IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SANTA CLARA

BEFORE THE HONORABLE C. RANDALL SCHNEIDER, JUDGE

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PEOPLE OF THE STATE OF CALIFORNIA,	)	
PLAINTIFFS,	)	
V.	)	NO. B1155032
FRANK ROE,	)	
DEFENDANT.	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

TESTIMONY OF JANINE ARVISO

MARCH 6, 2012

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APPEARANCES:

FOR THE PEOPLE: MADELINE SEIFF, DEPUTY DISTRICT ATTORNEY

FOR DEFENDANT: PETER JOHNSON, ATTORNEY AT LAW

COURT REPORTER: SUE HERFURTH, C.S.R. LICENSE #9645

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SAN JOSE, CALIFORNIA MARCH 6, 2012

PROCEEDINGS:

THE COURT: GOOD MORNING, LADIES AND GENTLEMEN.

FIRST OF ALL, LET ME THANK YOU, LADIES AND GENTLEMEN OF THE JURY, FOR STARTING EARLY. I KNOW SOME OF YOU ARE IN SOUTH COUNTY, AND IT'S A VERY DIFFICULT COMMUTE ON TUESDAY, SO THANK YOU FOR COMING AT AN EARLIER HOUR.

SECONDLY, IN ORDER TO ACCOMMODATE AN OUT-OF-STATE WITNESS CALLED BY THE DEFENSE, THE ATTORNEYS HAVE AGREED TO INTERRUPT MR. BURRY'S TESTIMONY SO THAT WE CAN HEAR THE TESTIMONY OF THIS OTHER WITNESS OUT OF ORDER. WE ARE NOW IN THE PART OF THE TRIAL WHERE YOU HAVE BEGUN TO HEAR EXPERT TESTIMONY.

THERE ARE ESSENTIALLY TWO TYPES OF WITNESSES:

A PERCIPIENT WITNESS IS A WITNESS THAT PERSONALLY SAW SOMETHING OR DID AN ACTIVITY THAT THEY ARE TESTIFYING ABOUT. MISS DESAI PERSONALLY PERFORMED THE GAS CHROMATOGRAPH TEST IN THIS CASE. MR. BURRY PERSONALLY REVIEWED IT.

THEN YOU HEARD THAT MR. BURRY HAS SPECIAL TRAINING AND EXPERIENCE WITH REGARD TO THE EFFECT OF ALCOHOL IN THE BODY, AND THEREFORE HE WAS ALLOWED TO TESTIFY TO GIVE EXPERT OPINIONS REGARDING SOMETHING THAT HE DIDN'T PERSONALLY OBSERVE OR PARTICIPATE IN. I WOULD LIKE TO READ YOU THE INSTRUCTION THAT DEALS WITH HOW TO CONSIDER EXPERT TESTIMONY.

WITNESSES ARE ALLOWED TO TESTIFY AS EXPERTS AND TO

GIVE OPINIONS. YOU MUST CONSIDER THE OPINIONS, BUT YOU ARE NOT REQUIRED TO ACCEPT THEM AS TRUE OR CORRECT.

THE MEANING AND IMPORTANCE OF ANY OPINION ARE FOR YOU TO DECIDE. IN EVALUATING THE BELIEVABILITY OF AN EXPERT WITNESS, FOLLOW THE INSTRUCTIONS ABOUT THE BELIEVABILITY OF WITNESSES GENERALLY.

IN ADDITION, CONSIDER THE EXPERT'S KNOWLEDGE, SKILL, EXPERIENCE, TRAINING AND EDUCATION, THE REASONS THE EXPERT GAVE FOR ANY OPINION, AND THE FACTS OR INFORMATION ON WHICH THE EXPERT RELIED ON IN REACHING THAT OPINION.

YOU MUST DECIDE ON WHETHER THE INFORMATION THE EXPERT RELIED ON WAS TRUE AND ACCURATE. YOU MAY DISREGARD ANY OPINION THAT YOU FIND UNBELIEVABLE, UNREASONABLE OR UNSUPPORTED BY THE EVIDENCE.

A WITNESS MAY BE ASKED A HYPOTHETICAL QUESTION. A HYPOTHETICAL QUESTION ASKS THE WITNESS TO ASSUME CERTAIN FACTS ARE TRUE, AND THEN TO GIVE AN OPINION BASED ON THE ASSUMED FACTS.

IT IS UP TO YOU TO DECIDE WHETHER AN ASSUMED FACT HAS BEEN PROVED. IF YOU CONCLUDE THAT AN ASSUMED FACT IS NOT TRUE, CONSIDER THE EFFECT OF THE EXPERT'S RELIANCE ON THAT FACT IN EVALUATING THE EXPERT'S OPINION.

IF THE EXPERT WITNESSES DISAGREED WITH ONE ANOTHER, YOU SHOULD WEIGH EACH OPINION AGAINST THE OTHERS. YOU SHOULD EXAMINE THE REASONS GIVEN FOR EACH OPINION AND THE FACTS OR OTHER MATTERS UPON WHICH EACH WITNESS RELIES.

YOU MAY ALSO COMPARE THE EXPERT'S QUALIFICATIONS.

THEREFORE, WE'VE ASKED MR. BURRY TO RECESS HIS

TESTIMONY BRIEFLY, AND COUNSEL, YOU MAY CALL YOUR WITNESS OUT OF ORDER.

MR. JOHNSON: AT THIS TIME THE DEFENSE CALLS JANINE ARVISO.

JANINE ARVISO,

CALLED AS A WITNESS, HAVING FIRST BEEN DULY SWORN, TESTIFIED AS FOLLOWS:

THE WITNESS: I DO.

THE CLERK: PLEASE STATE YOUR FULL NAME FOR THE RECORD.

THE WITNESS: JANINE, J-A-N-I-N-E, A-R-V-I-S-O.

DIRECT EXAMINATION:

BY MR. JOHNSON:

Q. MISS ARVISO, CAN YOU GIVE US SOME BACKGROUND REGARDING YOUR EDUCATION, PLEASE?

A. I HAVE A BACHELOR OF SCIENCE DEGREE FROM CAL POLY IN SAN LUIS OBISPO, AND MY DEGREE AT CAL POLY IS IN BIOCHEMISTRY.

I HAVE AN ABD DEGREE, THAT'S ANOTHER DEGREE, AN ABD IN CHEMISTRY FROM THE UNIVERSITY OF NEW MEXICO. AN ABD IS AN INDICATION THAT I WAS IN THE PH.D. PROGRAM, COMPLETED ALL THE COURSEWORK SUCCESSFULLY, ALL THE EXAMINATION EXERCISES, PREPARED TO DEFEND A PROPOSAL FOR A DEGREE, BUT DID NOT DEFEND MY DISSERTATION. SO THE ABD IN CHEMISTRY IS FROM NEW MEXICO.

I SUBSEQUENTLY WAS CERTIFIED AS A QUALITY AUDITOR BY THE AMERICAN SOCIETY FOR QUALITY.

Q. CAN YOU TELL ME WHAT A QUALITY AUDITOR IS?

A. AS A CHEMIST WHO PRACTICES AS A QUALITY AUDITOR, I WORK FOR CLIENTS WHO USE LAB RESULTS TO MAKE IMPORTANT DECISIONS. THEY NEED TO UNDERSTAND THE RESULTS THEY ARE USING TO MAKE SURE THEIR DECISIONS WERE GENERATED USING SCIENTIFICALLY VALID MODELS AND IN A RELIABLE MANNER, SO I AUDIT THE WORK PRODUCT OF TESTING LABORATORIES FOR THE PEOPLE WHO USE LAB RESULTS TO MAKE IMPORTANT DECISIONS.

Q. THE AGENCY THAT CERTIFIES YOU IS WHO?

A. THE AMERICAN SOCIETY FOR QUALITY IS ESSENTIALLY THE TRADE ORGANIZATION, PROFESSIONAL ORGANIZATION FOR QUALITY PRACTITIONERS. IN ORDER TO ACHIEVE CERTIFICATION, YOU HAVE TO HAVE A CERTAIN EDUCATION AND EXPERIENCE, A CERTAIN LEVEL OF EDUCATION AND EXPERIENCE IN THE FIELD, AND SIT FOR AN EXAMINATION THAT COVERS THE BODY OF KNOWLEDGE FROM SAMPLING THEORY TO AUDIT PRACTICES AND SO FORTH.

Q. ALL RIGHT. AS FAR AS ANY ORGANIZATIONS OR ASSOCIATIONS RELATED TO AUDITING OR LAB PRACTICES OR THINGS OF THAT NATURE, DO YOU BELONG TO ANY?

A. I AM A SENIOR MEMBER OF THE AMERICAN SOCIETY FOR QUALITY.

Q. SENIOR MEMBER MEANS YOU HAVE BEEN THERE FOR A WHILE?

A. I'M AN OLD MEMBER, YES. I DON'T REMEMBER HOW MANY YEARS IT TAKES, BUT YES.

Q. WHEN DID YOU CERTIFY FOR QUALITY --

A. WHEN DID I GET MY ORIGINAL CERTIFICATION? I DON'T REMEMBER THE YEAR. IT'S A PROCESS WHERE YOU SIT FOR AN EXAM FOR THE FIRST CERTIFICATION, AND YOU RECERTIFY EVERY THREE

OR FOUR YEARS THEREAFTER BY SUBMITTING DOCUMENTARY EVIDENCE OF THE TRAINING THAT YOU'RE PROVIDED, THE TRAINING YOU'VE RECEIVED, MATERIALS THAT YOU'VE WRITTEN, THOSE KINDS OF THINGS. I HAVE RECERTIFIED A NUMBER OF TIMES. SO IF THAT'S EVERY THREE OR FOUR YEARS, IT'S BEEN SOME TIME.

Q. HAS IT BEEN MORE THAN 20 OR 30 YEARS?

A. CERTAINLY NOT MORE THAN 30.

Q. REGARDING THAT PARTICULAR FIELD, DOES THAT INCLUDE, FOR EXAMPLE, GOING INTO LABORATORIES AND AUDITING SPECIFICALLY THEIR STANDARD OPERATING PROCEDURES AND METHODS OF ANALYSIS, THINGS OF THAT NATURE?

A. YES. ON-SITE AUDITS ARE ONE OF THE SERVICES I PROVIDE, AND THAT INVOLVES BOTH GOING IN AND ASSESSING TECHNICAL RIGOR AND EFFICACY OF THE LAB AS A QUALITY SYSTEM, DOES IT HAVE ALL SYSTEMS AND CONTROLS IN PLACE SO IT CAN IDENTIFY PROBLEMS AND PREVENT PROBLEMS FROM OCCURRING, AND THERE IS A VERY ROBUST AND COMPLETE RECORD TRAIL, SO YOU CAN MAKE THAT ASSESSMENT AFTER THE FACT.

Q. HAVE YOU BEEN EMPLOYED BY ANY PARTICULAR COMPANIES OR AGENCIES IN THAT CAPACITY?

A. I STARTED MY CAREER OUT OF GRADUATE SCHOOL WORKING IN THE NATIONAL LABORATORY COMPLEX, WORKING AS AN OPERATING CONTRACTOR FOR THE DEPARTMENT OF ENERGY IN IDAHO IN A SMALL ENGINEERING LAB. WHILE I WAS THERE, I ESTABLISHED AND MANAGED FULL SERVICE ANALYTICAL TESTING LABORATORIES. THAT INCLUDED SETTING UP A QUALITY SYSTEM FOR THE LAB.

I SUBSEQUENTLY BECAME INVOLVED IN QUALITY ISSUES FOR THE DEPARTMENT OF ENERGY AND WORKED ON INTERAGENCY

QUALITY ISSUES WITH THE DEPARTMENT OF DEFENSE, ENVIRONMENTAL PROTECTION AGENCY AND THE DEPARTMENT OF ENERGY.

WHEN I LEFT THE NATIONAL LAB SYSTEM, I STARTED MY OWN QUALITY ASSURANCE FIRM FOR THE U.S. NAVY'S NATIONWIDE LABORATORY ASSESSMENT PROGRAM, AND WE AUDITED AND EVALUATED THE QUALITY OF WORK PRODUCED BY BOTH COMMERCIAL AND NAVY LABORATORIES THAT DID ANALYTICAL SERVICES FOR THE U.S. NAVY.

Q. AS FAR AS THAT EXPERIENCE, IT INVOLVED OR MADE YOU FAMILIAR WITH VARIOUS ANALYTICAL PROCESSES?

A. VERY FAMILIAR. ESSENTIALLY, THE CHALLENGE THAT FACES AN ANALYTICAL LAB IN THIS KIND OF ENVIRONMENT IS THAT WE'RE DOING SCIENCE ON A PRODUCTION LINE. THE CHALLENGES IN THAT KIND OF ENVIRONMENT ARE VERY DIFFERENT THAN IN A RESEARCH LABORATORY, AND MANY YEARS OF STUDY AND PRACTICE ARE DEMONSTRATED.

THE MOST, THE BEST WAY WE CAN POSSIBLY ENSURE THAT WE'RE PRODUCING, CONSISTENTLY PRODUCING DATA OF ACCEPTABLE QUALITY IS BY IMPLEMENTING WHAT'S CALLED A QUALITY MANAGEMENT SYSTEM WITHIN A LABORATORY, OR QUALITY ASSURANCE PROGRAM WITHIN A LABORATORY TO IDENTIFY ALL THE THINGS THAT MATTER, ALL THE THINGS THAT AFFECT THE QUALITY OF YOUR WORK PRODUCT, AND DOCUMENT EVERYTHING AND CONTROL EVERYTHING SO THAT YOU HAVE A SYSTEMIC MEANS OF KNOWING WHETHER OR NOT THINGS ARE WORKING. YOU DON'T HAVE TO RELY ON MEMORY OR TRUST PEOPLE, YOU CAN ACTUALLY RECONSTRUCT THE WORK AFTER THE FACT.

Q. NOW, HAS THAT INCLUDED THE GAS CHROMATOGRAPH ON

OCCASION?

A. YEAH. MY FIRST PRACTICAL EXPERIENCE WAS IN A LAB SET UP FOR THE DEPARTMENT OF ENERGY. WE HAD A NUMBER OF GC INSTRUMENTS IN THE LAB. READING SPECIFICATIONS, DOING PERFORMANCE TESTING OF THE INSTRUMENTS AT INITIAL SETUP, AND EVALUATING, DOING QUALITY ASSESSMENTS OF WORK PRODUCED BY THE INSTRUMENTS. THAT WAS MANY YEARS AGO, WHEN I GOT OUT OF GRADUATE SCHOOL, BUT I HAVE BEEN REVIEWING WORK PRODUCT FOR RESULTS PRODUCED BY THE GC ESSENTIALLY IN THE INTERVENING DECADES.

Q. YOU'RE FAMILIAR WITH ISO?

A. YES. ISO IS THE INTERNATIONAL STANDARD ORGANIZATION. YOU MAY BE FAMILIAR WITH ISO 9000. ISO IS AN INTERNATIONAL ORGANIZATION THAT ESTABLISHES QUALITY STANDARDS IN QUITE A VARIETY OF DISCIPLINES WITHIN THE FIELD OF TESTING LABORATORIES. THE RELEVANT STANDARD IS ISO 17025. THAT IS THE STANDARD THAT SETS THE MINIMUM REQUIREMENTS TO DEMONSTRATE THE COMPETENCE OF CALIBRATION IN TESTING LABORATORIES. THAT'S ESSENTIALLY THE INTERNATIONAL BAR FOR WHAT SYSTEMS AND CONTROLS THE LABORATORY NEEDS TO HAVE IN PLACE.

Q. HAVE YOU RECEIVED TRAINING SPECIFIC TO ISO 17025?

A. I RECEIVED TRAINING, ACTUALLY, ORIGINALLY, FIRST FOR ISO GUIDE 25, WHICH WAS THE PREDECESSOR DOCUMENT TO ISO 17025.

Q. AND HAVE YOU RECEIVED ANY KIND OF EXPERIENCE OR TRAINING RELATED TO AUDITING LABORATORIES RELATIVE TO COMPLIANCE WITH ISO STANDARDS?

A. YES. I HAVE BEEN SPECIFICALLY TRAINED IN ASSESSING LABORATORIES TO AN ISO STANDARD.

Q. YOU SERVE AS A CONSULTANT CURRENTLY?

A. YES.

Q. OVER, SAY, THE PAST 10 YEARS, WHAT IS YOUR -- CAN YOU GIVE US A RANGE OF DIFFERENT PEOPLE WHO EMPLOYED YOUR SERVICES AS A CONSULTANT?

A. WELL, IT STARTED WITH THE DEPARTMENT OF ENERGY, ITS CONTRACTORS, THE U.S. NAVY. PROBABLY, OVER THE ENTIRE COURSE OF MY CAREER, THE MAJORITY OF MY DATA QUALITY ASSESSMENT WORK FOR LABORATORIES HAS BEEN DONE ON BEHALF OF FEDERAL AGENCIES BECAUSE THEY DO SO MUCH OF THAT TYPE OF WORK.

IN THE LAST -- FOR MORE THAN A DECADE I HAVE BEEN DOING DATE QUALITY ASSESSMENTS OF FORENSIC WORK PRODUCT, AND IN THAT CAPACITY MY WORK HAS BEEN ON BEHALF OF CRIMINAL DEFENSE LAWYERS WHO NEED TO UNDERSTAND THE FORENSIC DATA THAT THEY HAVE BEEN PRESENTED WITH.

Q. AND THAT IS ESSENTIALLY THE CAPACITY IN WHICH YOUR SERVICES WERE RETAINED IN THIS CASE?

A. YES.

Q. OBVIOUSLY, YOU ARE BEING COMPENSATED FOR YOUR SERVICES, RIGHT?

A. YES.

Q. AS PART OF YOUR ISO TRAINING AND AUDITING, YOU HAVE TALKED -- FIRST OF ALL, ARE YOU REQUIRED TO UNDERSTAND AND APPLY GOOD SCIENTIFIC PRACTICES IN GENERAL?

A. TO BE PROFICIENT, YES. AM I REQUIRED TO? I DON'T

KNOW. THERE'S A LAW THAT SAYS I HAVE TO, BUT --

Q. AS FAR AS IN ORDER TO PERFORM YOUR JOB?

A. YES. IT'S IMPORTANT THAT YOU UNDERSTAND NOT ONLY THE QUALITY PRINCIPLES, BUT THE UNDERLYING SCIENTIFIC PRINCIPLES.

Q. AND AS FAR AS, FOR EXAMPLE, THE CONCEPT OF TRACEABILITY, IS THAT ONE OF THE AREAS WHERE YOU HAVE RECEIVED TRAINING AND EXPERIENCE AND PREVIOUSLY CONDUCTED AUDITS RELATING TO THINGS OF THAT NATURE?

A. YES.

Q. WITH REGARD TO YOUR AUDITING FORENSIC PROCEDURES IN THE PAST, HAVE YOU ON MANY OCCASIONS LOOKED AT STANDARD OPERATING PROCEDURES FOR GOVERNMENT LABS IN THE FORENSIC SETTING?

A. YES.

Q. SO ONE OF THE THINGS YOU DO IS EXAMINE THESE PROCEDURES TO SEE WHETHER THEY ARE ADEQUATE; IS THAT RIGHT?

A. YES. IT'S A MULTI-PART PROCESS.

ESSENTIALLY, FIRST, WHEN YOU'RE PRESENTED WITH A STANDARD OPERATING PROCEDURE, YOU READ IT AND MAKE AN ASSESSMENT OF WHETHER OR NOT THAT PROCEDURE AS WRITTEN COMPORTS WITH INTERNATIONAL STANDARDS AND WITH THE PREVAILING SCIENCE.

THE SECOND STEP IS TO SEE WHETHER THE SYSTEM WAS FOLLOWED IN PRACTICE, BECAUSE HAVING IT WRITTEN IN A PROCEDURE AND ACTUALLY HAVING IT FOLLOWED IN PRACTICE ARE TWO DIFFERENT THINGS.

