IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON

IN AND FOR THE COUNTY OF KING

STATE OF WASHINGTON, Plaintiff, v. KYLE GRISSOM, Defendant.	Cause No. 17-1-03475-1 SEA

MOTION HEARING

The Honorable Sean P. O'Donnell Presiding

September 28, 2018

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A P P E A R A N C E S

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E X A M I N A T I O N I N D E X

FOR THE DEFENDANT:

NO.	DESCRIPTION	EVID
2	Washington State Patrol Toxicology request for analysis form	11
3	Becton Dickinson certificate of compliance	11
4	Sequence list	27
5	Volatiles work list, traceability form	27
6	Document produced by NIST	27
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8 - 11	No description given	33

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THE COURT: Yeah, let's do that in written form. If -- why don't you put that -- 7?

MR. MIDDAUGH: 7 would be next in line, yes.

THE COURT: And then any objection from either side on me admitting 7?

MR. MIDDAUGH: Not for the purposes of this hearing.

THE COURT: Okay. 7's admitted. You can hand -- if you can hand it back up to me so I can look at it, please.

(Defendant's Exhibit No. 7 admitted into evidence.)

THE COURT: All right. You may proceed with your questions.

JEANINE ARVIZU: Witness herein, having first been duly sworn on oath, was examined and testified as follows:

D I R E C T E X A M I N A T I O N

BY MR. MIDDAUGH:

Q. Ms. Arvizu, what do you do for a living?

A. I'm a chemist who works as an auditor in the field of measurement quality.

Q. Do you have any educational background or experience related

to that field?

A. I have both. About -- approaching 40 years of experience, and a bachelor of science in biochemistry from Cal Poly in San Luis Obispo; "ABD" in chemistry from the University of New Mexico. That's not a degree. It's "All But Dissertation." It means I completed all the graduate-level coursework and all the qualifying exams for admission to candidacy for a Ph.D., but did not defend my dissertation.

Q. And was that because there was a problem with your dissertation, or --

A. No, that's because I was working, and I would have had to quit my job and move back to New Mexico to continue.

Q. So you went the professional track.

A. Yes.

Q. How many labs, ballpark, have you audited?

A. I've audited the work of -- oh, gosh -- many, many labs. In person, I've done dozens of audits, and I've audited the work product of probably hundreds of labs throughout the country, throughout the world.

Q. Have you ever contracted with the United States government?

A. Yes. I served as program manager for the U.S. Navy's quality program that audited the government and commercial labs that do analytical work for the Navy. And then once the lab's approved, evaluated the work and assessed the work on an ongoing basis to make sure it met standards, and if it

didn't, I'd let the Navy know so they didn't pay for it.

Q. Do you teach other auditors how to do their jobs?

A. I have trained audit teams how to do their job. I've taught field people how to collect samples. I've taught bench-level chemists on good lab practices. And in recent years, I have been providing training in the legal community on forensic quality issues to defense lawyers, prosecutors, and to groups of judges.

Q. And have you published papers related to the field of auditing labs and best lab practices?

A. I wrote the standard that the Navy used as the basis for its evaluation. I have presented on the field of forensic quality at national and international conferences.

Q. Have you testified in court regarding audit practices or lab practices?

A. The last time I counted, it was more than 250 times.

Q. Does that include testifying twice already today?

A. Twice already today.

Q. And have you been -- testified in Washington state?

A. Yes, I have.

Q. And how many times, if you could ballpark?

A. I'm really not sure. A bunch of places: Bellevue; Bainbridge Island in a case for the federal public defender; here in Seattle; a bunch --

Q. Have you testified in this building before?

A. I have. Not on this floor, but on this building.
Q. And have you qualified or been accepted in court as an expert in lab practices?
A. Yes.
Q. And --
A. Most of them dealt with lab practices. A few were only sampling. Many of them were both sampling and lab.
Q. And is testifying regarding blood testing practices something that you've done before?
A. Yes, many dozens of times.
Q. In preparing for your testimony today, did you preview the Washington State Patrol toxicology lab case file related to the testing of Mr. Grissom's blood?
A. Yes.
Q. Approximately how many pages is a case file?
A. What the laboratory terms their case file is typically only dozens of pages, but the supporting information that's the basis for the scientific conclusions is much more lengthy. And I routinely receive thousands of pages from the Washington State Patrol tox lab in any given toxicology case.
Q. Did you identify --
THE COURT: Are they the same pages? I mean, is it just the same boilerplate? Or are they sending you thousands of individualized pages for an individual case?

A. Typically dozens of pages are individual. The rest are essentially applied to all the samples in the lab at that period of time.

THE COURT: So like manuals and the like?

A. Manuals, temperature monitoring records, calibration records for equipment, that kind of thing.

THE COURT: It's too bad they keep it and then to send it to you in bulk, but, okay, thank you.

Q. (By Mr. Middaugh) I want to get directly to the analysis that was done of Mr. Grissom's blood. First off, just as a clerical matter, did you write a report related to your analysis of how the lab analyzed Mr. Grissom's blood?

A. Yes, I did.

Q. I'm going to come forward with what's previously been marked as Defense Exhibit 1. Would you please take a look at this document?

Do you recognize that document?

A. Yes, that's the report I wrote.

Q. Okay. I'm going to ask you to flip it over and testify from memory, but I'm going to ask that Ms. Arvizu be allowed to have it present in case she needs to refresh her recollection as to any point.

THE COURT: Yup.

MR. MIDDAUGH: I am not seeking to admit it at this time; just marked for identification.

THE COURT: Okay.

Q. (By Mr. Middaugh) As part of your analysis, did you receive any information about the blood vials in this case?

A. I received some information, yes.

Q. I'm going to show you what's been previously marked as Defense Exhibit 2, which is the Washington State Patrol Toxicology request for analysis form. Do you recognize this document?

A. I do. This is part of the case file.

Q. And was there anything that was unusual about the notations on Defense Exhibit 2?

A. Yes. There is an issue on the right side of the page in the column for laboratory use only where it describes the specimens received.

Q. And what was unusual about the results that were recorded there?

A. In this case, there were two separate tubes of blood that were included in the specimen. A -- they're identified as A and B. And the A tube was described as containing approximately 6 milliliters of blood. The B tube was described as containing only 4 milliliters of blood.

