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SUPERIOR COURT OF NEW JERSEY
COUNTY OF MONMOUTH
LAW DIVISION-CRIMINAL PART
DOCKET NO. A-4384-09T3
A-4775-09T3

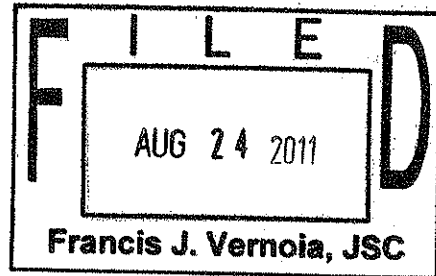
STATE OF NEW JERSEY,

Plaintiff-Appellant,

v.

NICOLE HOLLAND,

Defendant-Respondent,



STATE OF NEW JERSEY,

Plaintiff-Respondent,

v.

KENNETH PIZZO, JR.,

Defendant-Appellant,

FINDINGS AND CONCLUSIONS OF REMAND COURT

On remand from Superior Court of New
Jersey, Appellate Division, Docket Nos.
A-4384-09T3 and A-4775-09T3

Findings and Conclusions Submitted to the
Appellate Court: August 24, 2011

Monica do Outeiro, Assistant
Prosecutor, argued the cause for the

State of New Jersey, (Peter E. Warshaw Jr., Monmouth County Prosecutor, attorney; Patricia Quelsh, Assistant Prosecutor, Robyn Mitchell, Deputy Attorney General, and John Dell'Aquilo, Deputy Attorney General, of counsel; Ms. do Outeiro, on the brief).

John Menzel argued the cause for appellant Kenneth Pizzo, Jr.

Alexander M. Iler argued the cause for respondent Nicole Holland.

FRANCIS J. VERNIOIA, J.S.C.

This matter comes before this court pursuant to a remand from the Appellate Division in the consolidated matters of State v. Holland and State v. Pizzo. State v. Holland, ___ N.J. Super. ___ (App. Div. 2011). In the Appellate Division's April 5, 2011, opinion, the consolidated cases were remanded "for a hearing before a single judge to be designated by the Assignment Judge of Monmouth County to establish the reliability of the Alcotest results and the validity of the Traceable Certificate of Calibration for Digital Thermometer at the time of the Alcotest's calibration in each case." Id. (slip op. at 22-23). This court received the designation, held a number of case management conferences with counsel, and conducted the hearing on May 25, 26 and 27, 2011. Counsel submitted post-hearing briefs. Based upon the evidence presented and after full consideration of the arguments of counsel, this court makes the following findings of fact and law.

I. The Issues Presented

The Appellate Division's decision provides the procedural history and factual background of the Holland and Pizzo matters which need not be repeated here. It is that background, however, which provides the context for the specific issues which this court was directed to consider and decide. Ms. Holland and Mr. Pizzo were charged in separate towns on separate occasions with the offense of Driving While Intoxicated contrary to N.J.S.A. 39:4-50. Both defendants were administered a breath test using separate Alcotest 7110 MKIII-C breath-testing devices ("Alcotest"). In both cases, the blood alcohol concentrations ("BAC") exceeded the limit set forth in N.J.S.A. 39:4-50.

The common thread between the Holland and Pizzo matters was that the separate Alcotests which were used to obtain the BAC in each case had been calibrated, in part, using a "Control Company, Inc. ("Control Company") digital thermometer instead of the Ertco-Hart digital thermometer referenced in State v. Chun." Id. (slip op. at 2) (citations omitted). The Appellate Division concluded that the Chun Court's various references to the Ertco-Hart digital thermometer did not "mandate that only the Ertco-Hart device could be used" during the Alcotest calibration process. Id. (slip op. at 14-15). The court held that "the use of another [i.e., other than the Ertco-Hart] manufacturer's temperature probe to calibrate the Alcotest machine does not

alone compel the exclusion of [Alcotest] results" Id.
(slip op. at 18).

While the use of a digital thermometer (other than the Ertco-Hart device referred to in Chun) during the Alcotest calibration process does not "automatically" render Alcotest BAC results inadmissible, "the State still bears the burden of demonstrating the 'proper working order' of the device." Ibid. The State meets this burden by introducing "into evidence the three core foundational documents" and producing the "other foundational documents in discovery" as defined in Chun. Ibid. (Citation omitted).¹ As found by the Appellate Division, "the State [has] done both in the Holland and Pizzo matters." Ibid.