SO IT'S BOTH SEEING THE ADEQUACY OF THE PROCEDURE

ITSELF AS WRITTEN. IS IT INTERNALLY CONSISTENT, DOES IT ADDRESS ALL IMPORTANT ISSUES, DOES IT COMPLY WITH THE STANDARD, AND WAS IT FOLLOWED IN PRACTICE.

Q. NOW --

MR. JOHNSON: AT THIS TIME, YOUR HONOR, I WOULD PROFFER MISS ARVISO AS AN EXPERT IN THE AREA OF GENERAL SCIENTIFIC PRACTICES AND ON SPECIFIC FORENSIC ANALYSIS USING THE GAS CHROMATOGRAPH ON TRACEABILITY. AND I HAVEN'T TOUCHED ON IT, BUT --

BY MR. MR. JOHNSON:

Q. AS FAR AS YOUR ISO TRAINING AND ISO 17025, YOU'RE FAMILIAR WITH THE TERM "UNCERTAINTY OF MEASUREMENT"?

A. YES.

Q. THAT'S SOMETHING YOU CONSIDERED AND EXPERIENCED AS WELL?

A. IT'S SOMETHING I ROUTINELY ASSESS DURING THE COURSE OF AUDITS.

MR. JOHNSON: THAT WOULD BE THE LAST CATEGORY, YOUR HONOR.

THE COURT: YES, I BELIEVE YOU HAVE ESTABLISHED A FOUNDATION THAT SHE IS AN EXPERT ON LABORATORY QUALITY SYSTEMS; ALSO ON THE QUALITY CONTROLS FOR GAS CHROMATOGRAPH; SHE IS AN EXPERT IN TRAINING REGARDING TRACEABILITY AND ISO 17025.

IS THERE ANYTHING ELSE YOU WANTED?

MR. JOHNSON: I MENTIONED UNCERTAINTY OF MEASUREMENT, BUT THAT'S FINE.

THE COURT: THAT WOULD BE INCLUDED, UNCERTAINTY OF

MEASUREMENT.

MR. JOHNSON: OKAY. THANK YOU.

THE COURT: THANK YOU.

BY MR. JOHNSON:

Q. SO MISS ARVISO, YOU HAD THE PRIOR OCCASION TO EXAMINE THE OPERATING PROCEDURES AND ASSESS THE TRACEABILITY OF THE METHOD HERE IN SANTA CLARA COUNTY AT THE DISTRICT ATTORNEY'S LAB LAST YEAR, CORRECT?

A. YES.

Q. YOU PREVIOUSLY TESTIFIED IN THAT REGARD, RIGHT?

A. YES.

Q. YOU TESTIFIED AT THAT TIME THAT THE LAB PROCEDURES WERE INADEQUATE, RIGHT?

A. CORRECT.

Q. AND THEY DID NOT HAVE THE TRACEABLE METHOD, RIGHT?

A. THAT'S CORRECT.

Q. NOW, MR. BURRY HAS INTRODUCED THE TERM AND DESCRIBED SOMETHING THAT YOU CAN TELL ME WHETHER IT MAKES SENSE OR NOT. HE SAYS THAT AS FAR AS THE SCIENCE IS CONCERNED, THERE'S ACTUALLY TWO TERMS FOR TRACEABILITY: ONE IS TRACEABLE, AND THE OTHER IS TRACEABILITY, AND IT MEANS SOMETHING DIFFERENT. IS THAT A TRUE STATEMENT?

A. THEY ARE DIFFERENT FORMS OF THE WORD, BUT I'M NOT SURE THAT I UNDERSTAND. THEY ARE NOT THE SAME WORD, BUT THEY REFER TO THE SAME PRINCIPLE, THE SAME UNDERLYING PRINCIPLE.

Q. IS THERE SOME, ANYWHERE WHERE YOU'VE REVIEWED DOCUMENTS, IN THE TRAINING AND EXPERIENCE AND PROCEDURES OR

ANYTHING LIKE THAT, WHERE YOU'VE SEEN THAT TRACEABLE MEANS SOMETHING DIFFERENT THAN TRACEABILITY?

A. NO, CERTAINLY NOT.

Q. AND SO WHEN, IN THE FIELD OF SCIENCE, WHEN YOU TALK ABOUT TRACEABLE, YOU'RE TALKING ABOUT TRACEABILITY, RIGHT?

A. YES.

Q. THAT'S WELL UNDERSTOOD BY ALL THE SCIENTISTS IN YOUR FIELD, RIGHT?

A. YES.

Q. NOW, USING, FOR EXAMPLE, THAT TERM TRACEABLE IN SOME SORT OF WAY, FASHION, TO SAY THAT, YOU KNOW, WE KNOW THE EQUIPMENT IS OUT THERE, WE KNOW THE CHEMICALS ARE OUT THERE; IF WE WANTED TO, WE CAN TRACE IT; USING THAT KIND OF LAYPERSON'S TERM, IS THAT APPROPRIATE FROM THE STANDPOINT OF GOOD SCIENTIFIC PRACTICES?

A. NO, THAT'S REALLY NOT WHAT WE'RE TALKING ABOUT WHEN WE TALK ABOUT TRACEABILITY IN A SCIENTIFIC SENSE.

TRACEABILITY, I THINK A LOT OF FOLKS WHEN THEY TOOK HIGH SCHOOL SCIENCE CLASS, OR COLLEGE, REMEMBER IF YOU DIDN'T WRITE IT DOWN AND DON'T DO IT, YOU HAD TO WRITE THINGS IN NOTEBOOK, MAKE A CONTEMPORANEOUS RECORD OF WHAT YOU DID. IT'S FOUNDATIONAL TO THE PRACTICE OF SCIENCE THAT WHAT WE DO IS DOCUMENTED. WE DON'T RELY ON PEOPLE'S MEMORY, PEOPLE'S RECOLLECTION AFTER THE FACT; WE RELY ON CONTEMPORANEOUS RECORDS.

MORE THAN THAT, IN THE FIELD OF ANALYTICAL CHEMISTRY WE RELY ON AN UNBROKEN CHAIN OF COMPARISONS FROM WHAT ARE CALLED NIST PRIOR REFERENCE MATERIALS OR REFERENCE

STANDARDS, ALL THE WAY DOWN TO THE BENCH WHERE WE ACTUALLY PERFORM THE TESTING.

I CAN HAVE CONFIDENCE IN AN EXPERIMENTAL RESULT BECAUSE EVERY UNKNOWN IS TRULY UNKNOWN; I NEVER HAVE INDEPENDENT, ALL-KNOWING OVERSIGHT TO KNOW WHETHER I GOT THE RIGHT NUMBER OR NOT, BUT IF I KNOW ALL THE CONNECTIONS BETWEEN THE ANALYSIS OF MY UNKNOWN SAMPLE AND I HAVE AN UNBROKEN CHAIN OF DOCUMENTATION SHOWING HOW IT RELATES TO THAT PRIMARY REFERENCE MATERIAL, I CAN HAVE A GREAT DEAL OF CONFIDENCE IN THAT RESULT.

THAT'S WHAT TRACEABILITY IS TALKING ABOUT, THE DOCUMENTED PEDIGREE, IF YOU WILL, THAT SHOWS HOW YOUR MEASUREMENT IS RELATED BACK TO THAT ORIGINAL MEASUREMENT. AND IT SPEAKS TO EVERY PIECE OF EQUIPMENT THAT YOU USED, WHETHER IT WAS IN CONTROL, OPERATING CONDITION, ITS TOLERANCE FOR SPECIFICATIONS AT THE TIME YOU USED IT, WHETHER OR NOT THE CHEMICALS YOU USED WERE OF KNOWN AND APPROPRIATE PURITY AT THE TIME YOU USED IT. CHEMICALS HAVE A SHELF LIFE, JUST LIKE MILK. IT CAN ONLY BE KNOWN TO BE OF ACCEPTABLE PURITY WITHIN ITS SHELF LIFE. THAT'S THE WAY THE MANUFACTURER CERTIFIES THEM.

ALL THESE PIECES NEED TO BE IN PLACE TO ENSURE THE TRACEABILITY OF A RESULT. WE SHOULDN'T HAVE TO EVER JUST TRUST ME THAT I REMEMBER, OR IT'S ALWAYS A PRACTICE TO ONLY RUN THESE SAMPLES WHEN EVERYTHING WORKS OUT. AS AN AUDITOR, THAT'S AN INSUFFICIENT DEMONSTRATION. IT'S LIKE TELLING YOUR IRS AUDITOR, I REMEMBER THAT CHARITABLE DEDUCTION, YOU DON'T HAVE TO HAVE THE PROOF; THAT'S NOT SUFFICIENT. AS AN

AUDITOR, IT'S NECESSARY TO HAVE THE ACTUAL DOCUMENTARY EVIDENCE TO PROVE THAT EVERYTHING WAS WORKING AND IN CONTROL AT THE TIME YOU MADE THE MEASUREMENT.

Q. NOW, REGARDING THAT DEFINITION, THAT UNBROKEN CHAIN OF COMPARISONS SUPPORTED BY DOCUMENTATION, IS THAT A STANDARD THAT IS THE ACCEPTED STANDARD IN THE SCIENTIFIC COMMUNITY?

A. FOR DECADES THROUGHOUT MY PROFESSIONAL CAREER, YES.

Q. THIS IS NOTHING NEW?

A. THIS IS NOTHING NEW; IT HAS BEEN A PART OF QUALITY STANDARDS FOR DECADES.

Q. SO THE IDEA THAT, YOU KNOW, THE SANTA CLARA COUNTY DISTRICT ATTORNEY'S LAB DID NOT, WAS NOT REQUIRED TO ADHERE TO SCIENTIFIC PRINCIPLES OF TRACEABILITY IN ORDER TO ENSURE VALID, RELIABLE RESULTS, THAT'S SOMETHING THAT, YOU KNOW, IS INHERENT IN SCIENCE, RIGHT?

A. NOT ONLY INHERENT IN SCIENCE. MY UNDERSTANDING IS THEY PREVIOUSLY HELD AN ACCREDITATION UNDER A STANDARD THAT ALSO REQUIRED TRACEABILITY OF THEIR MEASUREMENTS.

Q. YOU'VE REVIEWED TITLE 17 OF THE CALIFORNIA CODE OF REGULATIONS?

A. YES.

Q. AS AN AUDITOR, YOU DO LOOK AT LOCAL REGULATIONS FOR VARIOUS LABS THROUGHOUT THE COUNTRY?

A. YES.

Q. YOU HAVE ACTUALLY DONE THAT FOR VARIOUS LABS THROUGHOUT THE COUNTRY?

A. YES.

Q. SO YOU REVIEWED TITLE 17, AND IN THERE, IS THERE LANGUAGE THAT SUPPORTS THE FACT THAT THERE'S AN UNDERSTANDING WITH THE DEPARTMENT OF HEALTH THAT TRACEABILITY IS PART OF TITLE 17?

A. YES.

Q. SPECIFICALLY, FOR ONE THING, IT TALKS ABOUT DOCUMENTATION, RIGHT?

A. IT DOES.

Q. TALKS ABOUT BEING ABLE TO USE A STANDARD UNDER WHAT WE PREVIOUSLY SAID WAS THE NATIONAL INSTITUTE OF STANDARDS, WHICH IS KNOWN AS NIST?

A. YES.

Q. YOU MENTIONED THE LABORATORY ACCREDITING AGENCY AGENCY OR LABORATORY. IS THAT THE AMERICAN SOCIETY OF CRIME LABORATORY DIRECTORS?

A. THAT'S THE FIRST PART OF THE NAME. IT CONTINUES, LABORATORY ACCREDITATION BUREAU.

Q. THERE'S AN ASCLD LAB?

A. CORRECT.

Q. YOU'RE AWARE OF THE ASCLD LAB HAS A PROGRAM CALLED THE LEGACY PROGRAM?

A. YES.

Q. AS FAR AS THE DOCUMENTATION IN THIS CASE UP UNTIL -- I'LL TELL YOU THAT YESTERDAY THERE WAS A STATEMENT BY MR. BURRY THAT THE LAB HAS NOW BEEN ACCEPTED IN SOME MANNER FOR THE INTERNATIONAL PROGRAM OF ASCLD, THAT IT PREVIOUSLY WAS LABELED LEGACY LAB, OKAY, AND YOU REVIEWED PREVIOUSLY ASCLD LAB AND LEGACY; IS ALL THAT RIGHT?

A. YES.
Q. LET ME SHOW YOU A PARTIAL MANUAL FROM 2005 FOR ASCLD LAB ACCREDITATION.
THE COURT: HAS THAT BEEN MARKED?
MR. JOHNSON: DEFENSE O.
BY MR. JOHNSON:
Q. IT'S A PARTIAL MANUAL, PART OF THE MANUAL FOR ASCLD?
A. IT'S THE AMERICAN SOCIETY OF CRIME LAB DIRECTORS. THAT'S THE ASCLD PART.
THE LABORATORY ACCREDITATION BOARD IS THE LAB PART. IT'S AN EXCERPT FROM THE MANUAL. IT ESSENTIALLY SETS THEIR ACCREDITATION REQUIREMENTS
Q. IN THERE, IS THERE A REFERENCE TO QUALITY ASSURANCE AND VARIOUS COMPONENTS OF QUALITY ASSURANCE THAT ARE SUPPOSED TO BE CONTAINED IN DOCUMENTATION OF THE LAB?
A. YES.
Q. IN THERE, IS THERE A REFERENCE TO TRACEABILITY?
A. THERE IS. THIS IS THE SECTION. NOT VERY HELPFUL THAT THESE ARE OUT OF ORDER -- .4, .2 ENTITLED QUALITY SYSTEM.
IT DESCRIBES THE FACT THAT IN ORDER TO HAVE A QUALITY SYSTEM IN THE LABORATORY, THERE ARE CERTAIN MANDATORY ELEMENTS YOU MUST ADDRESS. SO THIS IS DESCRIBING EACH OF THOSE DOCUMENTS, ELEMENTS.
IT SAYS, COMPREHENSIVE MANUALS MUST CONTAIN REFERENCE TO DOCUMENTS OR POLICY AND PROCEDURES PERTAINING TO THE FOLLOWING.

THERE'S A PAGE AND A HALF OF ITEMS LISTED, ONE OF WHICH IS THE LABORATORY'S PROCEDURES FOR ENSURING THAT MEASUREMENTS ARE TRACEABLE TO APPROPRIATE STANDARDS WHERE AVAILABLE.

WHAT THAT MEANS IS THE LABORATORY ACTUALLY HAS TO HAVE IN PLACE WRITTEN, APPROVED PROCEDURES THAT DESCRIBE ALL THE REQUIREMENTS IN THEIR WORLD, IN THEIR PARTICULAR LABORATORY, FOR ENSURING THAT MEASUREMENTS ARE TRACEABLE TO THE REFERENCE STANDARDS.

Q. NOW, THAT'S PRETTY CLEARLY STATED IN THAT LEGACY MANUAL, CORRECT?

A. YES. THIS IS THE 2005 VERSION. I HAVE VERSIONS GOING BACK MANY YEARS PRIOR TO THIS, AND THAT HAS BEEN A REQUIREMENT FOR MANY YEARS BY THIS PROGRAM.

Q. SO THE IDEA THAT THE LAB WAS NOT REQUIRED TO ENSURE TRACEABILITY, YOU KNOW, BEFORE 2012, THAT'S REALLY NOT TRUE, IS IT?

A. UNDER THIS ACCREDITATION STANDARD, THEY WERE REQUIRED TO HAVE PROCEDURES IN PLACE TO ENSURE THE TRACEABILITY OF THEIR MEASUREMENTS.

Q. CERTAINLY IN COMPLIANCE WITH GOOD SCIENTIFIC PRACTICES?

A. CERTAINLY.

Q. THE FACT THAT THE LAB PERSON NOW HAS STATED THAT UNDER TITLE 17 THERE IS NO REQUIREMENT OF TRACEABILITY; UNDER LEGACY THERE IS NO REQUIREMENT UNDER TRACEABILITY. IS THAT OF CONCERN AS AN AUDITOR WHEN LAB PERSONNEL, IN OTHER WORDS, THE ATMOSPHERE -- THE CULTURE OF THE LAB IS SUCH THAT

THEY HAVE A BELIEF THAT TRACEABILITY IS NOT REQUIRED IN THEIR WORK; IS THAT OF CONCERN AS AN AUDITOR?

A. I AM NOT SURE WHAT YOU'RE ASKING. IT CERTAINLY WOULD BE OF CONCERN IF PEOPLE IN THE LABORATORY THAT WERE OPERATING PURPORTEDLY IN ACCORDANCE WITH A STANDARD WERE UNAWARE OF THE REQUIREMENT FOR TRACEABILITY. THAT'S ONE OF THE THINGS YOU DO AS AN AUDITOR IS TRY TO GO OUT AND ASSESS MEMBERS -- THE FAMILIARITY OF PEOPLE IN THE LAB WITH THEIR QUALITY SYSTEM AND RELEVANT STANDARD.

THAT WOULD CERTAINLY BE A PROBLEM, MOST IMPORTANTLY BECAUSE THE QUALITY CONTROL PRACTICES THAT YOU DO DAY IN AND DAY OUT IN A PRODUCTION LABORATORY, IF YOU'RE AN ANALYST, THE COMPLETENESS AND PRACTICES YOU'RE DOING IN TERMS OF DOCUMENTING THINGS ARE HOW TRACEABILITY HAPPENS. AND IF YOU'RE UNAWARE THAT TRACEABILITY IS EVEN A REQUIREMENT, THINGS ARE GOING TO FALL THROUGH THE CRACKS, YOU'RE NOT GOING TO DOCUMENT THINGS THAT NEED TO BE DOCUMENTED FOR TRACEABILITY PURPOSES.

SO THAT WOULD BE A REAL SERIOUS PROBLEM, AND IT WOULD PROBABLY BE MANIFESTED IN A LACK OF TRACEABILITY IN THE LABORATORY'S RECORDS.

Q. WOULD YOU AGREE THAT, BASED ON YOUR PREVIOUS REVIEW OF THE LAB RECORDS -- AND WE HAVE, I DON'T KNOW, AN INCH OR TWO WORTH OF RECORDS YOU REVIEWED PREVIOUSLY, RIGHT?

A. YES.

Q. AND YOU HAD PREVIOUSLY OPINED THAT THEY DID NOT HAVE TRACEABILITY. WOULD YOU AGREE THAT THE CULTURE WITHIN THE LAB WHERE THEY HAVE A MISUNDERSTANDING OF THE

REQUIREMENTS REGARDING TRACEABILITY LIKELY LED TO THE FACT THAT THEY DON'T HAVE TRACEABILITY?

A. IT CERTAINLY MAY HAVE BEEN A CONTRIBUTING FACTOR. WITHOUT DOING THE AUDIT MYSELF, I COULDN'T NECESSARILY DRAW A CONCLUSION, BUT THE EVIDENCE WOULD CERTAINLY INDICATE THAT IN PRACTICE, THEIR -- THEY WEREN'T SEEKING TO TRACK AND DOCUMENT THE RIGHT THINGS TO ENSURE TRACEABILITY. AND WHAT WE'RE TRYING TO DO IS TO BE ABLE TO RECONSTRUCT WHAT HAPPENED TO A SAMPLE AFTER THE FACT, WHO DID WHAT TO WHICH SAMPLE USING WHICH EQUIPMENT, UNDER WHICH TOLERANCES, THROUGHOUT THE ENTIRE MEASUREMENT PROCESS.

AND IF PEOPLE THAT ARE DOING THAT WORK AREN'T DOCUMENTING EACH AND EVERY THING THAT THEY ARE DOING, YOU CAN'T RECONSTRUCT THAT AFTER THE FACT. THAT TRACE, THE LINK OR CHAIN IS BROKEN.