Q. And why is that significant?

A. This particular tube -- and I know what type of tube it is because there is a photograph of the tube in the discovery -- is a tube that's manufactured by a company

called Becton Dickinson. And it's the only tube in the United States that's certified for use in blood alcohol testing specifically.

And under standards, consensus standards published by the scientific community, when you use a manufacturer's device such as this to collect a specimen, you're required to comply with the manufacturer's instructions, because those are the conditions under which their certification is valid.

In this case, the manufacturer and consensus standards require that the blood tubes be completely filled.

These particular tubes have a nominal fill volume of 10 milliliters of blood. That is they're manufactured with sufficient volume -- vacuum inside the tube to suck in 10 milliliters of blood. Under the manufacturer's published certifications, anything less than 9.3 milliliters is considered an underfilled tube.

Also, according to the manufacturer's instructions, underfilled tubes may lead to inaccurate results. They impress upon the users how important it is to ensure that the tubes are completely filled before the analysis is performed.

Q. And completely filled would be within the range of 9.3 milliliters to 10.7 milliliters?

A. That is correct.

Q. I'm going to show you what's previously been marked as

Defense Exhibit 3, the Becton Dickinson certificate of compliance.

Do you recognize what's previously been marked as Defense Exhibit 3?

A. I do.

Q. What is that?

A. This is the certificate of compliance that the tube manufacturer produces for their blood alcohol tubes that states the nominal fill volume.

Q. And that is related to the specific lot number of tubes that were used for Mr. Grissom's blood.

A. That's correct.

MR. MIDDAUGH: And I would seek to admit Defense Exhibit 2 and 3 for the purposes of this hearing only.

MR. BALES: No objection.

THE COURT: 2 and 3 are admitted.

(Defendant's Exhibit Nos. 2 and 3 admitted into evidence.)

Q. (By Mr. Middaugh) So just going back to the underfilling issue, why is it so significant they're underfilled? What is the concern that you have as a lab auditor and as a chemist when you see an underfilled tube?

A. Well, in addition to the fact that it doesn't comply with the manufacturer's own instructions, the particular concern in the case, for example, of an ethanol test is that an underfilled tube is like a warning sign or an indication

that the tube may not have been sterile at the time it was used to collect the specimen. These tubes are manufactured so that the inside of the tube is sterile. And there's a vacuum inside.

If, however, the tube is allowed to get -- while it's empty, it's allowed to get too cold or too hot and it leaks, then when air leaks in, microbes come along with the air, it's no longer sterile, and also there's no longer enough vacuum to suck in 10 milliliters of blood.

So the presence of an underfilled tube is a warning sign that the tube may have been unsuitable for use at the time it was originally used.

Q. And that could lead to the inaccurate reporting of ethanol results by a lab?

A. Correct.

Q. And you said that this is kind of generally accepted standards, that you need to completely fill the tube. Who issues those types of standards?

A. Those are issued by the Clinical & Laboratory Standards Institute, CLSI. Those are consensus standards that are used nationally and internationally for blood collection, collection of vena puncture samples. And they make it clear that you fill the tubes completely until the vacuum is exhausted. And they also require that you comply with the manufacturer's specific instructions for -- in the

individual type of tube, because there's different types of tubes for different purposes.

THE COURT: So which of those factors would compromise the alcohol rating? The microbes' lack of sterility, the absence of a vacuum, how do those intersect with a false positive?

A. Good question. The false positive can arise because when microbes come into a specimen, there are certain microbes that we know, a normal metabolic process is that they can act on the blood in a tube. So if you collect a sample into a tube that's not sterile, you -- either the tube itself is already not sterile, or the collection site where you inserted the needle was not sterile.

THE COURT: In someone's arm?

A. In someone's arm.

THE COURT: Is the arm ever going to be completely sterile?

A. Well, it's -- exactly. It's never going to be completely sterile.

THE COURT: Okay.

A. We try to do what's called an aseptic collection to minimize the amount of microbes present. But microbes can still be introduced. The problem is that we all have glucose in our blood, and the particular microorganism that we're concerned about for an ethanol test is call Candida albicans. It's a

yeast. There is bacteria on our skin, and there's yeast on our skin. This particular one, Candida albicans is the most -- it's very, very common. It's on all of our skin.

If Candida albicans is introduced to a blood specimen, there's glucose in that blood, that -- if it's kept at room temperature, that creates the conditions under which the yeast can grow, feed on the glucose, and ferment it into ethanol and create ethanol in the tube that was not present at the time the sample was collected. And there's no way the lab can tell the difference between ethanol that was there at the time of collection and ethanol that was created during fermentation.

Turns out that the additives in these tubes work very well against a bacteria. That is a different kind of microbe. So if bacteria's introduced, they do a pretty darned good job of protecting against it, but this preservative doesn't work at all against yeast.

The one thing that's essential for that process to happen is the tube can't be refrigerated. If the tube is refrigerated at all times between collection and testing, then microbes can't be active, because refrigeration is the best tool that we scientists have to protect against microbial activity.

So if we had records showing in this case that the specimen was refrigerated between March 1st and March 6th

when it was received by the laboratory, then there would not be a concern as to the process of fermentation occurring in the tube.

THE COURT: Is the presence of alcohol only a byproduct of yeast, of the presence of yeast?

A. It is not. There is another byproduct, which is carbon dioxide. But it doesn't create enough carbon dioxide for it to be visible in the same way that it is when you pop the top on a carbonated drink. So there are no -- there are no visual clues to the fact that fermentation may have occurred in a specimen.

THE COURT: So are there other ways to test for the presence of CO2?

A. Not CO2. You could actually test for the presence of the microorganisms. You could test for Candida.

THE COURT: Okay.

A. I don't know of any forensic laboratory that has that capability. But it certainly could be done.

THE COURT: What? The testing for the microorganisms.

A. Correct.

THE COURT: Okay. Taking over your witness. Go ahead, Mr. Middaugh.

MR. MIDDAUGH: No problem.

Q. (By Mr. Middaugh) And I just want to understand relative, you know, 9.3 to 10.7 is what the manufacturer recommends.

Correct?

A. That's what its spec is. It -- that's their manufacturing spec, yes.

Q. So it's not just a recommendation. It's a -- it's their specification for how much blood is supposed to be in the tube.

