at 3:32 p.m.)

STATE OF ARIZONA)
) SS:
County of Pima)

I, Erin Goold, Electronic Transcriber, do hereby certify that I have listened to the digital recording of the foregoing; further that the foregoing transcript pages 1 through 160, were reduced to typewritten form from the digital recording of the proceedings held August 28, 2007, in the Pima County Justice Court, in the matter of State v. Kirkpatrick; and that the foregoing is an accurate record of the proceedings as above transcribed in this matter on the date set forth.

DATED this 19th day of October, 2007.

Erin Goold