Q. PREVIOUSLY MR. BURRY HAD TESTIFIED THAT IF YOU ASCERTAIN A RESULT, A TEST RESULT FROM A NONTRACEABLE METHOD, THAT THAT TEST RESULT IS ARBITRARY; WOULD YOU AGREE WITH THAT?

A. YES.

MR. JOHNSON: IF I MAY APPROACH.

BY MR. JOHNSON:

Q. NOW, YOU'RE FAMILIAR WITH CHANGES IN THE CULTURE OF FORENSIC LABS RELATED TO THE ADOPTION OF STANDARDS OF ISO 17025 SINCE, WE'LL SAY, THE REPORT BY THE NATIONAL ACADEMY OF SCIENCES REGARDING THE PROBLEMS ASSOCIATED WITH FORENSIC LABORATORIES?

A. YES.

Q. CAN YOU EXPLAIN WHAT TYPE OF PROBLEMS WERE IDENTIFIED BY THE NATIONAL ACADEMY OF SCIENCES REPORT THAT HAVE LED TO THE CHANGE IN LABORATORY ACCREDITATION?

A. VERY RECENTLY, UNDER A CONGRESSIONAL MANDATE, THE NATIONAL ACADEMY OF SCIENCES CONVENED AN INTERDISCIPLINARY PANEL TO ADDRESS THE PRACTICE OF FORENSIC SCIENCE IN THIS COUNTRY. IT WAS A VERY EXTENSIVE EFFORT, AND IT CULMINATED, I BELIEVE, IN THE PUBLICATION IN LATE 2009, I THINK, OF A REPORT ENTITLED "STRENGTHENING FORENSIC SCIENCE," AND THERE'S A SECONDARY TITLE, BUT IT WAS A VERY COMPREHENSIVE LOOK AT THE PRACTICE OF FORENSIC SCIENCE IN THIS COUNTRY, AND THE JUDGE WHO CHAIRED THE GROUP WROTE A VERY ENLIGHTENING INTRODUCTION TO THE REPORT IN WHICH HE SAID HE HAD BEEN A PRACTICING JUDGE FOR LO THESE MANY YEARS, AND ALWAYS ASSUMED FORENSIC SCIENCE WAS BASED ON SOUND, ROBUST SCIENTIFIC PRINCIPLES. SOUNDS LIKE SCIENCE TO ME, THERE IS NO REASON TO QUESTION IT.

AFTER SITTING THROUGH A COUPLE OF YEARS OF THESE COMMITTEE HEARINGS, HE HAD A COMPLETELY DIFFERENT PERSPECTIVE ON THE PRACTICE OF FORENSIC SCIENCE IN THIS COUNTRY, THAT IT WAS SUFFERING THE CONSEQUENCES OF -- THIS IS MORE MY WORDS, OF A VERY INSULAR PRACTICE OF SCIENCE.

THE FORENSIC SCIENCE COMMUNITY HAS LARGELY BEEN OPERATING INDEPENDENT OF THE PRACTICE OF QUALITY ASSURANCE IN OTHER INDUSTRIES.

IF YOU'RE IN AN INDUSTRY WITH VERY HIGH EXACTING REQUIREMENTS FOR MANUFACTURING SPECIFICATIONS -- IN TOLERANCES FROM A MANUFACTURING PERSPECTIVE OR FROM

PHARMACEUTICALS, THOSE INDUSTRIES HAVE ROBUST, HIGH EXPECTATIONS FOR THE LABORATORIES AND FOR THE PRACTICE OF SCIENCE.

IN CONTRAST, THE FORENSIC SCIENCE COMMUNITY HAS BEEN LARGELY INSULATED FROM INDEPENDENT OVERSIGHT, RIGOROUS SCIENTIFIC INDEPENDENT OVERSIGHT -- AND, QUITE FRANKLY, PEOPLE DOING THE OVERSIGHT FOR THE MOST PART ARE LAWYERS AND NOT IN GENERAL -- THERE ARE CERTAINLY EXCEPTIONS, BUT ARE NOT IN THE GENERAL SCIENTIFICALLY LITERATE POPULATION.

SO THE FORENSIC COMMUNITY EVOLVED WITHOUT NECESSARILY ADHERING TO THE SAME RIGORS OF SCIENTIFIC PRACTICE THAT EXIST IN VIRTUALLY EVERY OTHER ARENA OF OUR LIVES, SO THINGS -- FOR EXAMPLE, THE TERM IS SCIENTIFIC VALIDATION. BEFORE WE USE AN ANALYTICAL METHOD TO TEST AN UNKNOWN SAMPLE, IT'S A FUNDAMENTAL PRECEPT OF SCIENCE, BEFORE YOU USE IT TO TEST UNKNOWNS, YOU MUST DETERMINE WHETHER THAT METHOD IS APPROPRIATE FOR ITS INTENDED USE.

YOU MUST GO INTO THE LABORATORY AND EMPIRICALLY TEST THE METHOD. WHEN DOES IT WORK, AND WHEN DOES IT NOT. ACCURACY, PRECISION, REPEATABILITY, SENSITIVITY, SELECTIVITY, ALL THESE KINDS OF CHARACTERISTICS.

IN FORENSIC SCIENCE, WHAT LABORATORIES WERE DOING WAS APPLYING AND USING METHODS THAT GAVE EXPECTED RESULTS, BUT THEY HAD NEVER VALIDATED THE METHOD BEFORE WE USED IT. SO THERE WERE TECHNIQUES BEING USED IN THE PRACTICE OF FORENSICS THAT HAD NEVER BEEN SUBJECT TO THIS KIND OF RIGOROUS SCIENTIFIC OVERSIGHT AND SCRUTINY. THEY WERE USING METHODS WHOSE SCIENTIFIC VALUE WAS NOT BEING DEMONSTRATED.

THAT WAS THE PROBLEM.

WITH RESPECT TO A CERTAINTY ISSUE, THE NATIONAL ACADEMY OF SCIENCES SPECIFICALLY ADDRESSED THE CONCERN WITH THE FACT SO MANY FORENSIC RESULTS WERE REPORTED AS THE ANSWER AND THERE WAS NO ACCOMPANYING STATEMENT AS TO THE UNCERTAINTY OF THAT MEASUREMENT.

IT'S A FUNDAMENTAL PRECEPT OF SCIENCE THAT WHEN WE MAKE A MEASUREMENT, THERE IS AN INHERENT UNCERTAINTY ASSOCIATED WITH EACH MEASUREMENT. YOU NEED TO UNDERSTAND UNCERTAINTIES SO YOU CAN LEARN HOW TO USE THE RESULTS. THEY WERE CONCERNED IN THE ACADEMY'S REPORT ABOUT THE FACT PEOPLE MAY BE USING RESULTS WITHOUT UNDERSTANDING THE ASSOCIATED UNCERTAINTY.

Q. BECAUSE OF THAT, THAT LED TO A RECOMMENDATION THAT ALL FORENSIC LABS BE ACCREDITED UNDER A STANDARD REQUIREMENT IN COMPLIANCE WITH ISO 17025; THIS WAS ONE OF THE RECOMMENDATIONS IN THE REPORT?

A. YES.

Q. NOW, WHICH REQUIRED THE LAB THEN TO START PUTTING TOGETHER SOME SORT OF MECHANISM FOR ASCERTAINING UNCERTAINTY OF MEASUREMENT; IS THAT RIGHT?

A. YES.

Q. ASCLD LAB ACTUALLY CAME OUT WITH SOME GUIDES ALONG THE WAY TO ASSIST LABS IN ASCERTAINING ESTIMATION OF UNCERTAINTY; IS THAT RIGHT?

A. YES. THEY ISSUED GUIDELINES THAT DESCRIBED THEIR PROCESS FOR COMING INTO COMPLIANCE WITH THAT REQUIREMENT.

Q. ONE OF THE THINGS THAT ASCLD LAB HAS DONE --

MR. JOHNSON: I NEED TO MARK THIS AS AN EXHIBIT.

(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS DEFENSE EXHIBIT P.)

MR. JOHNSON: SHOWING TO COUNSEL.

BY MR. JOHNSON:

Q. LET ME APPROACH AND SHOW YOU ASCLD LAB GUIDANCE ON THE ESTIMATION OF MEASUREMENT OF UNCERTAINTY AND NXA, DETAIL ON NIST'S EIGHT-STEP PROCESS. THAT'S A DOCUMENT YOU'VE READ BEFORE, RIGHT?

A. YES.

Q. LET ME TAKE YOU THROUGH THAT REAL QUICK. THE NIST PROCESS IN HERE, THEY HAVE LAID OUT EIGHT STEPS, EACH WITH A SPECIFIC THING. IT'S A PROGRESSION STARTING WITH STEP ONE GOING DOWN.

A. YES.

Q. YOU GET TO STEP EIGHT?

A. YES.

Q. STEP ONE SPECIFIED THE MEASUREMENT OF THE PROCESS?

A. YES.

Q. I'LL ASK YOU TO EXPLAIN, WHAT IS A SPECIFIED MEASUREMENT OF PROCESS?

A. THAT'S THE DISCRETE MEASUREMENT YOU'RE MAKING; IN THIS CASE, THE DETERMINATION OF A PERCENT OF BLOOD ALCOHOL IN A BLOOD MATRIX SAMPLE. PERCENTAGE OF ALCOHOL IN A BLOOD SAMPLE.

Q. IN STEP TWO, THE MEASURING PROCESS MEANS THE OPERATING PROCEDURES?

A. CORRECT.

Q. THE WHOLE PROCESS?
A. CORRECT.
Q. FIRST THING, YOU LAY OUT YOUR PROCEDURES, THE PROCESS OR HOW IT'S GOING TO OCCUR?
A. THE PROCESS IS HOW YOU GET FROM THE SAMPLE OF BLOOD TO A FINAL RESULT. IT'S ALL THE STEPS, AND THAT'S DESCRIBED IN THEIR DOCUMENT.
Q. STEP TWO, IDENTIFYING UNCERTAINTY SOURCES?
A. CORRECT.
Q. STEP TWO, IDENTIFYING UNCERTAINTY SOURCES, WHAT ARE WE TALKING ABOUT?
A. IN THE FINAL DETERMINATION, THERE ARE A LOT OF FACTORS THAT CAN CONTRIBUTE TO THE ULTIMATE UNCERTAINTY OF THE MEASUREMENT. SO WHAT THEY ARE ASKING THE LABORATORY TO DO IS ESSENTIALLY GO THROUGH THE ENTIRE MEASUREMENT PROCESS AND DETERMINE ALL THE THINGS THAT MATTER, THAT HAVE A POTENTIAL TO INFLUENCE THE UNCERTAINTY IN THE FINAL RESULT.
MR. JOHNSON: I WOULD LIKE TO MARK THIS.
(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS DEFENSE EXHIBIT Q.)
BY MR. JOHNSON:
Q. IN THAT VEIN, WHEN YOU WERE PREVIOUSLY HERE TO TESTIFY, MARK BURRY HAD PREPARED SOME SORT OF FLOWCHART REGARDING TRACEABILITY. DO YOU RECALL SEEING THAT DOCUMENT?
A. I DO.
Q. LET ME SHOW YOU THE DOCUMENT.
A. YES.
Q. FIRST OF ALL, WOULD YOU AGREE THAT HE DID NOT

IDENTIFY ALL THE SOURCES FOR UNCERTAINTY IN THAT FLOWCHART?
A. NO. THIS IS A SELECTION OF THE CONTRIBUTORS TO UNCERTAINTY, BUT IT'S NOT ALL OF THEM.
Q. AT THAT POINT, HE WAS TRYING TO PROVIDE SOME SORT OF DEMONSTRATIVE FLOWCHART, BUT IT ACTUALLY DIDN'T PROVIDE ALL OF THE UNCERTAINTY ELEMENTS, CORRECT?
A. CORRECT. IT ESSENTIALLY SHOWS THE CHEMICALS, SOME OF THE CHEMICALS, EQUIPMENT USED IN THE MEASUREMENT, THEN DRAWS LINKAGES TO NIST, SUPPOSEDLY SUPPORTED BY TRACEABLE DOCUMENTATION, SOMETIMES THROUGH OTHER SUPPLIERS, SOMETIMES THROUGH THE LAB'S OWN DOCUMENTATION.
Q. THAT WAS DONE, THAT CHART WAS PRESENTED IN DECEMBER OF 2011, RIGHT?
A. YES. THAT'S WHEN I TESTIFIED ABOUT IT.
Q. STEP TWO, IDENTIFYING UNCERTAINTY SOURCES. AT LEAST AS FAR AS THAT CHART IS CONCERNED, THAT DOESN'T IDENTIFY ALL THE UNCERTAINTY SOURCES?
A. CORRECT.
Q. YOU WERE ASKED AT THAT TIME TO REVIEW THE LAB'S TRACEABILITY RELATIVE TO THAT FLOWCHART ONLY, AND AS TO AN ANALYSIS IN THAT PARTICULAR CASE, THAT WAS DONE IN FEBRUARY 2010?
A. YES.
Q. AND WHEN YOU DID THAT, YOU PUT TOGETHER --
MR. JOHNSON: SHOWING TO COUNSEL. I WOULD LIKE TO HAVE THIS MARKED.
(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS DEFENSE EXHIBIT R.)

MR. JOHNSON: YOUR HONOR, THESE ARE DEMONSTRATIVE. I WOULD LIKE TO SHOW THESE --

THE COURT: DO YOU WANT TO PROJECT THEM?

MR. JOHNSON: I CAN PUT THEM UP HERE.

BY MR. JOHNSON:

Q. THIS EXHIBIT Q IS A LITTLE CHART THAT WAS PRESENTED, CORRECT?

A. MM-HMM.

Q. EXHIBIT R, CAN YOU EXPLAIN WHAT THOSE XS MEAN?

A. I STARTED WITH THIS ONE. OVER THE COURSE OF REVIEWING THE MATERIALS, I IDENTIFIED WHETHER IN FACT THERE WAS A TRACEABLE -- IF THE LAB WAS ABLE TO DEMONSTRATE THE TRACEABILITY OF THE RELATIONSHIP BETWEEN EACH DISCRETE ITEM HERE; AND THESE ARE PIECES OF EQUIPMENT OR CHEMICALS GOING ALL THE WAY BACK TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY. I DID THAT ASSESSMENT AS OF FEBRUARY 2, 2010. BECAUSE TRACEABILITY IS NOT FOREVER, THE UNCERTAINTY ASSOCIATED WITH MEASUREMENTS CHANGES OVER TIME. SO THIS ASSESSMENT WAS MADE AS OF THIS DATE, AND IN EACH CASE LINK EACH OF THE DISCRETE SOURCES OF UNCERTAINTY THERE WERE BREAKS, SOMETIMES MULTIPLE BREAKS IN THE TRACEABILITY OF THE DOCUMENTATION GOING BACK TO NIST. THIS IS SORT OF A WEAK LINK ARGUMENT THAT, WELL, THE LINK IS BROKEN, THE CHAIN IS BROKEN.

Q. YOU ALREADY SAID THAT TRACEABILITY REQUIRES AN UNBROKEN CHAIN, CORRECT?

A. THAT'S CORRECT.

Q. LET'S TALK ABOUT THAT FOR A MINUTE, HOW THAT CHAIN

MAY BE BROKEN. TRACEABILITY, DOES THAT MEAN THE MERE FACT OF BEING ABLE TO IDENTIFY, FOR EXAMPLE, IF A PARTICULAR PIECE OF EQUIPMENT WAS USED?

A. THAT'S PART OF IT, BUT IN AND OF ITSELF IT IS INSUFFICIENT.

Q. IN ADDITION TO IDENTIFYING A PIECE OF EQUIPMENT USED SPECIFICALLY FOR A PARTICULAR ANALYSIS, YOU WOULD NEED ALSO TO SHOW, FOR EXAMPLE, THAT THAT EQUIPMENT WAS OPERATING CORRECTLY OR WITHIN A CERTAIN COMPETENCE OF CALIBRATION, CORRECT?

A. CORRECT. THERE'S A SERIES OF LINKAGES. NIST HAS PRIMARY REFERENCE STANDARDS, AND THEY USE THOSE PRIMARY REFERENCE STANDARDS. MANUFACTURERS USE, PREPARE THEIR MATERIALS CALIBRATED AGAINST THOSE PRIMARY REFERENCE STANDARDS, AND THEN THEY PRODUCE MATERIALS ULTIMATELY TO BE USED BY THE LABORATORY. SO WE'RE USING A GOOD, ACCREDITED SUPPLIER. THAT'S ALL TRACEABLE.

BUT ONCE SOMETHING IS IN THE LABORATORY, WHETHER IT'S A THERMOMETER OR BALANCE OR A PIPE FOR MEASURING VOLUME, YOU CAN'T JUST RELY ON THE FACT THAT AT ONE POINT IN TIME WHEN IT WAS GENERATED IT WAS OKAY, IT WAS TRACEABLE ALL THE WAY BACK TO THEM. THERE'S A REQUIREMENT THAT YOU PERIODICALLY VERIFY THAT IT'S STILL OPERATING WITHIN TOLERANCE. AND WHEN ITS CALIBRATION PERIOD IS UP, BECAUSE THEY ARE ON A REGULAR CYCLE, THAT IT BE RECALIBRATED BY AN ACREDITED SUPPLIER. SO SOMETIMES YOU SEND IT BACK, DO IT IN-HOUSE OR LABORATORY.

THERE'S A REQUIREMENT FOR BOTH THINGS TO HAPPEN,

THAT WHEN THE CALIBRATION PERIOD IS UP, BECAUSE YOU HAVE CERTIFICATES FOR A CERTAIN LIFETIME. WHEN IT'S UP, IT'S NECESSARY TO RECALCULATE. PERIODICALLY, YOU ALSO NEED TO VERIFY DURING ITS OPERATIONAL PERIOD THAT IT'S PERFORMING WITHIN TOLERANCE.

SO IN THE CASE, FOR EXAMPLE, OF ANALYTICAL BALANCE, THERE ARE ACCREDITED SUPPLIERS ACCREDITED TO ISO AS CALIBRATION SUPPLIERS WHO WILL COME AND CALIBRATE YOUR ANALYTICAL BALANCES AND CALIBRATE THEM IN A RANGE OF WHERE YOU MAKE THAT YOUR MASS MEASUREMENT. THEY WILL ISSUE A CERTIFICATE THAT THESE ARE THE MEASUREMENTS WE PERFORMED, IT WAS OPERATING WITHIN A SPECIFIC TIME, THIS IS GOOD UNTIL SUCH A DATE IN THE FUTURE. THAT'S GREAT, THAT MEANS WE CAN USE THAT INSTRUMENT IN THE LABORATORY.

BUT ANALYTICAL BALANCES ARE NOTORIOUSLY SUSCEPTIBLE TO VARIATION AND CHANGE AND TO THE EFFECTS OF USE IN THE LABORATORY. THEY ARE TYPICALLY PLACED ON REALLY, REALLY HEAVY MARBLE TABLES BECAUSE THEY ARE SUSCEPTIBLE TO SHAKING. AND, GOSH, LAST TIME I WAS HERE ON THE STAND WE HAD A EARTHQUAKE HERE. THIS CHANGES ANALYTICAL BALANCES.

THEY ARE SUBJECT TO CHANGE AS FUNCTIONS OF TEMPERATURE, HUMIDITY, ALL KINDS OF THINGS, JUST USE IN A LABORATORY.

THAT'S WHY WHEN YOU'RE USING AN ANALYTICAL BALANCE TO PREPARE STANDARDS, IT'S IMPERATIVE THAT YOU VERIFY THAT THE BALANCE IS WITHIN CONTROL AND WITHIN SPEC AT THE TIME YOU USE IT. SO, PRIOR TO ITS USE, IF YOU ARE GOING TO USE IT TO MAKE STANDARDS THAT DAY, GO TO THE CLOSET, AND THE LAB

HAS WHAT ARE CALLED AFTN TYPE ONE WEIGHT SETS. THESE ARE CALIBRATED WEIGHT SETS THAT YOU DON'T TOUCH WITH YOUR HAND BECAUSE THE OIL ON YOUR HAND WILL CAUSE PROBLEMS, YOU USE TONGS TO PLACE THAT ON THE BALANCE AND CHECK, AND VERIFY YES, IT'S OPERATING IN SPEC, OR IT'S NOT.