A. That's correct.

Q. And it's not uncommon when you're doing cases, auditing labs, to see blood containers that are slightly below 9.3 or slightly above 10.7?

A. Generally, when people estimate blood volumes, they estimate only to one significant digit, one number. So you'll see a lot of times, the number is 9. And that's perfectly acceptable.

It's quite uncommon to see numbers that are this low, 6 and 4. This is significantly low.

Q. And the unusualness of those numbers being that low, does contain a significant indication that there might have been a problem with the seal of one or both of those tubes.

A. It appears both. That would not be unexpected under the circumstances. These tubes, the most likely cause for them leaking and not having a tight seal is that they were not stored at the proper temperature. They're supposed to be stored empty at between 39 and 77 degrees Fahrenheit. So if they get too cold or if they get too hot, then they can

leak. Typically, they're packaged in boxes of two in a blood kit, and so typically they will experience similar temperatures, the two tubes. So having them both be underfilled would not be inconsistent with having had adverse temperature effects.

Q. If you were auditing a lab and you saw that they were attempting to issue a finding with regards to an ethanol concentration in blood to three significant digits using tubes that were filled to only 4 and 6 milliliters under these circumstances, would you consider that report or result to be valid?

A. It would not be a valid representation of the person's blood at the time it was collected. It might be valid representation of what was in the tube at the time it was received.

Q. But not what was necessarily --

A. But not necessarily what was in the person at the time it was collected.

Q. I want to turn next to the calibrator solutions and some of the issues that you identified regarding the calibrator solutions in this case.

A. Okay.

Q. So first of all, what is a calibrator solution?

A. A calibrator solution is a reference material. It's a known solution of ethanol in water that is -- it's prepared in a

water matrix, and it has a known concentration of ethanol.

It's used -- when it's used as a calibrator, it's used essentially to teach the instrument, to teach the method how much ethanol gives rise to how big of a signal. So you're developing a relationship between the quantity of ethanol and the size of the signal produced by the instrument.

Q. Why is it important in the gas chromatography testing that's performed by the toxicology lab for the presence of alcohol in blood?

A. Because it's the basis for the quantity. It doesn't affect the qualitative analysis, the identification of ethanol, but it is the basis for how we determine the quantity of ethanol in a sample.

Q. What is a certified reference material?

A. There are international standards for certified reference materials. They are materials that have been produced by a competent, qualified provider that have a known concentration that's suitable for use, for example, in calibrations. They're high-purity materials. In practice, the ones used for ethanol and for drug testing and toxicology are provided in little glass ampules. They're sealed. You don't unscrew the lid to open them. They have a little narrow neck, and you'll actual break off the glass to access the inside. They've been packaged in these sealed glass ampules under an inert gas so they would be nice and

stable because they're very high purity of known origin. They're produced by people that are accredited specifically to produce reference materials. There are labs that are accredited to do testing, labs that are accredited to do calibration. These are accredited specifically to produce these certified reference materials.

Q. And to be clear, the Washington State Patrol lab uses certified reference materials for all of their drug testing. Is that right?

A. That is correct.

Q. But they don't do it for alcohol.

A. That is correct. They --

Q. Do you have any idea why not?

A. I wonder that a lot. Labs all around the country use certified reference materials to calibrate their instruments for ethanol. This is one of a handful of laboratories that has chosen to prepare their own calibrator solutions.

Q. Why is it significant that they prepare their own and not use a certified reference material?

A. There are limited provisions under which that is acceptable. This is an accredited lab. They're required to follow this international standard, ISO 17025, as a condition of their accreditation. And guidance from their accrediting agency explains in general that if you're making a traceable measurement, which they're required to do for ethanol, then

you should use a certified reference material.

They give -- they have a little asterisk, a little note where they have a separate provision where, if a certified reference material is not available, for example, and if you choose to make your own, you can do it, but it must be done in a metrologically manner. Essentially, you impose on the laboratory the same kind of requirements that are imposed on an accredited producer to use what we call in science "primary methods" to manufacture your reference materials.

Q. And is one of the requirements of producing a valid calibrator solution -- or basically a "make your own" reference material -- contemporaneous documentation?

A. It is.

Q. And after reviewing the analysis that was done on Mr. Grissom's blood, do you believe that the Washington State lab contemporaneously documented the calibrator solution that they prepared?

A. No. The records in this case were not contemporaneously documented as required.

Q. I'm going to show you what have been previously marked as Defense Exhibit 4 and Defense Exhibit 5. I'm going to hand you Defense Exhibit 4.

Do you recognize that document?

A. I do. This is what's known as a sequence list. It includes a sequential list of all the individual items, samples, in

the batch that included Mr. Grissom's sample.

Q. I'm going to show you what's been marked as Defense Exhibit 5.

Do you recognize that document?

A. I do. This is two pages. One is a volatiles work list, and the other is a traceability form. The volatiles work list is prepared by the analyst when they are starting off their test, starting off their batch, when they're going to start opening up all the individual tubes of blood. And in that process, they open an individual tube. They use a device called a "diluter" to measure out a small quantity, just a few drops of the blood and to measure out some internal standard into a separate little vial that then gets capped and labeled. And that's one of the -- they run about 75 -- I don't remember the precise number -- samples in a batch and put them in the slot. So it's a process of sample preparation where you prepare every known and unknown sample in the batch at the same time, using the same equipment.

And you have to document what you're doing when you do it, because it's too easy to mix these things up. So you need to write down which lot number of the known samples you're using when you're measuring them out, and you need to write down the identity of the diluter, that piece of equipment that you use to make that critical measurement. That's what this work list is for.

In this case, they identified the diluter, and they identified each of the unknown samples that were prepared in this batch. But they don't identify any of the known quality control samples or the known calibrators that were used -- that were measure- -- supposedly measured out on the same day, at the same time.

They do it properly when they do drug testing. This form does include that information when this lab does drug testing.

But when they do alcohol testing, they don't document that until the next day. The next page or the second half of this one page is the traceability form. That's a summary form that reports the results of the testing on the knowns. And that identifies the lot numbers of those known samples.

But the problem is that that form has results on it. It doesn't even exist until the day after these samples are prepared.