IF IT'S NOT LEVEL AT THE TIME YOU'RE USING IT, IT WON'T OPERATE WITHIN TOLERANCE, SO THERE'S ADJUSTMENTS THAT NEED TO BE MADE TO THE BALANCE THROUGH ITS CALIBRATION PERIOD.

WHEN YOU CHECK IT PRIOR TO USE AND YOU HAVE DOCUMENTARY EVIDENCE YOU HAVE CHECKED IT PRIOR TO USE, THAT PRODUCES A TRACEABLE MEASUREMENT SYSTEM, BECAUSE I DON'T JUST KNOW THAT I USED THE BALANCE, BUT I HAVE THE DOCUMENTATION TO PROVE IT WAS OPERATING TO A CERTAIN TOLERANCE OR WITH A CERTAIN UNCERTAINTY AT THE TIME I WAS USING IT.

Q. ALSO AS FAR AS THE TRACEABILITY ASPECT -- WITH REGARD TO THE STANDARD OPERATING PROCEDURES YOU REVIEWED FOR THIS DISTRICT ATTORNEY'S LAB, WAS THERE ANY PROVISION FOR VERIFICATION OF THE ANALYTICAL BALANCE DURING THE TIME OF ITS OPERATION?

A. NO.

Q. ALSO, WHEN YOU -- IN ORDER TO COMPLETE THE DOCUMENTATION, WHAT YOU'RE SUPPOSED TO DO IS TO NOTATE IN YOUR NOTES WHERE YOUR RECORD KEEPING FUNCTION IS TO IDENTIFY WHICH BALANCE YOU USE, CONTEMPORANEOUS WITH THE TIME YOU'RE USING IT?

A. CERTAINLY.

Q. THAT'S NOT UNUSUAL, THAT'S GOOD SCIENTIFIC PRACTICE?

A. THERE'S NOTHING UNUSUAL ABOUT THAT. MOST LABS HAVE MULTIPLE BALANCES. IT'S MEANINGLESS, YOU DON'T KNOW SPECIFICALLY WHICH DEVICE WAS USED TO MAKE A MEASUREMENT.

Q. THE POINT BEING WE DON'T WANT TO RELY, FOR EXAMPLE, ON SOMEONE TELLING US AT SOME POINT IN THE FUTURE THAT, HEY, YOU KNOW WHAT, THAT'S THE BALANCE I USED?

A. THAT'S CORRECT.

Q. IN THIS CASE EVERYBODY WAS PROVIDED, MOST RECENTLY, I THINK, LAST WEEK, WITH AN UPDATED TITRATION WORK SHEET THAT IS AGAIN USED, THE PRIMARY STANDARD FOR THE PURPOSE OF PREPARING THE CALIBRATION STANDARDS; IS THAT RIGHT?

A. I DON'T KNOW HOW MUCH YOU'VE ALREADY HEARD ABOUT THIS, BUT YES, TITRATION IS THE TECHNIQUE USED BY THIS LABORATORY TO ENSURE THE CONCENTRATION OF THEIR CALIBRATION STANDARDS. TITRATION IS A TECHNIQUE THAT DEPENDS ON HAVING KNOWN CONCENTRATIONS AND KNOWN VOLUMES OF THE REACTIVE CHEMICAL.

Q. THEY USE POTASSIUM DICHROMATE. THEY HAVE TO WEIGH OUT A CERTAIN PORTION OF THE POTASSIUM DICHROMATE TO CONDUCT THAT ANALYSIS?

A. CORRECT. UNDER THE LAB'S PROCEDURE, AND UNDER TITLE 17 REQUIREMENTS, THE LABORATORY USES POTASSIUM DICHROMATE THAT IS PROVIDED BY NIST AS A PRIMARY STANDARD, AS A PRIMARY REFERENCE STANDARD. THAT MEANS IT HAS A REALLY GOOD PEDIGREE, THAT BOTTLE AT THE TIME IT'S SHIPPED FROM NIST HAS A REALLY GOOD PEDIGREE. ITS UNCERTAINTY IS

DOCUMENTED, WELL-KNOWN.

Q. THEY COULDN'T ACTUALLY TRACE THE POTASSIUM DICHROMATE?

A. CORRECT.

Q. I PRESENTED TO YOU WHAT THEY PRESENTED LAST WEEK WAS A COPY OF A POTASSIUM DICHROMATE FOUND IN A HAZARDOUS WASTE BIN; DO YOU RECALL THAT?

A. I DO.

Q. WOULD THAT BE AN APPROPRIATE SCIENTIFIC TOOL FOR TRACEABILITY?

A. NO. THE PROBLEM IS THAT YOU DOCUMENT THAT THIS IS NOT JUST THE LAB NUMBER, BUT THE BOTTLE I USED, AT THE TIME I USED IT. YOU DOCUMENT WHEN THE BOTTLE WAS OPENED AND WHEN THAT BOTTLE IS -- IT'S A CRADLE TO GRAVE EXERCISE. WHEN THE BOTTLE IS DEEMED COMPLETED, IT GOES TO HAZARDOUS WASTE.

Q. ALSO USED AT THE SAME TIME IS -- AS FAR AS THAT IS CONCERNED, TRACING THAT WOULD INCLUDE PHYSICAL DISPOSAL OF THE POTASSIUM DICHROMATE?

A. YES. THERE'S VERY STRICT EPA RULES FOR HOW LONG HAZARDOUS WASTE CAN BE STORED. YOU HAVE TO KNOW WHEN IT BECOMES WASTE.

Q. HOW LONG IS THAT?

A. TYPICALLY WHEN THEY USE A SATELLITE COMMUNICATION, IT'S 90 DAYS.

Q. WOULD YOU AGREE IT WOULD BE VERY UNUSUAL FOR POTASSIUM DICHROMATE THAT EXPIRED IN APRIL OF 2011 TO BE SITTING IN THE HAZARDOUS WASTE BIN 10 MONTHS LATER?

A. IT MIGHT MEAN THEY HAVE A REQ OR HAZARDOUS WASTE

COMPLIANCE PROBLEM.

MR. JOHNSON: LET'S MARK THESE AS ONE EXHIBIT STAPLED TOGETHER.

(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS DEFENSE EXHIBIT S.)

MR. JOHNSON: IT'S THE BEFORE AND AFTER TITRATION WORK SHEET.

BY MR. JOHNSON:

Q. INHERENT IN WHAT YOU SAID, BEFORE AND AFTER TITRATION, THERE IS SUPPOSED TO BE A -- THERE'S NOT SUPPOSED TO BE AN AFTER TITRATION WORK SHEET?

A. I'M NOT SURE WHAT YOU MEAN BY AFTER.

Q. ONE THAT WAS CONTEMPORANEOUS?

A. RIGHT.

Q. IN ANY EVENT, WHAT HAPPENED IS MORYAMA MADE SOME HANDWRITTEN NOTES ON HERE REGARDING POTASSIUM DICHROMATE AND REGARDING THE SPECIFIC BALANCE THAT WAS USED, RIGHT?

A. YES.

Q. THOSE NOTATIONS WERE NOT MADE TWO YEARS AGO WHEN HE PERFORMED THE ANALYSIS, RIGHT?

A. THAT'S CORRECT.

Q. NOW, BESIDES THE POTASSIUM DICHROMATE, THE FERROUS AMMONIUM SULFATE HAS TO BE MEASURED IN THE TITRATION PROCESS?

A. YES.

Q. THAT'S SOMETHING THAT IS CRITICAL AS FAR AS THE QUALITY IS CONCERNED, RIGHT?

A. IT CERTAINLY IS. THE TECHNIQUE THAT'S USED,

TITRATION -- WHAT'S REALLY IMPORTANT IS AN EXCESS OF DICHROMATE IS ADDED TO REACT WITH THE ETHANOL PRESENT. IF YOU KNOW EXACTLY HOW MUCH DICHROMATE IS ADDED TO THE SOLUTION, YOU CAN BACK TITRATE IT, TITRATE IT WITH FERROUS AMMONIUM SULFATE THAT WAS PRESENT, BUT IMPLICIT IN THE TECHNIQUE IS AN ABSOLUTE REQUIREMENT THAT YOU KNOW TO A DEGREE OF CONFIDENCE THE PURITY OF BOTH THE DICHROMATE AND FERROUS AMMONIUM SULFATE AND THE AMOUNT THAT WAS USED IN THAT TITRATION VESSEL. IF YOU DON'T KNOW THOSE THINGS ACCURATELY, THE TECHNIQUE OF TITRATION FALLS APART. IT DEPENDS ON THE USE OF WHAT'S CALLED A STANDARDIZED REAGENT.

YOU CAN'T JUST ACCEPT THE FACT THAT YOU PREPARED THE FERROUS AMMONIUM SULFATE AND IT MUST HAVE BEEN GOOD BECAUSE I GOT THE ANSWER I EXPECTED. NO, YOU ARE REQUIRED TO ACTUALLY STANDARDIZE THE MATERIAL BEFORE YOU USE IT AS A TITRANT.

IN THIS CASE THE LABORATORY USED PRIMARY REFERENCE DICHROMATE, WHICH IS ACCEPTABLE. WHEN YOU PAY BIG BUCKS FOR A PRIMARY REFERENCE, IF YOU USE A CALIBRATED BALANCE, USE DEVICES, POLYMETRIC DEVICES WITH TOLERANCE, YOU CAN ASSURE THAT'S ACCEPTABLE QUANTITIES.

IN CASE OF FERROUS AMMONIUM SULFATE, THEIR PRACTICE AS I UNDERSTAND IT IS THAT THEY DON'T ACTUALLY -- IT'S HARD TO TELL HOW THEY ACTUALLY DOCUMENT THIS, BECAUSE IT'S A TYPED FORM. THE FIRST PART IS FILLED OUT ON APRIL 8, 2010. THE NEXT PART IS FILLED OUT ON APRIL 13, 2010. THESE ARE NOT -- I CAN'T TELL THAT THESE ARE ACTUALLY MADE AT THE TIME IT'S RECORDED, BUT THEY TAKE 17.02 GRAMS OF FERROUS

AMMONIUM SULFATE, 20 GRAMS OF SULPHURIC ACID DILUTED WITH WATER. THEY JUST ASSUME THEY KNOW THE CONCENTRATION OF THE MATERIAL. THEY DON'T STANDARDIZE IT BEFORE THEY USE IT.

THAT'S HUGELY A PROBLEM, EVEN IF THEY WERE USING CALIBRATED EQUIPMENT. BUT, SADLY, THE BALANCE THEY WERE USING WAS NOT APPROPRIATELY CALIBRATED, AND SO I REALLY DON'T HAVE TRACEABILITY FOR THAT, WHICH IS ONE OF THE KEY COMPOUNDS IN THE TITRATION THAT'S USED TO VERIFY THE CONCENTRATION OF CALIBRATION STANDARDS.

Q. THAT NIST PROCESS, THAT'S ONE EXAMPLE WE TALKED ABOUT, THE ANALYTICAL BALANCE. ALSO, NOW THE PROBLEM WITH THE FERROUS AMMONIUM SULFATE, RIGHT, AND THERE'S OTHERS PERHAPS WE'LL GET TO AS FAR AS IDENTIFYING UNCERTAINTY SOURCES. BUT THE NEXT STEP IS THE NIST PROCESS, NUMBER THREE, IS TO QUANTIFY UNCERTAINTY SOURCES?

A. YES.

Q. THAT QUANTIFY UNCERTAINTY SOURCES, IS THAT THE TRACEABILITY COMPONENT OF THAT PROCESS?

A. RIGHT. THAT'S HOW YOU DEMONSTRATE THE QUANTITATION OF EACH OF THE SOURCES OF UNCERTAINTY, IS WITH THE DOCUMENTATION WITH THE RECORDS THAT SHOW THE ACTUAL IN-PRACTICE PERFORMANCE OF THE INSTRUMENT. YOU CAN'T JUST RELY ON THE FACT THAT, GEE, MY EQUIPMENT SUPPLIER SAYS IT'S THIS GOOD, THIS TOLERANT. YOU HAVE TO ACTUALLY DEMONSTRATE THAT WITH MEASUREMENTS MADE IN THE LABORATORY THAT YOU'RE CAPABLE OF ACHIEVING IT.

FRANKLY, MOST LABS ARE NOT CAPABLE OF ACHIEVING MANUFACTURER'S TOLERANCES FOR SOME KINDS OF EQUIPMENT; FOR

EXAMPLE, CLASS A GLASSWARE.

Q. ONE OF THE THINGS WE FOUND OUT IS SOME STUFF IS SENT OUT FOR CALIBRATION, SOME WAS BEING SENT OUT TO COMPANIES THAT WERE NOT NIST-CERTIFIED?

A. THEY WEREN'T ACCREDITED IN THAT PARTICULAR SCOPE. THEY MAY HAVE BEEN ACCREDITED FOR THERMOMETERS, BUT NOT BALANCE, AND THEY WERE SENDING THE BALANCE.

Q. NOW, MR. BURRY HAS SAID THAT -- AND ACTUALLY, WOULD YOU AGREE STEP FOUR THROUGH EIGHT IN THE PROCESS, IN THIS PROCESS ARE BASICALLY STATISTICS AND MATHEMATICAL FUNCTIONS?

A. YES, ACTUAL ANALYSIS GENERATED IN EARLIER STEPS.

Q. WE'RE DEALING HERE WITH STEPS ONE, TWO AND THREE?

A. YES.

Q. YOU DON'T GET TO STEP FOUR IF YOU HAVEN'T SATISFIED THE CONDITIONS OF STEPS ONE, TWO AND THREE?

A. YOU CAN GO THERE, BUT IT DOESN'T NECESSARILY MAKE IT VALID.

Q. MR. BURRY HAS SAID WHEN HE MADE HIS CALCULATIONS FOR UNCERTAINTY OF MEASUREMENT HE APPLIED IN THIS CASE, THAT HE RELIED ON IN THIS CASE, THAT HE USED HISTORICAL DATA GOING BACK TO 2006. DO YOU RECALL THAT?

A. YES.

Q. NOW, WHAT IS REQUIRED BY QUANTIFYING YOUR UNCERTAINTY SOURCES IS THAT YOU ACTUALLY ESTABLISH YOUR CERTAINTY OF MEASUREMENT, UNCERTAINTY OF MEASUREMENT FOR EACH ONE OF THOSE ELEMENTS OF THAT PROCESS?

A. CORRECT. AND THAT YOU HAVE THE TRACEABLE DOCUMENTATION TO DEMONSTRATE THE UNCERTAINTY ASSOCIATED WITH

EACH.

Q. WHICH WE KNOW DIDN'T EXISTED MAYBE UP UNTIL YESTERDAY, RIGHT?

A. CERTAINLY NOT IN THE MATERIALS I REVIEWED.

Q. SO IN ORDER -- TO RELY ON THAT HISTORICAL DATA FOR THE PURPOSE OF AN UNCERTAINTY MEASUREMENT WHEN THAT HISTORICAL DATA WAS PREDICATED ON A TIME WHEN THERE WAS NO TRACEABILITY AND THEY COULD NOT ASCERTAIN UNCERTAINTY, IS INAPPROPRIATE, IS IT NOT?

A. YEAH. AT BEST IT REPRESENTED A THEORETICAL, NOT A REAL WORLD.

Q. HAVE YOU REVIEWED SCIENTIFIC LITERATURE THAT AGREES THAT RETROACTIVE -- FIRST OF ALL, FORGET THE POSITION ASSOCIATED WITH THE DATA RELIED ON -- BUT THAT RETROACTIVE IN TERMS OF UNCERTAINTY IS NOT AN APPROPRIATE METHOD?

A. YES.

Q. IS THAT SOMETHING THAT YOU'VE SEEN IN SCIENTIFIC LITERATURE THAT YOU'VE READ THAT IS COMMONLY ACCEPTED IN YOUR FIELD?

A. YES.

Q. THE PROBLEM WITH NOT KNOWING -- WHEN WE'RE TALKING ABOUT UNCERTAINTY, WE'RE TALKING ABOUT MEASUREMENT ERROR, RIGHT?

A. IT'S SOMETIMES REFERRED TO THAT; THAT'S A SLIGHTLY UNCOMFORTABLE TERM FOR SOME PEOPLE.

Q. IF YOU DON'T KNOW WHAT THE UNCERTAINTY -- ALONG THE WAY, IF YOU DON'T HAVE AN UNBROKEN CHAIN OF CALCULATIONS OF UNCERTAINTY YOU CAN TRACE THROUGH YOUR METHOD, THEN THERE'S

NO WAY TO TAKE DATA AND APPLY IT TO AN UNCERTAINTY MEASUREMENT OVERALL, CORRECT?

A. YOU CAN DO IT, BUT IT'S NOT CORRECT.

Q. IT'S NOT RELIABLE?

A. CORRECT.

Q. IT'S CERTAINLY NOT A VALID PROCESS?

A. CORRECT.

Q. LET'S TALK ABOUT OTHER ASSUMPTIONS THAT WERE MADE. AS YOU KNOW, THERE HAS BEEN A REPORT THAT THERE'S A FOUR PERCENT MARGIN OF ERROR -- I'M SORRY, UNCERTAINTY, 99.7 IN EXPANDED UNCERTAINTY, AND THIS PROCESS IS ONLY SUBJECT TO FOUR PERCENT ERROR, POTENTIALLY; IS THAT RIGHT?

A. THE REPORT, THAT'S THE INFORMATION THAT'S PROVIDED ON THE REPORT OF ANALYSIS.

Q. DO YOU SEE ANYTHING THAT IS INHERENTLY BOTH COMMON SENSE ILLOGICAL AND SCIENTIFICALLY ILLOGICAL WITH THE PARTICULAR METHOD IN THIS CASE BASED ON YOUR REVIEW OF RECORDS, SEPARATE AND APART FROM TRACEABILITY, REGARDING THAT DETERMINATION THAT THERE'S FOUR PERCENT PLUS OR MINUS?

A. IN THE LAB'S PROCEDURE, WHEN IT'S CHECKING THE RESULTS ON ITS CALIBRATION STANDARDS, IT GETS TOLERANCES, AND IT MUST BE WITHIN A CERTAIN RANGE. AND THE TOLERANCES THAT IT APPLIES IN EACH AND EVERY CASE IS GREATER THAN FOUR PERCENT. IT RANGES FROM -- ONE IS 12 PERCENT, I THINK SEVERAL ARE FIVE PERCENT, I THINK ONE IS SEVEN PERCENT.

IF THAT IS THE ACCEPTABLE RANGE OF RESULTS FOR THE CALIBRATORS, IT REALLY DEFIES LOGIC HOW THEY CAN ASSUME THE FINAL RESULT IN FACT IS CAPABLE OF ACHIEVING PLUS OR MINUS

FOUR PERCENT WHEN THEY ACCEPT THAT DEGREE OF VARIABLE VARIABILITY IN THEIR CALIBRATOR.

Q. NOW, YOU HAD AN OPPORTUNITY TO REVIEW THE STANDARD OPERATING PROCEDURE FOR THE QUALITY CONTROL REFERENCE MATERIAL; IS THAT RIGHT?

A. YES.

Q. DID YOU SEE SOME PROBLEMS ASSOCIATED WITH THE QUALITY CONTROL REFERENCE MATERIAL USED IN THIS ANALYTICAL PROCESS?

A. YES. THE QUALITY CONTROL REFERENCE MATERIAL THAT THEY USED IN THIS LABORATORY, I BELIEVE IT HAS A NOTE, STARTS S-H. THIS IS A SAMPLE; IT'S A QUART SAMPLE THAT HAS AN AMOUNT OF ALCOHOL OR AMOUNT OF ETHANOL ADDED TO IT, AND IT'S INCLUDED AS A KNOWN OR POSITIVE CONTROL IN EACH BATCH THEY RUN IN THE LABORATORY.

THAT'S A GOOD PRACTICE, THAT'S EXACTLY WHAT LABORATORIES SHOULD DO, RUN POSITIVE CONTROLS EACH BATCH, MEASURE THE PERFORMANCE OF MEASUREMENT AT THE TIME THE SAMPLES ARE BEING RUN. THE ISSUE WITH THEIR QUALITY CONTROL REFERENCE MATERIAL, THEY PREPARE IT IN-HOUSE, DON'T PURCHASE IT OUTSIDE. IT'S QUITE STRIKING THAT ESSENTIALLY EVERYTHING THEY USE IN THIS LABORATORY THEY PREPARE IN-HOUSE, DON'T PURCHASE ANY INDEPENDENTLY CERTIFIED MATERIALS FOR USE AS CHECKS ON THEIR SYSTEM; THEY PREPARE EVERYTHING THEMSELVES.

IN THE CASE OF THIS QUALITY CONTROL REFERENCE MATERIAL -- AND I WOULD HAVE TO REMEMBER THE LANGUAGE, I WOULD HAVE TO READ THE SOP, BUT IT DESCRIBES THAT YOU TAKE APPROXIMATELY 75 MILS OF ETHANOL AND DILUTE IT TO TWO MILS

WITH WATER. THEY USE A GRADUATED CYLINDER TO DO THAT. THAT'S A TECHNIQUE THAT WILL GIVE YOU IN-THE-BALLPARK KIND OF RESULTS; CLOSE, MAYBE, MAYBE NOT. IT'S NOT A TECHNIQUE THAT WE USE IN THE LABORATORY FOR MEASURING KNOWN QUANTITIES OF STANDARDS OR KNOWN CONTROL SAMPLES.

IT'S THE TECHNIQUE YOU USE FOR PREPARING REAGENTS, A THREE PERCENT SOLUTION THAT YOU'RE USING IN YOUR ANALYSIS, BUT IT'S NOT A KEY REAGENT?

IN THIS CASE, THIS IS THEIR QUALITY CONTROL REFERENCE MATERIAL THAT THEY ARE GOING TO USE TO TEST HOW WELL THEIR METHOD IS USING, AND THEY DON'T KNOW ITS ACTUAL TRUE CONCENTRATION. THEY DO TEST IT, THEY RUN AND GET A SET OF 20 RESULTS OVER TWO INSTRUMENTS OVER A PERIOD OF TEN DAYS, AND THEY TAKE THE AVERAGE OF THE RESULTS AND SIMPLY ASSUME THAT THAT IS THE TARGET VALUE, THAT'S THE RESULT.

THEY SET TOLERANCE WINDOWS. IF I RECALL CORRECTLY, IT WAS ABOUT PLUS OR MINUS 10 PERCENT ON THE ACCEPTANCE CRITERIA. THEY SAY THAT'S THE TRUE VALUE OF A HIGH QUALITY CONTROL TEST SAMPLE.

WHAT THEY ARE EFFECTIVELY DOING IS THEY ARE SAYING THAT THEY CAN GET THE SAME NUMBER OVER AND OVER, BUT NOT WHETHER OR NOT IT'S THE RIGHT NUMBER. SO THEY ARE ESSENTIALLY CHECKING THE PRECISION OF THE MEASUREMENT, NOT THE ACCURACY OF THE MEASUREMENT. THEY ARE COMPLETELY DIFFERENT.

WHEN YOU ARE SIGHTING A RIFLE, YOU CAN HAVE ALL THE SHOTS CLOSE, BUT THEY CAN BE VERY, VERY FAR FROM THE TARGET. YOU'RE GETTING THE SAME RESULT OVER AND OVER, BUT

IT DOESN'T NECESSARILY MEAN IT'S THE RIGHT RESULT. SO THEY ARE CHECKING, THEY GENERATE THEIR AVERAGE AND MAKE SURE ON AN ONGOING BASIS THAT THEY KEEP HITTING THE RESULT. IT'S A PRECISION MEASUREMENT, NOT AN ACCURACY MEASUREMENT.

Q. WOULD YOU AGREE -- I NOTED YOU SAID THAT THE VARIATION IS ABOUT, THE QUALITY OF REFERENCE MATERIAL IS ABOUT SEVEN PERCENT?

A. I DON'T REMEMBER; I WOULD HAVE TO GO BACK AND LOOK.

Q. IT'S GREATER THAN THE FOUR PERCENT?

A. IT'S GREATER THAN THE FOUR PERCENT.

Q. THIS IDEA OF COMPARISON OF PRECISION VERSUS ACCURACY, IS THAT A SIGNIFICANT POINT IN THIS CASE BASED ON THE METHOD OF ANALYSIS THEY USE?

A. IT'S VERY IMPORTANT.

Q. YOU ALREADY DESCRIBED IT, BUT --

MR. JOHNSON: YOUR HONOR, DID YOU WANT TO MARK THIS? THIS IS MR. BURRY'S.

MS. SEIFF: NEXT IN LINE OR PEOPLE'S?

THE COURT: THAT WOULD BE PEOPLE'S 12.

(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS PEOPLE'S EXHIBIT NUMBER 12.)

MR. JOHNSON: I WILL MARK WHAT I'M ABOUT TO PROFFER; IT'S A BLOOD ALCOHOL CURVE CHART DONE BY MR. BURRY, WHAT IS COMMONLY SEEN AS AN ARCHERY TARGET.

THE COURT: WHAT IS THE UNCERTAINTY OF MEASUREMENT?

MR. JOHNSON: MASSIVE.

BY MR. JOHNSON:

Q. THIS LITTLE CIRCLE IN THE MIDDLE, THIS IS THE BULLSEYE, SO THE CONCEPT TO ILLUSTRATE BETWEEN PRECISION AND ACCURACY IS THIS: A GUY PULLS BACK THE BOW, HITS HERE; NOT VERY ACCURATE, RIGHT?

A. CORRECT.

Q. PULLS BACK THE BOW, BOOM, HITS HERE. AGAIN, NOT VERY ACCURATE, RIGHT?

A. (NODDING HEAD AFFIRMATIVELY.)

Q. HOWEVER, PRETTY GOOD PRECISION, RIGHT?

A. MM-HMM.

Q. PULLS BACK AGAIN, BOOM, HITS HERE. AGAIN, NOT VERY ACCURATE.

A. BUT VERY PRECISE.

Q. THAT BASICALLY KIND OF ILLUSTRATES THE CONCEPT OF PRECISION VERSUS ACCURACY?

A. WHEN IT COMES TO ANALYTICAL DATA, THE RISK IS THAT IT'S PROBABLY HUMAN NATURE TO THINK IT MUST BE RIGHT BECAUSE I'M GETTING THE SAME THING OVER AND OVER AGAIN. IT'S IMPORTANT THAT WE FORCE OURSELVES TO DISTINGUISH BETWEEN ACCURACY AND PRECISION BECAUSE YOU CAN HAVE EVERY ACTION, HAVE DATA ACCURATE AND PRECISE HITS, BULLSEYE EVERY TIME.

THIS IS AN EXAMPLE OF DATA THAT ARE INACCURATE, BUT VERY PRECISE. YOU CAN HAVE DATA THAT ARE INACCURATE AND IMPRECISE ALL OVER THE WALL HERE. THEY ARE NOT ACCURATE AND NOT PRECISE. OR YOU CAN HAVE DATA --

MR. JOHNSON: MAY I?

THE COURT: SURE.

THE WITNESS: IF YOU'VE GOT RESULTS THAT WERE --

ASSUMING THAT WAS REALLY A CIRCLE, THE AVERAGE OF THOSE WOULD BE VERY, VERY ACCURATE. BUT THE DATA THEMSELVES, IF YOU LOOK AT THE VARIABILITY, ARE IMPRECISE, SO YOU HAVE ALL FOUR OPTIONS AVAILABLE.

Q. BECAUSE WE ARE IN A COURTROOM OF LAW INVOLVING A LEGAL STANDARD OF BEYOND A REASONABLE DOUBT, THE METHOD WE ARE CONCERNED WITH, HOPEFULLY, THE TARGET FOR US IS ACCURACY, CORRECT?

A. CORRECT.

Q. SO WITH REGARD TO THE PARTICULAR METHOD THAT IS USED, A SINGLE COLUMN HEAD SPACE GAS CHROMATOGRAPH USES FLAME IONIZATION. IS THAT A METHOD WHICH YOU WOULD CATEGORIZE AS ONE THAT ADDRESSES PRECISION OR ACCURACY?

A. IT HAS THE ABILITY TO ADDRESS BOTH. DO YOU NEED ME TO GET INTO HOW IT'S DONE HERE?

Q. THAT'S FINE, GO FOR IT.

A. GAS CHROMATOGRAPHY IS A REALLY WELL UNDERSTOOD TECHNIQUE. IT'S BEEN VALIDATED FOR YEARS. IT'S A PROVEN, ROBUST, EFFECTIVE, VERY CAPABLE TECHNIQUE; BUT IT DOESN'T MEAN EVERY GC MEASUREMENT DONE IN THE UNITED STATES IS SCIENTIFICALLY VALID AND RELIABLE, SO IT'S NECESSARY TO GO BACK TO SEE HOW IT'S APPLIED TO ANY CIRCUMSTANCE TO SEE WHETHER THAT'S A VALID METHOD AND -- HAVE THEY HEARD ANYTHING ABOUT GC?

Q. VERY LITTLE. WHY DON'T YOU GO AHEAD AND DO IT.

A. THE GAS CHROMATOGRAPH AT ITS VERY BASIC LEVEL, IT'S A BIG OVEN, LOOKS ABOUT THE SIZE OF A MICROWAVE OVEN. AND INSIDE THAT OVEN IS A COLUMN, AND THAT COLUMN IS ESSENTIALLY

LIKE A LONG TUBE, TYPICALLY LIKE A 30MM LONG TUBE, AND IF YOU LOOK AT IT, IT WOULD LOOK LIKE A WIRE. VERY SMALL DIAMETER IN THE MIDDLE, AND THE INSIDE SURFACE HAS BEEN CHEMICALLY TREATED TO ACCOMPLISH ITS GOAL, WHICH IS TO PICK A SAMPLE AND SEPARATE IT.

DIFFERENT COMPOUNDS INTERACT TO DIFFERING DEGREES WITH THE SURFACE OF THE COLUMN, SO THERE IS AN INJECTION THAT OCCURS INTO THE COLUMN WHERE THE SAMPLE IS INJECTED ON TO THE COLUMN. THAT'S DONE BY AUTO SAMPLERS; WE DON'T HAVE A HUMAN BEING WITH SYRINGES DOING THE INJECTION, IT'S PREFERABLE TO USE A SAMPLER. A SAMPLE GOES INTO THE TUBE. WHEN THE SAMPLE COMES OUT, OUR DETECTION SYSTEM IN THIS CASE IS A FLAME IONIZATION SYSTEM, KIND OF A STUPID DETECTION SYSTEM, IF YOU WILL. IT WILL DETECT ANY HYDROCARBON THAT COMES THROUGH, DOESN'T DIFFERENTIATE IN CHEMICAL COMPOSITION; ANYTHING THAT COMES THROUGH IT WILL BURN IT UP AND GIVE YOU A PEAK.

WHAT HAPPENS IF I INJECT A COMPOUND -- THE RED ONE, TWO COMPOUNDS, RED AND BLACK, AND IT'S FLUSHED THROUGH THIS COLUMN WITH AN INERT GAS LIKE HELIUM. AND WE CAN CONTROL THE TEMPERATURE AND RATE OF THAT GAS THROUGH ALL THOSE THINGS, BUT AT A SET OF CONDITIONS WHEN I INJECT THE SAMPLE, MAYBE THE RED COMPOUND IS A REALLY SMALL, LITTLE COMPOUND AND IT DOESN'T INTERACT MUCH WITHIN THE WALLS OF THE TUBE BECAUSE IT DOESN'T HAVE THE CHEMICAL ACTIVITY FOR THAT. SO IT GOES THROUGH THE COLUMN FAST AND COMES OUT IN WHAT'S CALLED -- ITS RETENTION TIME IS VERY SHORT. THIS IS CALLED RETENTION TIME. THERE'S A T EQUALS VOLUME. YOU

INJECT THE SAMPLE AND SEE HOW LONG IT TAKES TO GET THROUGH THE COLUMN; THAT'S RETENTION TIME.

BLACK IS MAYBE BIGGER, INTERACTS MORE FREQUENTLY WITH THE WALLS. THAT GOES SLOWLY THROUGH THE COLUMN AND TAKES LONGER. IT COMES OUT WITH A LONGER RETENTION TIME.

AS I LOOK AT -- THIS IS CALLED A CHROMATOGRAM -- THE AREA UNDER THE PEAK IS PROPORTIONAL TO THE AMOUNT OF MATERIAL PRESENT, AND I CAN I LOOK AT THE GAS CHROMATOGRAM AND TELL YOU MUCH ABOUT THAT COMPOUND? CERTAINLY NOT. THIS FLAME IONIZATION SIGNAL WILL GIVE YOU A SIGNAL FOR ANYTHING THAT COMES THROUGH OTHER THAN THE HELIUM YOU USE AS A CARRIER.

SO THE ONLY WAY I CAN IDENTIFY THINGS WITH THE GC AS A TECHNIQUE IS TO INJECT KNOWN SAMPLES AND HAVE THE TEMPERATURE OF THE OVEN BE EXACTLY THE SAME, THE COLUMN BE EXACTLY THE SAME, THE FLOW RATE BE THE SAME. IF EVERYTHING IS THE SAME AND IF I INJECT A KNOWN SAMPLE OF -- SAY THAT MY RED IS ETHANOL, IF I INJECT A KNOWN SAMPLE OF ETHANOL, AND THAT'S A REFERENCE SAMPLE THAT SHOULD BE TRACEABLE IN THE LANGUAGE WE HAVE BEEN USING ALL MORNING, AND IT'S ALL THE SAME CONDITIONS, IF MY KNOWN SAMPLE COMES OUT AT 1.3 MINUTES AND WHEN I RUN THE UNKNOWN MIXTURE AND IT CAME OUT AT 1.3 MINUTES, CAN I SAY IT'S ETHANOL? WELL, I CAN SAY TENTATIVELY THAT I HAVE IDENTIFIED ETHANOL. THAT IS AN INDICATION THAT THAT PEAK IN MY UNKNOWN SAMPLE, THAT RED COMPOUND MAY BE ETHANOL, BECAUSE IT COMES OUT AT THE SAME RETENTION TIME UNDER THE SAME CONDITIONS AS A KNOWN REFERENCE SAMPLE OF ETHANOL.

WHY CAN'T I JUST SAY IT'S ETHANOL FOR SURE? THE REASON IS BECAUSE THERE ARE THOUSANDS OF VOLATILE ORGANIC COMPOUNDS THAT CAN GO THROUGH THIS INSTRUMENT AND BE DETECTED BY THAT FLAME IONIZATION DETECTOR, AND THE INSTRUMENT WON'T KNOW THE DIFFERENCE. IT WILL GIVE YOU THE SAME SIGNAL FOR ETHANOL AS ANY OTHER COMPOUND. THE PROBLEM IS IS THEY USE A RELATIVELY SHORT RUN TIME OF ONLY A COUPLE MINUTES, SO EVERY COMPOUND THAT GOES THROUGH THE INSTRUMENT IS AMENABLE TO ANALYZING COME OUT IN THAT PERIOD OF TIME. YOU CAN'T TELL ETHANOL FROM ANYTHING ELSE.

THERE MAY BE LOTS OF COMPOUNDS THAT COME OUT AT THE SAME RETENTION TIME AS ETHANOL. THE WAY WE DEAL WITH THIS SCIENTIFICALLY IS BY REQUIRING THAT ONCE YOU HAVE MADE THAT TENTATIVE IDENTIFICATION YOU MAY HAVE ETHANOL, THAT YOU USE A SECOND CHEMICAL TECHNIQUE TO VERIFY THAT CONCLUSION TO CONFIRM THE IDENTIFICATION OF ETHANOL.

IN THE CASE OF GC ANALYSIS, WHAT WE DO IS USE A DIFFERENT COLUMN, AND WE TYPICALLY PUT TWO CLUMPS IN THE SAME INSTRUMENT IN WHICH THEY ARE BOTH EXACTLY EXPERIENCING THE SAME LEVEL AMOUNT OF TEMPERATURE. THIS COLUMN IS MANUFACTURED WITH DIFFERENT CHARACTERISTICS ON THE INTERIOR SURFACE, SO CAPILLARY ACTIONS ARE DIFFERENT AND IN THE FIRST CASE WHERE IT CAME OUT IN THIS ORDER.

IN THE CASE OF A BLACK COLUMN, THESE TWO COMPOUNDS MAY COME OUT IN A COMPLETELY DIFFERENT ELUTION ORDER. THAT WAY, IF I RUN A KNOWN STANDARD THROUGH THIS COLUMN AND I GET IT COMING OUT AT THE SAME PEAK, ETHANOL, AS THIS ONE, YET WITH TWO DIFFERENT RETENTION TIMES, I CAN SAY WITH

CONFIDENCE, YEAH, IT'S ETHANOL.

Q. MR. BURRY SAID HE NEVER SAW AN ACRONYM, I MISSTATED IT AND CALLED IT SOCIETY OF FORENSIC TESTING.

A. SOCIETY OF FORENSIC TEST COLLEGE.

Q. ARE THERE OTHER STANDARDS SOUGHT AS FAR AS THIS GUIDELINE AND RECOMMENDATION MADE RELATIVE TO THE GAS CHROMATOGRAPH FOR THE ANALYTICAL ANALYSIS FOR ALCOHOL?

A. SPECIFICALLY FOR ALCOHOL AND SO FORTH, THE AMERICAN ACADEMY OF SCIENCE PUBLISHED A GUIDELINE IN 2006 FOR THE PRACTICE OF FORENSIC TOXICOLOGY. AND IN RECOGNITION OF THIS PROBLEM, THEY SAID IF ALL YOU DO IS A SINGLE COLUMN GC, YOU MAY ONLY TENTATIVELY IDENTIFY ETHANOL, YOU CANNOT CONFIRM AND REPORT IT AS ETHANOL DETECTED. YOU MAY TENTATIVELY IDENTIFY IT. IN ORDER TO CONFIRM OR VERIFY THAT IT IN FACT WAS ETHANOL, IT'S NECESSARY TO RUN A SEPARATE TECHNIQUE.

IN CASE OF THE GC, THAT'S CONSIDERED ACCEPTABLE IF YOU HAVE A DIFFERENT COLUMN WITH DIFFERENT CHEMICAL PROPERTIES THAT LEAD TO THOSE SIGNIFICANT FINDINGS IN ELUTION ORDER AND RETENTION TIME, THAT'S CONSIDERED CONFIRMATION OF THE IDENTITY OF ETHANOL.

AND IT'S IMPORTANT TO REALIZE THAT THESE KINDS OF EFFECTS CAN HAPPEN EVEN IF YOU HAVE TWO PEAKS THAT ARE TOO CLOSELY LINKED TOGETHER TO DISTINGUISH. IF THE INSTRUMENT CAN'T TELL THERE ARE TWO DIFFERENT COMPOUNDS COMING THROUGH, IT GIVES YOU A SUM OF TWO IN ONE BIG PEAK WHEN YOU ONLY DO A SINGLE COLUMN.

THE COURT: COUNSEL, BEFORE WE GO FURTHER, WHY DON'T WE TAKE OUR MORNING BREAK. AND WE'RE RIGHT AT THE

SINGLE COLUMN OF THE GAS CHROMATOGRAPH.