Q. So just to be clear, does the lab's accrediting agency approve of how the lab is preparing and documenting their calibrator solutions and documenting the -- or the form of documentation that's on Defense Exhibits 4 and 5?

A. The international standard that's the basis for this lab's accreditation requires that records be original records contemporaneously generated at the time of the observation or activity. You're not allowed to write down today a

record for what you did yesterday. You're supposed to document things when they happen. That's a requirement of the lab's -- of the international standard that the lab's accredited to. That's also a requirement for a traceable measurement.

THE COURT: So what's the policy issue behind that? I mean, if it's the same tech doing the -- doing the documentation on Day A -- or Day 1 and then Day 2?

A. Well, the problem is that there are lots of different bottles of this stuff around. There are lots of different pieces of equipment around. They're dif- -- and it's -- frankly, the big challenge of doing this kind of testing isn't getting a number. It's getting a number where all the supporting documentation is consistent and complete. The actual measurement itself is pretty straightforward.

The challenge is when -- especially -- this is like doing science on a production line and having in place real rigorous systems for keeping track of this and not mixing anything up. Labs across the country have had problems with using -- documenting the wrong number of calibrators and so forth.

And they do it properly for drugs. They document the lot numbers on this same form for all of their drug testing.

I don't know why ethanol isn't done the same way.

Q. (By Mr. Middaugh) Okay. And this -- I'm sorry. This

specific lab has a toxicologist that you're aware of who has had problems with some of these very types of issues. Correct?

A. Every laboratory has challenges with these kinds of issues. It's constantly a challenge.

Q. I want to next turn to the ethanol result in this case. My understanding is that the lab produced a result of .056 for ethanol. Is that your understanding as well?

A. Yes.

Q. Is that below the lowest calibrator solution that was used by the lab in this case?

A. It is.

Q. And is that consistent with generally accepted scientific standards?

A. It is not.

Q. I'm going to show you what's previously been marked as Defense Exhibit 6. I'm going to show Mr. Bales first.

Do you recognize this document as an excerpt and where it's from?

A. Yes. This is a document produced by NIST, the National Institute For Standards and Technologies. In the old days, it was known as the National Bureau of Standards. It's a branch of the Department of Commerce. They are our national metrology institute; that is all things measurement.

Q. So, Ms. Arvizu, does NIST direct the lab to not report

results that are lower than the lowest calibrator solution used?

A. That is a generally held scientific principle that is elucidated in this handbook very explicitly, that your range of reliable measurement for chemistry, for an analytical chemistry measurement is limited by the range of your calibrators, that you should never report a result that it is at a lower concentration than your lowest calibration solution or higher than your highest, because the low to the high represents your range of reliable measurement.

Q. And just to contextualize this, is this something that you should know in tenth grade? Or is this something that you only learn on the last day of getting your Ph.D.?

A. This is a sophomore chemistry founding principle. This is an analytical chemistry quantitative analysis.

Q. Are you aware of any other labs that consistently report results that are lower than the lowest calibrator solution that they use?

A. I am not. Occasionally, labs will -- will make those mistakes, will make -- will inadvertently, but not as a routine practice.

Q. And is it your understanding that the routine practice of the Washington State Patrol toxicology lab is to have its lowest calibrator solution set at .079. Correct?

A. That's correct.

Q. And is it your opinion that that affects the integrity of the reported result for ethanol in this case?
A. It affects the reliability of the concentration of ethanol.
Q. Not for the presence of ethanol.
A. Correct.
Q. I want to turn next to the drug testing that was done in this case. And I want to turn to the cannabinoids and benzodiazepine testing that was performed. And I'm going to ask the clerk to mark --

THE COURT: Mr. Middaugh, let me ask you a question. You had indicated at about 30 minutes, maybe 45 minutes at most, for this testimony.

MR. MIDDAUGH: I said 45 to 60 in my email to the Court. Mr. Bales said 30. I'm -- I apologize to the Court if -- I should have corrected him.

THE COURT: Well, what are you thinking?

MR. MIDDAUGH: Your Honor, I have more exhibits, but I have, kind of, two topics left in my direct examination. My guess would be 15 to 20 minutes.

THE COURT: Okay. And, Mr. Bales, is it your plan to do cross-examination today? Or are you wanting to -- I know you had both talked about some future video appearance for the witness. What's your preference today?

MR. BALES: At this point, I can end up cross-examining her. I've already canceled my afternoon appointment.

THE COURT: Okay. So you do have the time to cross-examine today?

MR. BALES: I do at this point, Your Honor. I mean --

THE COURT: Let's plan on doing it, then.

Okay.

Q. (By Mr. Middaugh) So earlier we talked about certified reference materials.

A. Yes.

MR. MIDDAUGH: Oh, I'm sorry. Would the Court please admit for the purposes of this hearing Exhibits 4, 5, and 6?

THE COURT: Any objection?

MR. BALES: No, Your Honor.

(Defendant's Exhibit Nos. 4, 5, and 6 admitted into evidence.)

Q. (By Mr. Middaugh) And you indicated that the lab uses certified reference materials for the testing of drugs.

A. Yes, they do.

Q. And so they use certified reference materials for the testing of cannabinoids and benzodiazepine?

A. Yes.

Q. But did you identify errors in the way that they were used in this case?

A. I did. May I refer to my report --

Q. If you would refresh your recollection.

A. -- for the specific? Yeah.

Q. (By Mr. Middaugh) Ms. Arvizu, did looking at your report

refresh your recollection?

A. Yes, it did.

Q. What were the ways in which the testing was done improperly in this case?

A. I testified earlier with regard to ethanol that the certified reference materials must be used in accordance with the manufacturer's instructions. The manufacturer's instructions for these drug standards, the certified reference materials, are explicitly described as ampules for one-time use, that they need to be used immediately after opening. They can't be opened and reused.

In some cases, the lab properly documents the fact that the ampules are opened the day that they're used. But they didn't do that for each of the ones used in this case.

Q. I'm going to show you what's previously been marked as Defense Exhibits 8, 9, and 10, which are the (inaudible). I'm going to show you Exhibits 8 and 9 together. They are similar documents. Do you recognize those?

A. I do.

Q. What are they?

A. These are essentially documents that describe the preparation of their calibration standard and the preparation of the control that they use to check their calibration for the analysis of benzodiazepines in this batch, the ones that were used for this particular case.