AND LADIES AND GENTLEMEN, REMEMBER THE ADMONITION I NEED TO GIVE YOU DURING THE BREAK. 10 OR 15 MINUTES, LADIES AND GENTLEMEN.

(THE MORNING RECESS WAS TAKEN.)

THE COURT: LET THE RECORD SHOW THAT COUNSEL AND THE DEFENDANT ARE PRESENT, STAFF IS PRESENT. THE JURY IS NOT PRESENT, NOR ANY WITNESSES, BUT MISS CONRADSON, JUROR NUMBER FOUR, IS HERE. AND MA'AM, LET ME ASK YOU -- THE BAILIFF TOLD ME THAT YOU REPORTED TO HIM THAT YOU KNEW THE WITNESS WHO IS NOW TESTIFYING.

A. YES, I DO.

Q. COULD YOU TELL US HOW IT IS YOU KNOW HER, IN WHAT WAY?

A. YES. I KNEW HER AS JANINE JESSUP. WE GREW UP TOGETHER, WERE CHILDHOOD FRIENDS. HER MOTHER TAUGHT MY BROTHER. WE WENT TO COLLEGE TOGETHER, WENT TO CAL POLY; I HAVE NOT SEEN HER IN 35 YEARS. I WAS QUITE SURPRISED. YOU HAVE TO CONFIRM HER PREVIOUS NAME, IT WAS JESSUP WHEN I KNEW HER. SHE WAS A BIOCHEM MAJOR AT THE TIME, I WAS AN ENGLISH MAJOR. WE KNEW EACH OTHER SINCE FOURTH GRADE.

Q. YOU HAVEN'T SEEN HER IN 35 YEARS?

A. NO, I HAVE NOT; SHE PROBABLY DOES NOT RECOGNIZE ME.

Q. YOU THINK THAT YOUR HAVING GROWN UP WITH HER, HAVING KNOWN HER FAIRLY WELL, I TAKE IT, OVER 35 YEARS AGO, THAT YOU CAN BE FAIR AND IMPARTIAL IN EVALUATING HER TESTIMONY, OR DO YOU THINK THAT THAT CONTACT WOULD CAUSE SOME DIFFICULTY BEING ABLE TO EVALUATE HER FAIRLY?

A. I BELIEVE I CAN EVALUATE HER FAIRLY, I JUST THOUGHT I SHOULD LET SOMEONE KNOW.

THE COURT: THAT'S QUITE RIGHT, THANK YOU FOR LETTING US KNOW. OF COURSE HER NAME IS DIFFERENT NOW, SO -- DID EITHER OF YOU HAVE QUESTIONS FOR MISS CONRADSON?

MR. JOHNSON: I DON'T.

MS. SEIFF: JUST BRIEFLY.

BY MS. SEIFF:

Q. I GUESS -- GIVEN THAT YOU GREW UP WITH HER, KNEW HER PREVIOUSLY, DO YOU THINK THAT AFFECTS THE CREDIBILITY YOU WOULD GIVE TO WHAT SHE'S SAYING MORE THAN OTHER WITNESSES BECAUSE YOU HAVE A BACKGROUND WITH HER YOU DON'T SHARE WITH OTHER WITNESSES?

A. I DO NOT BELIEVE SO. I WAS FAIRLY SHOCKED, I KEPT THINKING OF HER AS A KID, WASN'T AS ATTENTIVE TO THE TESTIMONY AS I WOULD HAVE BEEN, I THINK.

THE COURT: DID YOU HAVE ANY GLIMMER THAT SHE HAD DEVELOPED AN EXPERTISE IN QUALITY CONTROL?

JUROR NUMBER FOUR: NO, JUST THAT I HAVE NOT SEEN HER FOR 35 YEARS. I DID KNOW SHE WAS A BIOCHEM MAJOR. THAT'S THE LAST TIME I SAW HER.

THE COURT: YOU STILL THINK YOU COULD BE FAIR AND IMPARTIAL, EVEN THOUGH YOU HAD THIS LONG-TIME ASSOCIATION YEARS AGO?

JUROR NUMBER FOUR: I DO.

THE COURT: OKAY, FINE. THANK YOU VERY MUCH, THANK YOU FOR SHARING THAT WITH US. YOU'RE FREE TO GO; I WILL HAVE TO TALK TO COUNSEL ABOUT THIS FOR JUST A MOMENT.

(THE JUROR WAS EXCUSED.)

THE COURT: ANY OBJECTION TO HAVING HER REMAIN? WE DO HAVE THREE ALTERNATES -- ACTUALLY, FOUR STILL. MISS HELMSLY (PHONETIC) WOULD BE NEXT IF YOU WANT TO SUBSTITUTE HER. SO YOU HAVE LOTS OF FLEXIBILITY, BUT SHE SAID SHE CAN STILL BE FAIR AND IMPARTIAL.

MS. SEIFF: MY ONLY CONCERN IS THE WORDS SHE WAS USING TO DESCRIBE IT, LONG-TIME FRIEND, HER MOTHER'S BROTHER TAUGHT SOMEBODY, SO I GUESS MY CONCERN IS CAN SHE REALLY SEPARATE OUT -- AND I GUESS THE COUNTER ARGUMENT TO THAT FACT IS IT WAS QUITE A WHILE AGO, THEY HAVE NOT SPOKEN IN 35 YEARS.

THE COURT: SHE DID SAY SHE WAS SO SHOCKED BY THE ASSOCIATION THAT SHE SPENT A LOT OF HER TIME THINKING ABOUT THEIR RELATIONSHIP, DIDN'T REALLY FOCUS ON THE EVIDENCE, SO THAT'S PART OF THE RECORD. DOES EITHER ONE OF YOU OBJECT TO LEAVING HER, OR DOES EITHER ONE MAKE A MOTION TO HAVE HER SUBSTITUTED OUT?

MR. JOHNSON: I THINK AT THIS POINT IN TIME WE HAVE TO FIND CAUSE. I DON'T BELIEVE CAUSE HAS BEEN DETERMINED BASED ON HER STATEMENT AND GIVEN THE OPPORTUNITY, THAT'S WHAT IT'S FOR, TO ANSWER QUESTIONS. SHE IS A SWORN JUROR, WE PICKED THE JURY BASED ON OUR EXAMINATION OF JURORS BEFORE, AND NOW IT CAME OUT, AND HASN'T CHANGED ANYTHING. I WOULD OBJECT TO REPLACING HER.

THE COURT: WELL, WE HAVE ONE OBJECTION TO REPLACING HER AND NO MOTION TO DISQUALIFY HER.

MS. SEIFF: I WON'T MAKE THAT MOTION AT THIS

TIME.

THE COURT: YOU WON'T MAKE THAT MOTION?

MS. SEIFF: NO.

THE COURT: SHE WILL REMAIN AS JUROR NUMBER FOUR. DO YOU NEED MORE TIME OR SHOULD WE HAVE THEM BROUGHT IN?

MS. SEIFF: I'M READY.

THE COURT: WHOEVER IS SUPPOSED TO GET THE JURY --

(THE FOLLOWING PROCEEDINGS TOOK PLACE IN THE PRESENCE OF THE JURY.)

THE COURT: IF EVERYONE IS COMFORTABLE, FURTHER DIRECT?

MR. JOHNSON: SURE.

DIRECT EXAMINATION, CONT'D:

BY MR. JOHNSON:

Q. MISS ARVISO, WITH REGARD TO TITLE 17, TITLE 17 HAS SOME KIND OF BASELINE, BASIC REQUIREMENTS AS FAR AS THAT THE LAB IS SUPPOSE TO HAVE CERTAIN THINGS OCCUR IN THEIR STANDARD OPERATING PROCEDURE, CORRECT?

A. YES.

Q. BUT THE DEPARTMENT OF HEALTH DOES NOT ACTUALLY REGULATE OR DO ANYTHING TO POLICE THE VALIDITY OF THE METHOD THAT'S USED, RIGHT?

A. I'M UNAWARE OF ANY.

Q. AS FAR AS ASCLD LAB DIRECTORS, ASCLD LAB, THE ACCREDITING AGENCY, THEY DON'T DO ANYTHING TO ASSESS THE VALIDITY OF THE METHOD, RIGHT?

A. THAT'S CORRECT. IT'S OFTEN MISUNDERSTOOD BY DATA USERS. THERE'S A PERCEPTION THAT THE ACCREDITING AGENCIES

HAVE GONE IN AND LOOKED AT EVERY METHOD AND DETERMINED THAT THEY WERE VALID AND THEY ARE APPROVING THAT WORK.

ACCREDITATION IS SIMPLY -- THE ACCREDITING AGENCY IN THIS CASE, THE AMERICAN SOCIETY OF CRIME LAB DIRECTORS, THE LAB ACCREDITATION BOARD, IT'S SIMPLY THEIR ASSESSMENT THAT AT THE TIME THE INSPECTION WAS DONE, THE LAB HAD THE SYSTEMS IN PLACE THAT, IF THEY WERE APPROPRIATELY IMPLEMENTED, THEY COULD HAVE DONE THIS RIGHT. IT DOES NOT IN ANY WAY -- YOU SHOULD NOT DRAW THE CONCLUSION THAT ASCLD LAB HAS ESSENTIALLY CERTIFIED ANY INDIVIDUAL METHOD.

Q. NOW, WITH REGARD TO THE TERM CALLED PRODUCTION LINE OR PRODUCTION LABORATORIES --

A. YES.

Q. COULD YOU EXPLAIN WHAT YOU MEAN BY PRODUCTION LABORATORY VERSUS THE ALTERNATIVE --

A. RESEARCH LABS IN THIS COUNTRY DO WONDERFUL WORK, BUT THAT'S NOT WHAT HAPPENS IN A FORENSIC LABORATORY DOING BLOOD ALCOHOL TOXICOLOGY WORK. IT IS VERY MUCH SCIENCE ON A PRODUCTION LINE. THERE IS A PRODUCTION RATE THAT THE LABORATORY HAS TO ACHIEVE, A CERTAIN NORMAL THROUGHPUT FOR THE ANALYTICAL WORK. IT'S NOT -- EACH JOB, EACH BATCH OF SAMPLES THAT COMES IN ISN'T A NEW RESEARCH PROJECT; THEY ARE BEING EXPECTED TO USE PROVEN, VALID TECHNIQUES WITH APPROPRIATE QUALITY CONTROL SYSTEMS IN PLACE TO RELIABLY, CONSISTENTLY, DAY IN AND DAY OUT, PRODUCE ACCEPTABLE QUALITY DATA AND TO HAVE THE SYSTEMS AND CONTROLS IN PLACE SO, WHEN A PROBLEM OCCURS, THEY CAN DETECT AND ADDRESS IT.

Q. YOU DID REVIEW THE MATERIALS RELATED SPECIFICALLY

TO YOUR ANALYSIS IN THIS CASE?

A. YES, I DID.

Q. AND THERE WAS A BREAKDOWN IN THE PRODUCTION LINE?

A. THERE WAS.

Q. AND WHAT HAPPENED IN THIS CASE IS THE PRODUCTION LINE JUST WENT ON AS OPPOSED TO DOING ANY KIND OF QUALITY ASSURANCE REGARDING THE ANALYSIS IN THIS CASE, RIGHT?

A. NO, WE CALL IT A CORRECTIVE ACTION, ESSENTIALLY. AN ANALYTICAL BATCH IS A REAL FUNDAMENTAL CONCEPT IN PRODUCTION LABS. WHEN WE GROUP A SET OF SAMPLES TOGETHER AND PROCESS THEM ALL AT THE SAME TIME IN THE SAME MANNER USING THE SAME REAGENTS AND SAME EQUIPMENT, I CAN REASONABLY DRAW THE CONCLUSION THAT, YOU KNOW, IF MY KNOWN SAMPLES ARE GOOD, THEN I CAN ASSUME THAT MY UNKNOWN SAMPLES WERE ALSO IN CONTROL.

SO, A BATCH IS DEFINED AS A SET OF SAMPLES ANALYZE BY THE SAME ANALYST USING THE SAME EQUIPMENT, METHOD, SAME REAGENTS AT THE SAME TIME, SO THAT CONCEPT IS VERY KEY. THAT BATCH RUNS THROUGHOUT THE ANALYSIS OF ALL THE SAMPLES.

IN THIS CASE, I MENTIONED EARLIER THAT THE LITTLE AUTO SAMPLER FOR INJECTION, THEY PREPARE AN ENTIRE BATCH AND LOAD THE AUTO SAMPLER UP, AND THE BATCH PROCEEDS THROUGH THE ENTIRE RUN OF THE AUTO SAMPLER. SO IT STARTS WITH THE CALIBRATION STANDARDS, THEN IT INCLUDES A COUPLE OF KNOWN QUALITY CONTROL STANDARDS, AND THEN THEY START RUNNING A KNOWN SAMPLE.

AFTER EVERY 20 UNKNOWN SAMPLES THEY INCLUDE A KNOWN QUALITY CONTROL SAMPLE. THEIR PROCEDURE SAYS IT'S 10

PERCENT; IT'S ACTUALLY FIVE PERCENT, THEY ACTUALLY INCLUDE KNOWN CONTROLS.

SO THE BATCH STARTS AT THE BEGINNING WITH CALIBRATION, AND IT ENDS WITH THE FINAL QUALITY CONTROL SAMPLE, IN UNINTERRUPTED SEQUENCE. THE PROBLEM IN THIS RUN, AS I UNDERSTAND IT, IS THAT THE BATCH WAS INTERRUPTED IN THE MIDDLE OF THE RUN. THERE WAS AN OPERATING PROBLEM WITH THE INSTRUMENT. THAT HAPPENS.

YOU CAN'T TELL THIS FROM THE AVAILABLE RECORDS; YOU CAN'T TELL EXACTLY WHAT HAPPENED FROM THE AVAILABLE RECORDS. THERE'S A NOTE AT THE BOTTOM OF ONE OF THE FORMS THAT INDICATES THAT A SERIES OF SAMPLES ARE GOING TO HAVE TO BE RERUN, BUT IT DOESN'T DESCRIBE WHAT HAPPENED. YOU CAN SEE FROM THE TIMES INVOLVED THAT THE ORIGINAL SAMPLES WENT THROUGH THE INSTRUMENT JUST AS THEY'RE REQUIRED BY THE AUTO SAMPLER. AS SOON AS ONE GETS OUT, THE SYSTEM IS FLUSHED AND THE NEXT SAMPLE GOES THROUGH. VERY SEQUENTIAL, BUT THERE'S A BREAK, AND THE REST OF THE SAMPLES IN THE BATCH WERE NOT ANALYZED FOR A LONG PERIOD OF TIME THEREAFTER; THERE WAS A GAP IN TIME, AND FROM THE RECORDS I COULD NOT TELL WHAT HAPPENED OR WHY OR WHAT WAS DONE EXCEPT THAT THERE WAS A GAP IN TIME.

THAT MEANS THAT WAS NOT A CONTIGUOUS BATCH. YOU CAN'T SIMPLY ASSUME THAT SAMPLES RUN THE NEXT DAY WERE RUN UNDER THE SAME CONDITIONS AS THE CALIBRATION THAT WAS RUN THE DAY BEFORE. YOU SIMPLY CAN'T ASSUME THINGS IN THE PROCESS OF SCIENCE; YOU HAVE TO BASE IT ON EMPIRICAL EVIDENCE. SO THERE WAS AN INTERRUPTION, A DELAY, AND THE

BATCH WAS -- I FORGET THE TERM THEY USED, REINITIATED OR WHATEVER. BUT AFTER THE LONG DELAY, THEY SIMPLY CONTINUED JUST AS A MATTER OF PRACTICE. THE DOCUMENTATION ON THE RECORDS, IT'S DREADFULLY INSUFFICIENT TO DOCUMENT WHAT HAPPENED, WHY, WHAT CORRECTIVE ACTION DID THEY DO, WHY IN THE WORLD DID THEY CONTINUE WITH THE ANALYSIS INSTEAD OF STARTING OVER WITH A NEW CALIBRATION?

Q. ALSO, YOU EXAMINED BATCH RECORDS, RIGHT, THE RUN BATCH RECORDS?

A. YES.

Q. THERE WERE DIFFERENT VARIANCES REGARDING, FOR EXAMPLE, THE N-PROPANOL?

A. YES.

Q. AREA COUNTS?

A. YES.

Q. DID YOU FIND THE VARIANCE TO BE UNUSUAL FOR THIS TYPE OF ANALYSIS?

A. UNUSUALLY LARGE. THEY DIDN'T REALLY TALK ABOUT IT, BUT THE TWO PEAKS IN THIS COULD BE THE TWO PEAKS THAT WE SAW ON THE CHROMATOGRAMS IN THIS SAMPLE WHERE ONE IS THE INTERNAL STANDARD, THE OTHER IS THE UNKNOWN COMPOUND. THE INTERNAL STANDARD IS ADDED TO EACH AND EVERY SAMPLE IN THE ANALYTICAL BATCH. EVERY SINGLE ONE OF 90 SOMETHING SAMPLES IN THE BATCH GETS AN EQUAL VOLUME, AN EQUAL MEASURED VOLUME OF INTERNAL STANDARD IN EACH SAMPLE. THEN THE QUANTITATION CAN BE BASED OFF THE RESPONSE OF THE UNKNOWN PEAK IN RELATION TO RESPONSE OF THIS FIXED, KNOWN, INTERNAL STANDARD.

THAT ONLY WORKS IF YOU ACTUALLY HAVE A FIFTH VOLUME OF INTERNAL STANDARD IN EACH AND EVERY SAMPLE. IT'S INCUMBENT UPON YOU TO HAVE VERY, VERY PRECISE DELIVERY OF THE VOLUME. AND YOU CAN MONITOR THAT THROUGH AREA COUNTS OF THE INTERNAL STANDARD PEAK. THE LABORATORY'S PROCEDURE PRESCRIBES THAT AN INTERNAL STANDARD IS ACCEPTABLE IF IT HAS A 100,000 AREA COUNT. THAT'S THE MINIMUM NUMBER. THAT'S ONLY CRITERION PLACED ON AN INTERNAL STANDARD.

I REVIEWED LOTS AND LOTS OF BLOOD ALCOHOL PROCEDURES, AND THE WAY TO CONTROL AND MONITOR IS TO MONITOR FOR VARIABILITY IN THE INTERNAL STANDARD. THAT'S WHAT GIVES YOU AN INDICATION YOU HAVE A PROBLEM. IF YOU HAVE DONE YOUR WORK APPROPRIATELY, EVERYTHING IS IN CONTROL, THERE SHOULD BE VERY LITTLE VARIABILITY IN AREA COUNTS OF YOUR INTERNAL STANDARD, LIKE LESS THAN 10 PERCENT. FIVE PERCENT IS PERFECTLY NORMAL, THAT'S NORMAL VARIABILITY, BUT THERE'S 28 PERCENT VARIABILITY IN THIS BATCH, IN THE AREA COUNTS OF THE INTERNAL STANDARD. IT'S NOT OUT OF COMPLIANCE WITH THEIR OWN PROCEDURE, IT'S NOT CLEAR WHETHER THEY EVEN LOOKED AT THAT. THAT MAY HAVE BEEN AN INDICATION THEY DIDN'T ACTUALLY HAVE A SINGLE BATCH, THEY ACTUALLY HAD TWO BATCHES EXPERIENCING DIFFERENT CONDITIONS.