Q. And what is the difference between Exhibits 8 and 9? Are they different dates?
A. They're different solutions. They were prepared on different dates.
Q. And is there also a difference in terms of the documentation of when they were opened?
A. There is. In only one case did they document the fact that it was a freshly opened ampule that was used. In the other case, they did not document the date that it was opened.
Q. Why is that so significant?
A. Well, because there's this perception out there in the world that these are expensive materials, and so it's -- some people think they -- it's okay to save them and reuse them days later, weeks later.
Q. And is that correct?
A. It is not.
Q. And those are generally accepted scientific standards?
A. They are -- it's explicitly identified on the certificate of analysis produced by the manufacturer; it prohibits that practice.
Q. All right. I'm going to show you what's previously been marked as Defense Exhibit 10. Do you recognize that document?
A. I do.
Q. And what is significant to you about that document?

A. This is another document that describes the preparation of one of the calibrators in this solution, and it does not describe a date opened.

The second one is a certificate of analysis from the manufacturer; Cerilliant is the manufacturer. And this is just an example. There are one of these for each solution that's used; lots of and lots of these pages. But the information is the same. It specifically says that each ampule is intended for one-time use. International standards clarify that that means you must open and use it immediately. You cannot reuse these materials.

Q. And just to be clear, is contemporaneous documentation required by international standards?

A. It is.

Q. And that's contemporaneous documentation of when you open the ampule?

A. Contemporaneous documentation of any critical activity.

Q. And opening of the ampule directly before the testing process is --

A. It is.

Q. -- critical activity?

A. -- because the manufacturer's certificate specifically limits their warranty and states that it needs to be used shortly after opening to avoid concentration changes.

Q. And any change in concentration could affect a test, not for

the presence, but for the amount in an individual's blood?
A. That's correct.
Q. So the presence is not affected by the errors that you've identified, but the amount identified.
A. That's correct.
Q. Finally, I want to turn to the methadone results in this case. Was there a test for methadone performed?
A. Yes, there was.
Q. And I see -- are you checking your --
A. Checking my notes, yes.
Q. In what way did the test for methadone not comply with the lab standards for methadone testing?
A. This lab's procedure, written approved procedure, specifically requires that when you use a certified reference material to prepare your calibrator, you must use a certified reference material from a different source to prepare your control, to check it. That is, you teach the instrument with one solution, but you check it with a solution from a different source. That's a generally accepted principle in the field of analytical chemistry. It's expressly required by the lab's standard operating procedure. But in this case, both the calibrator and the control for methadone were prepared from the same source material.
Q. And to be clear, is that a violation of international

standards?
A. It is. It's a violation of the lab's own procedures, as well. And kind of just --
Q. And just one --
A. -- common sense, because if you -- if you calibrate your bathroom scale at home with a brick that you believe to be five pounds and then you go back and say, I'm going to check it and make sure it's right by using the same brick, that doesn't check anything. You have to have your calibrator and your control be from different sources.
Q. I'm going to show you what's previously been marked as Defendant's Exhibit 11. This is the 10-page WSP standards. And do you recognize this document, Defendant's Exhibit 11?
A. I do. This is the laboratory's procedure for methadone analysis.
Q. And does that specifically bar the practice in this case?
A. It does.
Q. It specifically says that you have to use two different lot numbers for the methadone solution?
A. If I can find it, yes, it does. I don't recall where -- what the exact language is.
Yeah, it specific -- shall I read -- refer you to the section?
Q. If you could just tell us what page it's on, and then if you could read it out loud.

A. It's on page 4 of 10, Section 5.6.3.2.C.
Q. And if you could just read out loud what the standard says.
A. "The control stock standards must be either a different lot number or from a different supplier to those used in producing the working standard."
Q. And that's exactly what the lab did not do in their methadone test.
A. That's correct.

MR. MIDDAUGH: I would seek to admit the remainder of the exhibits that have been marked other than Defense Exhibit 1, which was just as used for refreshing Ms. Arvizu's recollection.

THE COURT: Any objection?

MR. BALES: No, Your Honor.

THE COURT: All right. Those are admitted.

(Defendant's Exhibits No. 8 through 11 admitted into evidence.)

MR. MIDDAUGH: Thank you.

THE COURT: Any other questions?

MR. MIDDAUGH: Do you want me to leave the exhibits with her?

MR. BALES: Sure.

THE COURT: All right. Cross-examination.

C R O S S - E X A M I N A T I O N

BY MR. BALES:
Q. Is it Ms. -- is it Arvizu?

A. Very good.
Q. I have a couple of quick questions. In your analysis of the procedures and everything, do you consider the fact -- with regard to reliability, do you consider the fact that the defendant admitted to drinking alcohol, admitted to taking each of the drugs tested, and even the police officer's observations regarding some of those drugs, do you consider any of that?
A. No. In conducting a data audit, it's whether or not the reported result stands on its own scientific merits for that determination.
Q. So even if you had a sample that, say, contains cannabinoid -- marijuana, something like showing evidence of marijuana, it wouldn't matter to you if the defendant said, "yes, I smoked a lot of marijuana," and the police officer said, "I smelled a lot of marijuana"?
A. No. It wouldn't. In fact, in the analytical laboratory environment, we work very hard to make sure that we remove any potential for examiner bias. And so it's very important that your determination of what's present or absent in a sample and in how you process things, not be affected by that kind of external information.
Q. Wouldn't you also agree that a lot of this evaluation that you're talking about goes to the weight of the evidence as opposed to the admissibility of the evidence?

MR. MIDDAUGH: I'd object. That is calling for a legal conclusion.

THE COURT: Sustained.

Q. (By Mr. Bales) So let's talk a little bit about your report. You indicated a lot of your conclusions were based on the fact that you just didn't have information that established some of the things that you were looking for. Correct?

A. That was the case regarding the collection of the blood specimen. I did not have a contemporaneous records generated during the collection process. I often, for example, will get video of the blood collection so I can evaluate the practice to determine whether it was done in compliance with standards. And I really didn't get those kinds of records in this case. Those are records that are generated before the sample ever gets to the laboratory.

Q. Right. And so you said, for instance, custody records, you didn't get anything on custody records.

A. That's correct.

Q. And then in the first part of your report, you're mentioning that you had difficulty determining who was responsible for the different testing that was done and the custody of the items. Correct?