Q. ALSO WITH REGARD TO THAT N-PROPANOL, ONE OF THE THINGS IS PREPARATION OF THE STANDARD BEGINS?

A. YES.

Q. THAT'S WHERE WE START TALKING ABOUT THINGS LIKE THE HAMILTON TIPET ALREADY SHOWN ON HERE?

A. YES.

Q. THE MEASUREMENT MECHANISM?

A. THE INTERNAL STANDARD, THIS INTERNAL STANDARD FOR THEIR MEASUREMENT SYSTEM, THEY PREPARE IN A FOUR-LITER BOTTLE, JUG. IT'S NOT A METRIC DEVICE, IT'S A JUG THEY FILL WITH WATER. IF YOU'VE EVER HAD ANYTHING RESEMBLING AN INTRODUCTORY QUANTITATIVE CHEMISTRY CLASS, YOU KNOW THAT'S NOT HOW WE ENSURE CONSISTENT VOLUMES AND CONCENTRATION. THAT'S NOT THE KINDS OF PRACTICES YOU WOULD EXPECT TO SEE FOR PREPARATION OF A STANDARD. HOW DO YOU GET TOLERANCE? YOU FILL A JUG.

IN CONTRAST, ASCLD VOLUMETRIC WARE HAS ITS PUBLISHED TOLERANCES AT A CERTAIN TEMPERATURE. THERE'S AN INSCRIBED LINE ON THE GLASSWARE THAT GIVES YOU A TOLERANCE OF PLUS OR MINUS 0.01 MILLILITERS. AS LONG AS YOU BRING THE MENISCUS OR EDGE OF THE TOP OF THE SOLUTION RIGHT TO THAT LINE, YOU CAN BE WITHIN PLUS OR MINUS 0.01 MILLILITERS. YOU CAN'T DO THAT IN A FOUR-LITER JUG.

I CONFESS THIS IS THE FIRST TIME IN REVIEWING HUNDREDS AND HUNDREDS OF ETHANOL VOPS I HAVE EVER SEEN ANYBODY ATTEMPT TO PREPARE STANDARDS USING A BOTTLE INSTEAD OF VOLUMETRIC WARE.

Q. IT'S NOT JUST THE INTERNAL STANDARD, THEY ALSO DID THAT WITH OTHER THINGS?

A. WITH THE INTERNAL STANDARD, WITH QUALITY CONTROL REFERENCE MATERIALS IN THAT CASE, THEY USED A GRADUATED CYLINDER, WHICH IS NOT A CLASS A --

Q. YOU TALKED ABOUT THE ISSUE OF SHELF LIFE OF CERTAIN MATERIALS. CAN YOU EXPLAIN SOME PROBLEMS YOU SAW IN THIS

LAB AS FAR AS IN THE STANDARD OPERATING PROCEDURES FOR HOW THEY ADDRESS THAT?

A. CHEMICALS IN A LAB HAVE A SHELF LIFE. JUST AS A GENERAL RULE, SOLID MATERIALS TYPICALLY HAVE A LONG SHELF LIFE. AS LONG AS THEY ARE USED PROPERLY, YOU DON'T LEAVE THE BOTTLE OPEN, DON'T STICK A DIRTY SPATULA INTO THEM, THEY WILL TYPICALLY LAST A LONG TIME.

WHEN YOU MAKE A SOLUTION, DISSOLVE IT IN WATER, THE SHELF LIFE TENDS TO GO DOWN. IT'S HARDER TO HAVE THE SOLUTION BE OF KNOWN, DOCUMENTED PURITY FOR A LONG PERIOD OF TIME. A MORE CONCENTRATED SOLUTION TENDS TO HAVE LONGER SHELF LIFE THAN A VERY DILUTE SOLUTION AS A MATTER OF COURSE.

IN ADDITION, THE SHELF LIFE OF A DAUGHTER SOLUTION IS CONSTRAINED BY THE SHELF LIFE OF THE PARENT. IF I HAVE SOMETHING THAT'S GOING TO EXPIRE IN JUNE AND I'M PREPARING A MORE DILUTE SOLUTION FROM THAT CONCENTRATE, I CAN'T GIVE THE DAUGHTER, OR THE DILUTE SOLUTION, A SHELF LIFE THAT GOES BEYOND THE SHELF LIFE OF THE PARENT. I CAN'T GIVE IT A SHELF LIFE THAT GOES TO DECEMBER BECAUSE MY SOURCE MATERIAL ALREADY EXPIRES AT THAT TIME.

IT'S KIND OF LIKE MILK; YOU CAN'T MAKE IT BE ANY LESS ROTTEN BY DILUTING IT THREE WEEKS AFTER ITS EXPIRATION DATE.

SO, THE PROBLEM IN THIS LABORATORY IS THAT THEY HAVE ASSIGNED VERY LONG SHELF LIVES TO THEIR MATERIALS. AND THEY HAVE SHELF LIVES FOR PARENTS THAT ARE OF A GIVEN PERIOD OF TIME, AND THE DAUGHTERS OR DILUTE SOLUTIONS PREPARED FROM

THE PARENT IS GIVEN A LONGER SHELF LIFE THAN THE ORIGINAL PARENT. THAT'S NOT ACCEPTABLE. THAT MEANS THAT TRACEABILITY IS BROKEN. NO LONGER DO YOU KNOW THAT A SOLUTION IS OF KNOWN AND DOCUMENTED PURITY. YOU DON'T KNOW ITS PURITY. IT'S ONLY AS GOOD AS ITS SHELF LIFE, AND I CAN'T REMEMBER THE SPECIFICS, THERE ARE SO MANY DIFFERENT SERIES, BUT THIS WAS AN ISSUE FOR A WHOLE SERIES.

I WOULD HAVE TO GET MY NOTES, BUT FOR A WHOLE SERIES OF LABORATORY STANDARD CALIBRATION STANDARDS, REFERENCE MATERIALS, THE STOCK SOLUTION HAD ONE SHELF LIFE, BUT DILUTED SAMPLES HAD AN EVEN LONGER LIFE. THEY HAD SHELF LIVES EXTENDING INTO A YEAR FOR SOME OF THE SAMPLES, WHICH IS QUITE STRIKING, BECAUSE WHEN YOU -- INSTEAD OF PREPARING YOUR STUFF IN-HOUSE AND SAYING, I THINK THIS IS GOOD FOR TWO YEARS, BY GOLLY.

IF YOU GO TO AN ACCREDITED SUPPLIER OF REFERENCE MATERIALS, IT HAS TRACEABLE RECORDS AND A TRACEABLE SYSTEM, AND THEY SELL YOU A CERTIFIED REFERENCE MATERIAL -- THEY PACKAGE THESE THINGS TYPICALLY FOR ALCOHOL DETERMINATION IN SEALED GLASS VIALS. THEY ARE COMPLETELY SEALED, YOU HAVE TO BREAK THE GLASS SEAL WHEN YOU OPEN IT. THEY ARE STERILE, AND IN THOSE SEALED AMPULES, THOSE STANDARDS MAY BE GOOD FOR TWO OR THREE YEARS, BUT ONCE YOU BREAK THE SEAL, OPEN IT UP TO THE ENVIRONMENT, WHERE IT HAS THE ABILITY TO EVAPORATE OR BE CONTAMINATED WITH OTHER MATERIALS, AT THAT POINT THE SHELF LIFE DROPS TO A PERIOD ON THE ORDER OF A COUPLE OF WEEKS.

SO, SOMETHING MAY HAVE HAD A SHELF LIFE THE MIDDLE

OF 2015, BUT THE MINUTE I OPEN IT, I HAVE TO USE IT WITHIN TWO WEEKS OR GET RID OF IT. THAT SPEAKS TO THE NEED TO DOCUMENT EACH INDIVIDUAL BOTTLE THAT YOU'RE OPENING AND USING, NOT JUST THE BIG LOT. I CAN BUY A LOT OF THESE MATERIALS, AND THEY ARE ALL GOOD TO 2015? NO, THEY ARE ONLY GOOD FOR WHEN YOU OPEN THEM.

THAT'S THE PROBLEM IN THE LAB'S PROCEDURE. THEY MAKE A BIG BATCH OF STANDARD AND SAY IT'S GOOD FOR TWO YEARS, AND THEY ARE PACKAGED IN INDIVIDUAL VIALS, BUT WHEN YOU OPEN AN INDIVIDUAL VIAL, YOU NEED TO USE IT -- I FORGET WHAT THEY SAID, A WEEK OR TWO, BUT THEY NEVER DOCUMENT WHEN EACH INDIVIDUAL VIAL IS OPENED, SO THERE IS NO WAY OF KNOWING WHETHER OR NOT THEY EVEN MET THEIR OWN REQUIREMENTS FOR THE SHELF LIFE CONTROL.

Q. ALSO -- AT SOME POINT, THE DIRECTORS LAB MAY COME IN AND SAY THIS IS ALWAYS, ALL THESE COMPLAINTS THAT YOU HAVE REGARDING THE LAB, THAT IT'S ALL, YOU KNOW, REALLY JUST A LOT OF TECHNICAL MATTERS THAT YOU'RE RAISING, THAT YOU KNOW WHAT, WE DO HAVE A GOOD LAB, AND THE REASON THAT I CAN TELL YOU THAT IS BECAUSE WE PASSED PROFICIENCY TESTING, OKAY? IS THAT AN APPROPRIATE ARGUMENT?

A. NO, IT ISN'T. THAT IS A REAL ABUSE OF PROFICIENCY INFORMATION, IF YOU WILL. PROFICIENCY TESTS ARE -- WHEN A LABORATORY PURCHASES SAMPLES FROM A PROFICIENCY TEST PROVIDER, THEY ARE PREPARED BY A THIRD PARTY PROVIDER, AND THE THIRD PARTY KNOWS THE TRUE ANSWER, THEY HAVE ANALYZED IT, KNOW WHAT THE TRUE VALUE OF THE SAMPLE IS, AND SEND IT TO LABS ALL OVER THE PLACE. THEY SCORE THE LAB'S COMPLIANCE

WITH THEIR CRITERIA. THESE, AS PRACTICING FORENSIC LABORATORIES, THESE ARE CALLED OPEN. THAT MEANS THE LAB KNOWS IT'S A PROFICIENCY SAMPLE, THEY KNOW THEY ARE BEING TESTED.

THAT'S CONTRASTED WITH WHAT GOES ON IN VIRTUALLY EVERY OTHER FIELD OF ANALYTICAL CHEMISTRY. THE LABS ARE SUBJECT TO BLIND PROFICIENCY SAMPLES. THE ANALYST RECEIVING THEM CAN'T, HAS NO WAY OF DIFFERENTIATING PROFICIENCY SAMPLES FROM ANY OTHER SAMPLE THAT COMES IN THE DOOR.

THOSE ARE A LEGITIMATE ONGOING MEASURE OF THE LAB'S PERFORMANCE. STUDIES HAVE SUBSEQUENTLY, NOT UNEXPECTEDLY, SHOWN THAT WHEN LABS RUN OPEN PROFICIENCY SAMPLES, THEIR PERFORMANCE IS PREDICTABLY BETTER THAN WHEN THEY RAN BLIND PROFICIENCY SAMPLES. THAT'S NOT UNEXPECTED; WHEN YOU KNOW YOU'RE BEING TESTED, YOU TRY TO DO A BETTER JOB.

AS AUDITOR, I SEE EVIDENCE OF THOSE PRACTICES. WHEN IT'S A REGULAR SAMPLE, THEY USE THIS PIECE OF EQUIPMENT, BUT THEY USE THE REALLY CLEAN, NICE, UNSCRATCHED STUFF WHEN RUNNING A PROFICIENCY SAMPLE. SO YOU LOOK FOR THINGS LIKE THAT WHEN DOING AN AUDIT, BUT PROFICIENCY SAMPLES ARE AN EMPIRICAL, OBJECTIVE WAY OF DEMONSTRATING AT LEAST YOU'RE CAPABLE OF MEETING REQUIREMENTS AND PRODUCING AN ACCEPTABLE RESULT. BUT IT SHOULD NOT EVER BE USED AND IS NOT INTENDED FOR USE AS AN ONGOING ASSESSMENT OF THE LAB'S DAY-TO-DAY PERFORMANCE. THAT'S REALLY NOT AN APPROPRIATE USE.

Q. WELL, FOR EXAMPLE, IF YOU WERE GOING TO DO A

PROFICIENCY SAMPLE AND YOU HAD A BREAKDOWN IN YOUR AUTO SAMPLER, ASSUMING YOU ACTUALLY SUBMITTED YOUR PROFICIENCY SAMPLE TO THE PRODUCTION LINE AND THERE WAS A BREAKDOWN IN THE PRODUCTION LINE AND YOU WERE DOING A PROFICIENCY SAMPLE, YOU WOULD PROBABLY RETEST IT, WOULDN'T YOU?

A. I DO THAT ALL THE TIME.

Q. YOU WOULDN'T GO AHEAD WITH THAT PARTICULAR PRODUCTION LINE, WOULD YOU?

A. NO, BECAUSE THERE'S TOO MUCH AT RISK, BUT UNFORTUNATELY THAT'S SOMETHING YOU SEE ALL THE TIME.

Q. YOU'VE EXAMINED THE POLICIES, PROCEDURES, WRITTEN MATERIALS THEY HAVE THAT ADDRESS THE TYPES OF PROFICIENCY TESTING, RIGHT?

A. YES.

Q. YOU SAW NOTHING IN THERE THAT TELLS YOU THAT THEY ARE ENGAGED IN BLIND PROFICIENCY TESTS, RIGHT?

A. THAT'S CORRECT.

Q. JUST TO UNDERSTAND YOUR TESTIMONY, THE BLIND PROFICIENCY TESTS ARE BETTER THAN OPEN PROFICIENCY TESTS, BUT, AGAIN, THAT'S NOT AN APPROPRIATE MEASURE OF A LAB'S OVERALL PROFICIENCY?

A. THAT'S MORE REFLECTIVE OF REAL WORLD PERFORMANCE, BUT IS NEITHER INTENDED, NOR SHOULD IT BE USED, AS A QUALITY CONTROL CHECK ON INDIVIDUAL BATCHES, IF YOU WILL.

Q. LAST THING. I REMEMBER WHAT I HAD FORGOTTEN. ONE OF THE ISSUES ABOUT THESE BIG BATCHES THEY MAKE OF ALL THE STANDARDS, AS FAR AS TRACEABILITY IS CONCERNED -- AND YOU TOUCHED ON THIS EARLIER -- IS THAT THEY DON'T ACTUALLY HAVE

A PART OF THEIR STANDARD OPERATING PROCEDURE THAT VERIFIES THAT THOSE ARE STILL IN THE STATE THEY WERE WHEN CREATED; IS THAT CORRECT?

A. THAT'S CORRECT.

Q. THAT ASPECT IS --

A. IT'S JUST DONE IN THE LABORATORY. FRANKLY, THE OTHER THING THAT SHOCKED ME ABOUT THE LABORATORY IS THEIR PROCEDURE EVEN STATES THAT MAINTENANCE, THAT THEY DON'T DO MAINTENANCE ON THE INSTRUMENT. MAINTENANCE IS DONE ONCE A YEAR BY THE INSTRUMENT MANUFACTURER. THAT'S JUST STUNNING, BECAUSE GC'S NEED A LOT OF MAINTENANCE.

IF YOU LOOK AT THE INSTRUMENT MANUFACTURER'S RECOMMENDED FREQUENCY OF PREVENTIVE MAINTENANCE, THEY HAVE CERTAIN TASKS PRESCRIBED ON A DAILY, WEEKLY, MONTHLY, THREE-MONTH KIND OF SCHEDULE, AND THOSE ARE THE KINDS OF CHECKS THAT ARE NECESSARY TO ENSURE THAT THE INSTRUMENT OPERATES APPROPRIATELY BETWEEN PERIODS OF EXTERNAL CALIBRATION. THIS LAB RELIES ON A ONCE A YEAR VISIT FROM THE INSTRUMENT MANUFACTURER.

Q. OR IF THEY HAVE A PROBLEM.

A. WE GOT A COPY OF THE MAINTENANCE LOG, AND THEY WERE MOST NOTABLE FOR THE FACT THAT THEY WERE VERY SHORT, AND IT INCLUDED A SERIES OF SORT OF REPEAT PROBLEMS -- I CAN'T REMEMBER THE SPECIFIC TIME, I THINK IT WAS IN DECEMBER OR JANUARY BEFORE THE TESTING IN THIS CASE. I WOULD HAVE TO REFRESH MY NOTES BY LOOKING AT THE ACTUAL RECORD.

MR. JOHNSON: WHY DON'T I MARK THIS.

(AN EXHIBIT WAS MARKED FOR IDENTIFICATION AS

DEFENSE EXHIBIT T.)

BY MR. JOHNSON:

Q. T IS THE VAC 2 ELMER MAINTENANCE RECORDS. IN ANY EVENT, THE RECORDS YOU WERE PROVIDED WITH ENDED IN FEBRUARY 2011; IS THAT RIGHT?

A. CORRECT.

Q. AND DO NOT INCLUDE ANY REGULAR SCHEDULED PREVENTIVE MAINTENANCE DURING THE COURSE OF THE YEAR LIKE YOU DESCRIBED, THAT THE MANUFACTURER SUGGESTS THAT IS NEEDED IN ORDER TO ENSURE RELIABILITY OF OPERATIONS, RIGHT?

A. THEIR PROCEDURE STATES THAT'S THE CASE, THAT ONLY THE INSTRUMENT MANUFACTURER DOES IT. THIS HAS AN INDICATION THAT P/M WAS DONE IN JANUARY. I PRESUMED ACCORDING TO THEIR OWN PROCEDURE THAT WAS DONE BY THE INSTRUMENT MANUFACTURER, NOT BY THE ANALYSTS IN THE LABORATORY.

THE KINDS OF THINGS THAT WERE DONE IN JANUARY, ERASED OLD FIRMWARE AND PUT IN NEW FIRMWARE, REPLACED THE MAIN BOARD, RECALIBRATED THE OVEN AND CRANE MOTORS. OH, GOSH, THERE SHOULD BE TRACING FOR ALL THOSE ACTIONS.

FOUND A COUPLE OF VALVES WERE DISCONNECTED BECAUSE NO PEAKS WERE OBSERVED, SO THEY CONNECTED THOSE VALVES.

REPLACED -- AND THE LAST THING IN HERE IS RAN EIGHT SEQUENCES OF 100 VIALS TO TEST THE INSTRUMENT.

SO THAT APPARENTLY CONSTITUTES THEIR MAINTENANCE DURING THE PERIOD.

Q. FOR EXAMPLE, WHEN THEY PUT NEW FIRMWARE, WHICH IS THE SOFTWARE OF THE PROGRAM?

A. OH, I'M PRETTY SURE -- I'M NOT AN I.T. PERSON, BUT

THERE IS A DIFFERENCE BETWEEN SOFTWARE AND FIRMWARE.

Q. IN ANY EVENT, FIRMWARE AND MAIN BOARD WERE REPLACED?

A. YES.

Q. THERE WAS REVALIDATION OF THE INSTRUMENT, WAS THERE NOT?

A. EXACTLY. THEY ARE DOING SIGNIFICANT CHANGES, RECALIBRATING OVENS AND SO FORTH, REPLACING THE MAIN BOARD AND NOT TESTING AND EVALUATING THE PERFORMANCE OF THE INSTRUMENT BEFORE THEY START USING IT TO RUN SAMPLES.

Q. THEY RAN EIGHT SAMPLES?

A. EIGHT SEQUENCES OF 100 VIALS TO TEST THE INSTRUMENT. NEITHER THE SPECS OR REQUIREMENTS FOR SUCH A TEST IS DOCUMENTED IN THE PROCEDURES, SO I DON'T KNOW WHAT THAT CONSISTS OF.

MR. JOHNSON: THAT'S ALL I HAVE.

THE COURT: THANK YOU.

MS. SEIFF: THANK YOU, YOUR HONOR.

CROSS-EXAMINATION:

BY MS. SEIFF:

Q. GOOD MORNING, MISS ARVISO. MISS ARVISO, YOU'VE NEVER ACTUALLY WORKED IN A FORENSIC LABORATORY IN CALIFORNIA; IS THAT CORRECT?