A. Yes.

Q. Did you consider the chain of custody documents?

A. I did not receive chain of custody documents. That was the problem.
Q. Well, if there are chain of custody documents, obviously, that would significantly impact your assessment, then. Correct?
A. That would have helped. The records that I did receive, some of the records would have many different analysts' names on them. And so I couldn't tell who did which part of the batch processing, because I couldn't -- with many names, I couldn't tell who did what. That's something that should be really clear to an independent reviewer: who was responsible for which activity on which sample. And then I can -- if I'd had the custody records, I at least could have known who physically had possession of Mr. Grissom's sample.
Q. Correct. So on part of your report you indicate that Ms. Dawn Sklerov possessed the item on 3/24, but per the chain of custody documents, that -- would it surprise you that she never even possessed the items on that date?
A. That would be a problem if she did not have custody of the item on a date when she purportedly was testing it.
Q. Right. But there isn't a reported testing that she's done on 3/24/2017.
A. There's different kinds of activities associated with the tests. There's preparation, what's called extraction where the drugs in question are extracted from the specimen. And

then a separate analysis, part of the analytical process is the instrumental analysis, testing it on -- the extract on the instruments. So ofttimes these analytical processes can extend over a period of many days.

Is that -- I'm not sure I'm asking you -- answering your question.

Q. Right. Well, I guess the bottom line is if there was custody documents -- and presumably there are -- that that would have given you significant information for your analysis.

A. That would have been very helpful, yes.

Q. All right. You talked a little bit about questions regarding the integrity of the sample, I think, under a number of different areas. One of them was the volume that was included in the tubes. But what is the purpose of potassium -- is it oxalate and sodium fluoride?

A. Potassium oxalate is an anticoagulant. And if you just put blood into a sterile tube, it will very quickly clot and turn solid. That's a normal metabolic process.

Q. Right.

A. However, with -- in the presence of an anticoagulant, it keeps it in liquid form, suitable for analysis. So the anticoagulant keeps it in a whole-blood form suitable for analysis.

The other additive that's present is sodium fluoride.

That's an antiglycolytic agent. It functions as the preservative that inhibits any bacterial action on the blood. It is not effective at inhibiting yeast action on the blood.

Q. So your -- you claim that it doesn't affect yeast at all.

A. It is not effective in preventing action and growth by yeast, that's correct.

Q. Well, don't studies show, even without the use of any of those extra chemicals, that microorganisms could only produce maybe, at a maximum, up to .02 grams per 100 milliliters of alcohol with regard to the result? And that's without any chemicals, and we're not even talking about refrigeration.

A. An average person has a -- typically on the order of 100 milligrams of glucose in your blood. That's an average person who doesn't have -- who's fasting and who doesn't have diabetes.

There's a formula that you can use. It's stoichiometry where you can compute how much ethanol can I produce from 100 milligrams of glucose, and you can produce approximately .05 gram percent ethanol from an average concentration of glucose. So from 100 milligrams, you can get .05 percent ethanol.

I don't know what this subject's eth- -- or glucose concentration was at the time the sample was collected.

Have no way of knowing that. At this time nobody would have any way of knowing that.

But an average person would -- you'd be able to create .05, if all of the glucose was consumed.

Q. So wasn't -- are you familiar with the study with regard to biological microorganisms, and they said that it would only produce close to .02?

MR. MIDDAUGH: I would object to this as improper impeachment --

THE WITNESS: What --

MR. MIDDAUGH: -- I mean, what's the study?

THE COURT: The witness hasn't answered the question whether she's aware of the study.

MR. BALES: Aware of it or not.

MR. MIDDAUGH: Sure.

THE COURT: Not the content --

THE WITNESS: Can you give me --

THE COURT: -- or the conclusion.

THE WITNESS: Can you give me the title or the name?

Q. (By Mr. Bales) Are you aware of any studies with regard to the formulation of microbiological organisms in blood samples where they indicated the maximum possible -- the average increase or change might be .02, which is without sodium fluoride? Have you reviewed any studies like that?

A. I have not. I believe I've read all the studies that are

published, that I know of that are published in English. There's one in German that I haven't read in the original.

I am not aware of that one. I know that -- I've seen much higher numbers in some cases. But I -- I don't know of any average of only .02.

Q. You indicated maybe .05.

A. For an average person.

Q. And one of the things that you indicated, there was no evidence that the tubes were inverted eight times. Isn't that correct?

A. That's one of the things I wrote in my report, yes.

Q. And --

MR. MIDDAUGH: I guess I would object to that as beyond the scope of -- if it's not one of the bases that was raised in this motion.

THE COURT: Are you talking about the sample tubes?

MR. BALES: Correct.

THE COURT: Objection is overruled.

MR. BALES: Well, they're the tubes that were collected. She indicated in the blood --

THE COURT: The blood sample tubes that were collected?

MR. BALES: Right. She was indicating -- had indicated the procedures that were followed, et cetera. This is part of the procedures that were followed.

THE COURT: The objection's overruled. So...

Q. (By Mr. Bales) Are you aware that the Washington administrative code says that they only need to be inverted three or four times?
A. I am. That's actually incompatible with the manufacturer's instructions. They have different types of tubes with different additives that only require three to four inversions. But this particular formulation requires a minimum of eight under the manufacturer's specs.
Q. And you believe that underfilled tubes somehow compromise the testing.
A. I do. The manufacturer's product insert states that.
Q. It states that it actually compromises?
A. It states that underfilled tubes may lead to inaccurate analytic results.
Q. With regard to these tubes, if the seal is broken and there's -- isn't that tube going to be inoperable if the seal is actually broken?
A. If it's completely removed and there's no vacuum at all inside, then they won't be able to function in the normal manner. It would not drop -- it would not suck in blood, essentially.
Q. And so isn't it true when they put the -- the needle in the arm, that they press that tube on there and it's the actual presence of the vacuum that pulls the blood out?
A. That is correct.

Q. And so the fact that there's blood in the tube shows that the tube actually had some vacuum at the time it was used?
A. It shows that it has some vacuum. If it wasn't able to draw in 10 mils, then it means it didn't have sufficient vacuum.
Q. Doesn't it also potentially mean that somebody pulled it off of there when they were filling it?
A. That's absolutely a possibility, although all phlebotomists are trained to leave the needle in as long as blood is flowing.
Q. And you think -- well, aren't you saying that all laboratory technicians are trained to do their specific task in a certain way --
A. And it doesn't always happen.
Q. And isn't it true that the lab uses ethanol calibrators that are made from traceable ethanol and that they are calibrated against NIST standard reference material, which is, I guess it's the SRM, and that the SRM is a higher credibility than the CRM?
A. That is -- that is true. That does not solve their problem of the fact that they don't manufacture them according to primary standards in a metrologically valid manner. They perform -- they prepare them in an approximate concentration, and then they determine the assigned value by analyzing it as a sample.
Q. And that's part of the lab's standard operating procedure.

A. It is.
Q. And with regard to those where you're talking about the traceability, those lot numbers were documented on both the sequence parameters and on the toxicology info path form, weren't they?
A. Yes, both of which didn't exist until after the testing was performed; the instrumental analysis. My concern is that during the preparation, when all these bottles are open and all the things are on the benchtop, that's contemporaneous recordkeeping.
Q. Right. But there's multiple different records that they have where they can record them on one document or multiple documents, and the requirement would be that they at least, under your standard, at least on one of the documents; maybe not the document you're referencing.
A. Well, for an audit trail, you need to know who did what when. And that's -- in this case, the lot number that was used to measure into the vial on the date it was prepared was not documented. It was documented the next day on a different record.
Q. But what about on -- what about on the sequence parameters and also on the toxicology on both?
A. I can show you that. Okay. The -- this -- this volatile -- this work list, this first page form, this is Exhibit 5, the left side, this is the document that in the case of drug

testing, this is where they write down the lot numbers of each of the knowns that are used.

It's not done in the case of ethanol. In the case of ethanol, it's done on this other page where results are summarized.

Those are really two different parts of the process. There is the preparation that happens, processing all these samples, one by one, opening each container, measuring them out, sealing them up, going through that for dozens and dozens and dozens of samples. And then once that's done, then you go over to the instrument and place them on the positions in the autosampler and hit go. The next day when all the results are reported, that's when this form is generated, and that's where the lot numbers are documented.

Q. And you think that they just had them from memory on the lot numbers, that the next day they just pulled that out of the air from, you know what? I was testing this yesterday, I remembered lot number PC 562581?

A. That's exactly what we're concerned about. You want -- when -- at the time you look at the bottle to measure it out, to measure -- to prepare the batch, that's when you should be writing down or notating on a computer the fact that that's the one that you used. You don't want to have to rely on your memory of what you did the day before.

Q. You don't think that they're actually memorizing the lot

numbers in their head and then write them down on the form the next day, do you? Memorizing a 10-digit number or?

A. I don't know. There may be some of those numbers that they use over and over, and they might have them memorized. I don't know.

Q. And the instrument that was used for the blood alcohol has been validated to quantify blood alcohol levels from .01 to .40. Correct?

A. I've looked at the validation study for several of their different instruments. I don't remember the range for this one, but that's probably approximately close. I'm not sure of the exact numbers.

Q. So that wouldn't surprise you --

A. It's slightly different for each instrument.

Q. Right. But that wouldn't surprise you --

A. It would not.

Q. -- it was validated to .01 to .40?

A. It would not.

Q. And that during the volatile run, they use a .04 grams per 100 milliliter controls as -- that are tested?

A. They did.

Q. And also external proficiency in, I guess, linearity samples, also been tested with this volatile analysis method, that same method?

A. Same method, different times.

Q. And I believe in your report, I think it was under No. 10, you stated something like you did not -- you did not ensure that the materials were from a known concentration.
A. Yes. That's because the "date opened" was not documented for -- in some cases. For some of the standards, it was, but not for all of them.
Q. But you're not saying that there weren't fresh ampules used each time.
A. In some cases, but in other cases, that could not be demonstrated from the records.
Q. Are you aware that, for instance, the standard that -- I guess it was CAN 160630-W was prepared and tested against the lot number? That was in the working standard. I guess that one was CAN 150805-W. And then --
A. Can I refer to the original records for those? I don't remember those numbers.
Q. You can.
A. Okay.
Okay. I'm sorry. Which numbers were you referring to? This -- we're looking at cannabinoids?
Q. Correct.
A. Okay.
Q. I guess the working standard was the CAN 160630-W was prepared and tested against the lot number on the working standard, which was CAN 150805-W.

A. Those are not the standards that I have used in this case. Let me...
Q. And there was a working control of CAN 151022-Q.
A. Okay. The cannabinoid working standard that was used in this batch to calibrate was CAN 160630-W.
The cannabinoid working control was CAN 160620-Q.
Q. You don't have CAN 150805-W?
A. Not on the date this was tested, no.
Q. Or CAN 151022-Q?
A. No. This -- the work list, it's page 27 of 50 in the case file. That's the work list for the batch that included Mr. Grissom's sample.
Q. And are you confident that you have all the records on that?
A. There's only one batch list for cannabinoids.
Q. Now, are you aware that with the working standards and controls that they verify prior to being put into use?
A. Oh, yes. They must be.
Q. And if they don't -- if they're not verified, then a new lot working control or standards are prepared?
A. Yes, I would expect that to be the case.
Q. And also are you aware that two tests are performed for any drug or volatile reporting on the toxicology lab? Two separate tests?
A. That is required by standard.
Q. And on the 3/13/2017, cannabinoids were identified as

presumptive positive via that EMIT testing performed by Ms. Sklerov?

A. Yeah, that's not a confirmation. That's a tentative identification. It's a screen that's subject to false positives, and it must be confirmed. In this case, it was confirmed.

Q. Right.

A. Using the work list that I described.

Q. And then on 3/16/2017, methadone was identified by Ms. Sklerov using the gas chromatography mass spectroscopy using a separate sample?

A. I would have to look at the dates, but, yes, there was a confirmatory test done for methadone.

Q. And they did a quantitation that those drugs were performed by two different analysts using two different instruments than the ones that originally identified the compound.