A. NOT ANYWHERE, NO.

Q. AND HAVE YOU ACTUALLY AUDITED THE SANTA CLARA COUNTY CRIME LAB?

A. NO.

Q. HAVE YOU VISITED THE SANTA CLARA COUNTY CRIME LAB?

A. NO, BUT I WOULD BE HAPPY TO.
Q. CURRENTLY, WHAT PERCENT OF YOUR COURT APPEARANCES WOULD YOU SAY ARE IN CRIMINAL CASES?
A. WHAT DO YOU MEAN BY CURRENTLY; IN THE LAST YEAR?
Q. SURE.
A. IN THE LAST YEAR, 100 PERCENT HAS BEEN CRIMINAL CASES.
Q. APPROXIMATELY, OF THOSE IN THE LAST YEAR THAT YOU'VE TESTIFIED IN CRIMINAL CASES, HOW OFTEN ARE THEY FOR THE DEFENSE?
A. ALL THE TIME.
Q. HOW MANY SCHEDULED COURT APPEARANCES OTHER THAN THIS ONE DO YOU HAVE SCHEDULED THIS WEEK?
A. I'M SORRY, HOW MANY DO I HAVE SCHEDULED --
Q. I'LL WAIT ONE SECOND.
(INTERRUPTION, JUROR'S PHONE.)
BY MS. SEIFF:
Q. THE QUESTION WAS, OTHER THAN THIS TESTIMONY IN THIS CASE, HOW MANY OTHER SCHEDULED COURT APPEARANCES DO YOU HAVE THIS WEEK?
A. THIS WEEK, COURT APPEARANCES, NONE.
Q. HOW ABOUT IN THE LAST MONTH?
A. THAT'S HARD TO DO WITHOUT MY CALENDAR. I DON'T -- I'M NOT SURE IF I TRAVELED IN FEBRUARY AT ALL. FREQUENTLY, I DO REVIEWS AND IT DOESN'T CULMINATE IN TESTIMONY. I DID DO A DEPOSITION, A VIDEO DEPOSITION IN A GUNSHOT RESIDUE CASE; I THINK THAT WAS IN FEBRUARY, BUT I DIDN'T TRAVEL FOR THAT.

Q. WHERE ARE YOU TRAVELING FROM?
A. ALBUQUERQUE.
Q. HOW MANY TIMES HAS MR. JOHNSON OR HIS FIRM HIRED YOU TO TESTIFY IN A DUI TRIAL?
A. ONE OTHER ONE BESIDES THIS CASE.
Q. HAS HE HIRED YOU TO REVIEW DOCUMENTS IN OTHER CASES?
A. MANY YEARS AGO, YEARS AGO IN A CIVIL CASE, I BELIEVE.
Q. DO YOU GET PAID BY HOURLY RATE, OR IS IT COURT APPEARANCE; HOW DOES THAT WORK?
A. HOURLY RATE REGARDLESS OF THE ACTIVITY, WHETHER I'M TRAVELING, TESTIFYING, REVIEWING, WHATEVER.
Q. WHAT IS THAT HOURLY RATE?
A. $150 AN HOUR.
Q. THAT'S YOUR RATE INCLUDING THE TIME TO TRAVEL HERE AND THE TIME TO TRAVEL BACK?
A. THAT'S CORRECT, BUT I DON'T BILL MORE THAN EIGHT HOURS A DAY. SO IF I PULL A RED EYE, YOU GET A BARGAIN.
Q. YOU TESTIFIED THAT YOU SPENT SOME TIME REVIEWING THE DOCUMENTS FOR THIS CASE, AND ALSO YOU PREVIOUSLY REVIEWED SOME DOCUMENTS FROM THE SANTA CLARA COUNTY CRIME LAB; IS THAT RIGHT?
A. YES.
Q. YOU'RE GETTING THE $150 PER HOUR THAT IT TAKES YOU TO REVIEW ALL OF THAT?
A. YES.
Q. NOW, APPROXIMATELY HOW MANY HOURS WOULD YOU SAY IT

TOOK YOU TO PREPARE FOR YOUR TESTIMONY TODAY FOR THIS CASE?
A. ABOUT THREE HOURS.
Q. YOU BASE YOUR TESTIMONY TODAY ON SOME WORK YOU'VE DONE FOR THE OTHER CASE YOU TESTIFIED FOR MR. JOHNSON?
A. IT WAS CERTAINLY PART OF MY CONTEXT. I STILL REMEMBERED IT, I HAD IT ACCESSIBLE, COULD REFER TO IT.
Q. HOW MANY HOURS DID YOU SPEND REVIEWING THOSE DOCUMENTS THAT YOU BASED YOUR TESTIMONY ON HERE TODAY?
A. I DIDN'T GO BACK AND ATTEMPT TO MAKE ANOTHER REVIEW OF THE DOCUMENTS. I SIMPLY WENT BACK AND PULLED, SELECTED ONES TO SEE IF THE SITUATION WAS THE SAME WITH THAT AS IT WAS WITH THIS ONE, SO THAT WAS JUST PART OF MY THREE HOURS.
Q. BUT THAT WAS FOR THIS CASE?
A. YES.
Q. MY QUESTION IS, FOR THE PREVIOUS CASE YOU TESTIFIED IN FOR MR. JOHNSON, APPROXIMATELY HOW MANY HOURS DID YOU SPEND REVIEWING THOSE MATERIALS OF WHICH YOU HAVE BASED SOME OF YOUR TESTIMONY ON TODAY?
A. I'M SORRY, I DON'T REMEMBER. I WOULD HAVE TO GO BACK AND LOOK. IT WAS MORE TIME; THE RECORDS WERE CONSIDERABLY MORE VOLUMINOUS THAN THE ONES RECEIVED IN THIS CASE.
Q. SPEAKING OF THAT, WHEN DID YOU DO THAT REVIEW FOR THE PRIOR CASE?
A. LAST WINTER. DO YOU NEED IT MORE SPECIFIC THAN THAT?
Q. WELL, THERE WAS TESTIMONY THAT YOU PREPARED THAT ONE DOCUMENT, DEFENSE EXHIBIT R, WHICH YOU DATED FEBRUARY 2,

2010?

A. I DID NOT PREPARE THAT DOCUMENT. ACTUALLY, THE STATE BROUGHT THAT DOCUMENT, AND THE FIRST TIME I SAW IT WAS DURING MY TESTIMONY IN DECEMBER --

Q. DID YOU WRITE THE FEBRUARY --

A. I DID, THAT'S MY HANDWRITING AS OF THAT DATE. I WANT TO MAKE IT CLEAR THAT I'M NOT SAYING THIS FOREVER AND EVER; THIS IS A DISCRETE ASSESSMENT AS OF THAT DATE.

Q. AS OF FEBRUARY 2?

A. THAT'S CORRECT.

Q. YOU INDICATE YOU PULLED SOME SELECT DOCUMENTS FROM YOUR REVIEW OF THE LAST CASE TO PREPARE FOR THIS CASE; IS THAT RIGHT?

A. YES.

Q. YOU REVIEWED SOME NEW DOCUMENTS THAT WERE PROVIDED THAT ARE SPECIFIC TO THIS CASE; IS THAT CORRECT?

A. THAT'S CORRECT.

Q. NOW, DID YOU REVIEW ANY NEW DOCUMENT IN TERMS OF THE LAB'S POLICY AND PROCEDURE OR ANYTHING OF THAT NATURE NOT SPECIFIC TO THE TESTING IN THIS CASE SINCE YOU TESTIFIED IN THE LAST TRIAL?

A. LET ME MAKE SURE I UNDERSTAND YOUR QUESTION.

SOMETHING THAT I HADN'T READ PREVIOUSLY, SOMETHING THAT WAS COMPLETELY NEW SINCE DECEMBER? I DON'T BELIEVE THERE ARE ANY. IF THERE ARE, I'M UNAWARE OF THEM.

Q. LET ME REPHRASE MY QUESTION. DID YOU DO, DID YOU REVIEW ANY DOCUMENTS FROM THE CRIME LAB -- AND I'M PURPOSELY EXCLUDING THE ONES SPECIFIC ON THE TESTING DONE FOR THIS

CASE THAT YOU TESTIFIED ABOUT HERE SOMEWHAT TODAY. WAS THERE ANY REVIEW OF MATERIALS OF THE CRIME LAB THAT WERE NEW OR DIFFERENT FROM WHAT YOU DID IN THE PREVIOUS CASE?

A. THAT WERE NEW OR DIFFERENT? THEY HAD UPDATED THEIR STANDARD OPERATING PROCEDURE IN FEBRUARY OF 2011, BUT I WAS AWARE OF THAT AND HAD SEEN THAT PREVIOUSLY.

AT THE TIME I WAS REVIEWING IT, IT DIDN'T APPLY TO THE WORK IN THAT CASE BECAUSE IT WAS EARLIER. IT DOES APPLY TO THE WORK IN THIS CASE. THAT'S REALLY THE ONLY THING I CAN THINK OF. I'M NOT SURE I REALLY UNDERSTAND WHAT YOU MEAN BY NEW AND DIFFERENT. I DIDN'T GET A LOT OF MATERIAL; I GOT A RELATIVELY SMALL AMOUNT OF MATERIAL IN THIS CASE.

Q. THAT WAS MATERIAL SPECIFIC TO THE TESTING AND PROCEDURES USED IN THIS CASE?

A. THAT'S CORRECT. SOME CAME VERY RECENTLY.

Q. YOU TESTIFIED THAT YOU ARE AN AUDITOR, YOU GO AROUND AND AUDIT VARIOUS LABS; IS THAT CORRECT?

A. YES.

Q. YOU TESTIFIED YOU NEVER AUDITED THE SANTA CLARA COUNTY CRIME LAB?

A. NO.

Q. HAVE YOU AUDITED ANY OTHER FORENSICS LABORATORIES IN CALIFORNIA?

A. I HAVEN'T. I HAVE A COURT ORDER TO AUDIT ONE IN SANTA BARBARA, THAT MAY HAPPEN THIS WEEK, BUT NO, I HAVE NOT AS OF TODAY.

Q. NOW, YOU SPENT SOME TIME ON DIRECT TESTIFYING ABOUT, IN YOUR OPINION, THE LACK OF TRACEABILITY IN THE

SANTA CLARA COUNTY CRIME LAB. WHAT WOULD BE THE NUMERICAL VALUE THAT YOU WOULD ASSIGN TO THE ERROR FOR NOT HAVING TRACEABILITY?

A. I THINK THAT'S A QUESTION THAT REALLY CAN'T BE ANSWERED. THERE IS NOT A MEANS OF ASSIGNING A NUMERICAL VALUE TO UNCERTAINTY IN THE ABSENCE OF TRACEABILITY. NOT A SCIENTIFICALLY RELIABLE MANNER OR SUPPORTABLE MANNER. I'M NOT SURE I UNDERSTAND YOUR QUESTION.

Q. WELL, YOU'RE TESTIFYING IN YOUR OPINION, AGAIN, THAT THERE IS NO TRACEABILITY, AND THAT IMPACTS THE OVERALL RELIABILITY OF THE TEST RESULTS THEY ARE PRODUCING; IS THAT CORRECT?

A. CORRECT.

Q. TO WHAT EXTENT IS THAT LACK OF TRACEABILITY IMPACTING THE RELIABILITY OF THEIR RESULT?

A. OKAY. WHAT IT MEANS IS THAT THEIR RESULTS CANNOT BE REPORTED WITH AN ASSOCIATED SCIENTIFICALLY DEFENSIBLE UNCERTAINTY. WE KNOW, AS SCIENTISTS, EVERY MEASUREMENT WE MAKE HAS AN UNCERTAINTY ASSOCIATED WITH IT. IF YOU'RE MEASURING THE LENGTH OF THIS PEN AND USING AN ELEMENTARY SCHOOL RULER WITH VERY FEW LITTLE MARKS ON IT, YOU'RE GOING TO GET A DIFFERENT NUMBER WITH LARGER UNCERTAINTY THAN YOU WOULD IF YOU MEASURED THIS WITH HIGH PRECISION CALIPERS THAT EXIST IN MANUFACTURING FACILITIES. SO EVERY MEASUREMENT HAS UNCERTAINTY ASSOCIATED WITH IT.

IF YOU KNOW THE SOURCES OF UNCERTAINTY, YOU CAN QUANTIFY IT. THE PROBLEM HERE IS WE DON'T HAVE A DOCUMENTARY BASIS FOR KNOWING ALL THE SOURCES AND

QUANTIFYING ALL SOURCES OF UNCERTAINTY. SO YOU CAN GET AN ASSUMPTION, THIS IS A NUMBER WE GOT, THERE'S AN UNCERTAINTY ASSOCIATED WITH IT, BUT I CAN'T TELL YOU HOW BIG OR HOW SMALL THE UNCERTAINTY IS.

Q. YOUR TESTIMONY IS YOU CAN'T DETERMINE HOW MUCH THAT IS GOING TO IMPACT THE RELIABILITY IF THERE ISN'T TRACEABILITY?

A. NO. DURING THE COURSE OF AUDITING, WHEN AN ANALYST IS USING A VOLUME TIPET, I'VE ASKED, WHAT'S YOUR DOCUMENTATION TO DEMONSTRATE THE CALIBRATION FAULT OF THAT TIPET.

OH, FRED DID IT, HE TOLD ME IT'S OKAY, SO I USED IT. WELL, LET'S CHECK THIS. AND WHEN WE WOULD CHECK IT, IT WOULD BE OUT OF SPEC BY 30 OR 40 PERCENT; THEY WERE SHOCKED. THAT'S THE KIND OF THING THAT YOU CAN CHECK IN AN AUDIT IF THEIR SYSTEM DOESN'T DEMONSTRATE.

IF I ACTUALLY WAS AUDITING THE LAB, ASKING THEM TO CHECK THINGS IN, WE COULD LOOK AT IT TODAY, BUT WE CAN'T GO BACK AND SEE WHAT IT WAS WHEN IT WAS DONE. THAT'S WHY IT NEEDS TO BE CONTEMPORANEOUS

Q. BUT AGAIN, TO BE CLEAR, YOU HAVE NOT DONE THAT?

A. I HAVE NOT DONE THAT, NO.

MS. SEIFF: I HAVE NOTHING FURTHER. THANK YOU.

THE COURT: IT'S NOON. DO YOU ANTICIPATE --

MR. JOHNSON: I JUST HAVE A COUPLE QUESTIONS.

REDIRECT EXAMINATION:

BY MR. JOHNSON:

Q. REGARDING THAT, THAT YOU CAN'T ESTABLISH THAT

MEASUREMENT OF UNCERTAINTY, THAT'S BECAUSE THE LABORATORY HAS NOT ENGAGED IN A ROBUST SYSTEM THAT PROVIDES US THE INFORMATION TO ENABLE US TO DO THAT?

A. CORRECT. THE RECORDS YOU NEED TO DO SUCH A DETERMINATION DID NOT EXIST.

Q. MORE IMPORTANTLY, THE LAB CAN'T DO SO EITHER; IS THAT ACCURATE?

A. THAT'S CORRECT.

Q. I ANTICIPATE THE LAB COMING IN HERE AND SAYING, WE KNOW WE HAVE 0.11 AND YOU CAN'T GIVE US A NUMERICAL VALUE, THERE IS NO WAY THAT UNCERTAINTY CAN TAKE IT ALL THE WAY TO 0.08. WHAT'S YOUR RESPONSE TO THAT?

A. IT CERTAINLY CAN, AND I'VE SEEN CASES WHERE THAT WAS, INSTANCES WHERE THAT WAS THE CASE. IT'S PROBABLY ONE OF THE MOST FUNDAMENTAL PRECEPTS OF QUALITY ASSURANCE. IT'S IMPORTANT TO UNDERSTAND WHEN YOU'RE TRYING TO LOOK AT UNCERTAINTY IS THE LEVEL OF QUALITY CONTROL NECESSARY FOR ANY GIVEN MEASUREMENT IS THE FUNCTION OF THE INTENDED USE OF THAT MEASUREMENT.

IF YOU'RE GOING TO USE A MEASUREMENT AND DECIDE WHETHER OR NOT YOU DUMPED SOMETHING DOWN THE SANITARY SEWER OR SENT IT TO THE HAZARDOUS WASTE SITE OR WHAT NOT, THAT PROBABLY DOESN'T HAVE THE SERIOUS CONSEQUENCES AS IN A FORENSIC SETTING WHERE THERE'S A DISCRETE REGULATORY THRESHOLD, IF YOU WILL, AND WHETHER OR NOT THAT THRESHOLD IS EXCEEDED IS IMPORTANT, AND THERE IS IMPORTANT CONSEQUENCES FOR THAT. IN THAT KIND OF CIRCUMSTANCE, THAT'S REALLY IMPORTANT. THE LEVEL OF QUALITY CONTROL NECESSARY TO

SUPPORT SUCH A DETERMINATION IS GREATER IF THE INTENDED USE OF THE DATA IS MORE IMPORTANT.

SO, IF WE WERE DOING A LOT OF PRODUCTION LAB MEASUREMENTS IN SUPPORT OF A RELATIVELY STRAIGHTFORWARD, NO BIG CONSEQUENCES KIND OF DECISION, THEN IT'S NOT A PROBLEM. THE KINDS OF ISSUES THAT WE HAVE SEEN MAY NOT BE A PROBLEM, BUT WHEN YOU'RE MAKING IMPORTANT DECISIONS, FOR EXAMPLE, IMPORTANT FISCAL DECISIONS, LIKE IN ENVIRONMENTAL PROGRAMS WHERE THERE IS BIG FINANCIAL CONSEQUENCES FOR A RESULT, THIS KIND OF PERFORMANCE, USE OF A SINGLE COLUMN, REPORTING RESULTS OF UNCERTAINTY WOULD SIMPLY NOT BE ACCEPTABLE, BECAUSE IT WOULD BE INSUFFICIENT USE OF DATA BECAUSE AN IMPORTANT DECISION WAS BEING BASED ON THAT MEASUREMENT.

MR. JOHNSON: THAT'S ALL I HAVE.

THE COURT: MAY THIS WITNESS BE EXCUSED? DO YOU WISH HER TO REMAIN THIS AFTERNOON?

MS. SEIFF: NO, YOUR HONOR.

MR. JOHNSON: SHE IS GOING TO STICK AROUND.

THE COURT: YOU'RE EXCUSED, BUT IF COUNSEL WISHES YOU TO REMAIN, THAT'S HIS DECISION.

THANK YOU VERY MUCH. WE'LL TAKE OUR LUNCHEON RECESS. 1:30, LADIES AND GENTLEMEN.

(THE LUNCHEON RECESS WAS TAKEN.)

REPORTER'S CERTIFICATE

I, SUE HERFURTH, DO HEREBY CERTIFY THAT THE FOREGOING IS A FULL, TRUE AND CORRECT TRANSCRIPT OF THE TESTIMONY OF THIS WITNESS IN THE WITHIN-ENTITLED ACTION ON THE 6TH DAY OF MARCH, 2012.

THAT I REPORTED THE SAME IN STENOTYPE, BEING A QUALIFIED AND ACTING PRO TEM REPORTER OF THE SUPERIOR COURT OF THE STATE OF CALIFORNIA, IN AND FOR THE COUNTY OF SANTA CLARA, APPOINTED TO SAID COURT, AND THEREAFTER THE SAME WAS TRANSCRIBED BY COMPUTER UNDER MY DIRECTION AS HEREIN APPEARS.

I HAVE ADHERED TO CIVIL CODE OF PROCEDURE SECTION 237(1)(2), SIXTH DISTRICT COURT OF APPEAL MISCELLANEOUS ORDER 96-02, BY SEALING THROUGH REDACTION OF ALL REFERENCES, IF ANY, TO JUROR-IDENTIFYING INFORMATION, INCLUDING BUT NOT LIMITED TO NAMES, ADDRESSES AND TELEPHONE NUMBERS.

DATED THIS 15TH DAY OF JULY, 2012.

_____
SUE HERFURTH, C.S.R.
CERTIFICATE NO. 9645