A. Yes.

Q. And using different --

A. There was no doubt about the identification of these drugs, the qualitative identification.

Q. And they used separate samples of the defendant's drugs for each one of those tests.

A. Yes.

Q. And they didn't do a quantitative on -- is it -- what is it? Seven? -- is it --

A. 7-aminoclonazepam?
Q. Thank you. So they didn't -- they didn't use a quantitative or report a quantitative on that, did they?
A. No. They only reported it as positive.
Q. And with regard to one of the last topics that you had, it was with regard to the fact that on the methadone, that they used the same lot number?
A. Yes.
Q. And they did actually use separate fresh ampules for each test. Correct?
A. Let me look.
Q. And while you're looking, they actually did that on different days and different technicians did that separately.
A. There was a sample extracted on April 19th of 2017. And there were -- and that sample was also analyzed on the instrument on April 19th.
You said it was two different analysts on?
Q. Well, didn't they, on the -- we had --
A. Are you referring to the screening that was done earlier and identified a presumptive for methadone?
Q. It was when they were preparing the working standard for the calibrator. They used fresh ampules from the methadone CRM lot number, FE 062 --
A. They were done on different days. That does not absolve you

of responsibility for using a different source.
Q. And it's your position that the lab's not allowed to actually use different ampules if they come from the same lot number.
A. That's correct. That's what the standard says. That's what their own procedure says.
Q. And, again, with the methadone, there wasn't a quantity; there was only just the presumptive positive standard that was reported.
A. No, they actually reported a quantity.
Q. And what was the quantity?
A. 0.12 milligrams per liter.
Q. And you don't know if that was consistent with what the defendant reported he had actually taken that day?
A. I don't.
Q. All right.

MR. BALES: I have no further questions.

THE COURT: All right. Any redirect?

MR. MIDDAUGH: I just want to brief address.

R E D I R E C T E X A M I N A T I O N

BY MR. MIDDAUGH:

Q. You indicated that you did not review custody records or chain of custody records or you were not sure if the chain of custody records that you received were complete. Is that correct?

A. Correct.
Q. Does that affect whether the vials were properly filled?
A. No.
Q. Does that affect whether -- how the calibrator solutions for ethanol were prepared?
A. No.
Q. Does that affect whether the calibrator solutions used for ethanol were accurate?
A. No.
Q. Or the contemporaneous documentation of the calibrator solutions?
A. No.
Q. Do the chain of custody records reflect whether the ethanol result is lower than the lowest calibrator solution used in the case?
A. It does not.
Q. Does it affect anything else that you testified to on direct examination?
A. Don't believe so.
Q. You were cross-examined about the contemporaneous documentation of the calibrator solution. You reviewed the entire SDT response that was provided to you by the Washington State Patrol toxicology lab. Correct?
A. Yes.
Q. Was there any contemporaneous documentation of the

calibrator solutions?

A. Not for ethanol. There was for the drugs.

Q. And finally with regards to the methadone, just to be clear so we can focus in on the issue, do the standards care about whether methadone was tested on one day and tested again on another day if the same lot number was used as the certified reference material?

A. No.

Q. That is a violation of the standards?

A. It is.

Q. And it is a violation of the WSP's own standards that are published on their website.

A. I don't know if it's published on their website, but the procedure that I have that was in effect at the time of this testing.

Q. That is in the document that, I believe, is Defense Exhibit 10 or 11?

A. 11.

Q. Defense Exhibit 11. Okay.

MR. MIDDAUGH: And then I have no further questions.

THE COURT: All right. Recross?

MR. BALES: No, Your Honor.

THE COURT: All right. You may step down.

THE WITNESS: Thank you, sir.

THE COURT: All right. So we'll hit pause here. Is that

right?

MR. BALES: Correct.

THE COURT: Are you going to have any other witnesses?

MR. MIDDAUGH: No, Your Honor.

THE COURT: Okay.

MR. MIDDAUGH: I think there is a scheduling question. I'm in -- currently in an indecent liberties trial in Judge Doyle's court. We expect to be in Monday through Thursday of next week. On Friday, I have an issue that's going to be taking me out of the office for a substantial portion of the day.

THE COURT: Okay. I think what I'll have you do is -- when is your trial date?

MR. MIDDAUGH: Well, that's the problem. It's October 9th. I am not going to be finishing my indecent liberties trial until the 9th. So we're going to be on standby. I have an in-custody robbery trial that's -- the prosecutor's projecting eight to ten days on.

THE COURT: Okay.

MR. MIDDAUGH: That's on standby. I just --

THE COURT: So.

MR. MIDDAUGH: I don't know what's realistic as far as scheduling.

THE COURT: Yeah.

MR. BALES: I would just suggest that because your expert

had scheduling issues and if the motion is denied (inaudible) you're going to be calling her during the trial anyway. So I would suggest that you coordinate with her on her availability. I will talk to my individual experts on when they are available, and we might -- might need to move for a short continuance in the case to correspond with your experts' availability and following up with this hearing.

THE COURT: Okay. So why don't you all do that. And then check with Rianne after you've done that. And then we'll deal with your trial dates as we get closer to the 9th. And I think that's a --

MR. BALES: During the week.

THE COURT: Or during the week.

MR. BALES: We'll set a hearing.

THE COURT: Okay. That sounds good.

MR. MIDDAUGH: Is that -- I just want to be clear, Your Honor. I took over this case from Mr. Leavitt with a promise to be ready to go. And that was my intention. I'm sorry that it looks like we might have to have another --

THE COURT: Things happen.

MR. MIDDAUGH: -- delay in this case.

THE COURT: Things happen. Okay.

MR. MIDDAUGH: Okay.

THE COURT: All right. Thank you, everyone.

MR. MIDDAUGH: Thank you.

MR. BALES: All right. Thank you, Your Honor.

THE COURT: Thank you, Madam Clerk.

(Conclusion of hearing)

C E R T I F I C A T E

STATE OF WASHINGTON)
)
COUNTY OF KING)

I, the undersigned, do hereby certify under penalty of perjury that the foregoing court proceedings were transcribed under my direction as a certified transcriptionist; and that the transcript is true and accurate to the best of my knowledge and ability, including any changes made by the trial judge reviewing the transcript; that I received the audio and/or video files in the court format; that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially interested in its outcome.

IN WITNESS WHEREOF, I have hereunto set my hand this 29th day of November, 2018.

_____
Sara L. Kern, CET