Because the State introduced "the core documents into evidence and produced the other foundational documents in discovery," the "burden of production" has "shift[ed] to the defendant[s] to show why the [Alcotest] was not in working order." Ibid. Application of those principles to the Holland and Pizzo matters requires the defendants to show "whether and how the differences in the [Control Company and Ertco-Hart

¹ The three core foundational documents defined in Chun include, "(1) the most recent calibration report prior to a defendant's test, with part I--control tests, part II--linearity tests, and the credentials of the coordinator who performed the calibration; (2) the most recent new standard solution report prior to a defendant's test; and (3) the certificate of analysis of the 0.10 simulator solution used in a defendant's control tests." State v. Chun, 194 N.J. 54, 160, cert. denied, 555 U.S. 825, 129 S. Ct. 158, 172 L. Ed. 2d 41 (2008). In this matter, and as discussed infra, the State introduced the three foundational documents into evidence in the Holland and Pizzo trial courts. State v. Holland, ___ N.J. Super. ___, ___ (App. Div. 2011) (slip op. at 18).

digital thermometers] had any impact at all" upon the "working order" of the Alcotests. Ibid.

After establishing the foregoing analytical paradigm, the Appellate Division addressed the specific issues which this court, on remand, was directed to address. First, the court noted that in the Holland and Pizzo matters, questions were raised "based upon the foundational document itself." Id. (slip. op. at 19). The court noted that certain terms and references on the Control Company Traceable Certificate of Calibration for Digital Thermometer were unclear. The Appellate Division held that "as part of its ultimate burden to clearly establish the good working order of the device, the onus of explaining any facial irregularity in the foundation documents that might affect the proper operation of the device in question lay with the State." Id. (slip op. at 20-21). The Appellate Division, therefore, directed that this court, on remand, "determine, among other issues validly raised by defendant Holland, whether the Control Company temperature probe was properly certified on May 26, 2009, pursuant to the Traceable Certificate of Calibration of Digital Thermometer." Id. (slip op. at 21 & n.8). While the Appellate Division defined that issue in the context of the Holland matter, the court reached the "same result" in the Pizzo matter. Id. (slip op. at 22).

Second, the Appellate Division noted that the "State has represented that it will be able to demonstrate that its change of manufacturer 'holds no significance' and the 'the Control Company Inc. temperature probe is comparable to its Ertco-Hart-manufactured counterpart and meets the Special Master's requirements of traceability to internationally-recognized NIST standards.'" Ibid. The Appellate Division, therefore, directed that this court, on remand, determine the "reliability of the Alcotest results and the validity of the Traceable Certificate of Calibration for Digital Thermometer at the time of the Alcotest's calibration . . . " in the Holland and Pizzo matters. Id. (slip op. at 22-33).

II. Definitions

The pieces of equipment at issue in this case have been referred to as "digital thermometers," "temperature probes," "devices," "external NIST traceable temperature probes" and as "Digital NIST Temperature Measuring Systems." See Holland, supra, ___ N.J. Super. ___; State v. Chun, 194 N.J. 54, cert. denied, ___ U.S. ___, 129 S. Ct. 158, 172 L. Ed. 2d 41 (2008). While each of those terms in context may accurately describe all or part of the actual equipment which is the subject of this opinion, it is important to recognize the separate components which comprise the equipment and for this court to identify the nomenclature it will use to define those components.

The Control Company and Ertco-Hart digital thermometers which are the subject of this case consist of two essential components. The first is a "temperature probe," which is a slender cylindrical piece of metal, about nine and three quarter inches in length for the Control Company and Ertco-Hart temperature probes. In each case, one end of the temperature probe is connected to an attached cord. The metal portion of the "temperature probe" is a sensor which is affected by the temperature of the substance into which it is inserted.

The cord at the end of the "temperature probe" can be connected to the second of the two essential components of a "digital thermometer," which is the "digital read out device." The "digital read out device" displays the temperature of a substance as sensed by the "temperature probe."

The coupling of the "temperature probe" with the "digital read out device" creates what would be more commonly referred to as a thermometer, a device capable of reading the temperature of a particular substance. In this opinion, infra, all references to a "temperature probe" and "digital read out device" shall be to those respective components of a "digital thermometer." References to "digital thermometer" shall be to the combination of the "temperature probe" and "digital read out device" collectively functioning as a thermometer.

III. The Witnesses

The State presented two witnesses, New Jersey State Trooper Thomas Snyder and Dr. David Baum, the Director of the New Jersey State Police Office of Forensic Sciences. The defendants did not call any witnesses.

A. Dr. David Baum

Dr. Baum has been employed by the New Jersey State Police as the Director of the Office of Forensic Sciences since March 17, 2008. The Office of Forensic Sciences is a "section" within the New Jersey State Police Investigations Branch. The New Jersey State Police Alcohol Drug Testing Unit ("ADTU") is a "section" of the Investigations Branch of the State Police. The ADTU oversees the Chemical Breath Testing Program in the State of New Jersey, as well as the standardized Field Sobriety Testing in the State.

As the Director of the Office of Forensic Sciences, Dr. Baum is in charge of six laboratories in the State of New Jersey and is responsible for all forensic testing performed by the State Police. He provides services for DNA testing, serology, drug testing, toxicology testing, anthropology, and equine testing. He also provides scientific guidance and scientific decisions for the ADTU. His duties include the purchase of, and/or the approval of the purchase of, the scientific equipment for the various State Police laboratories. Dr. Baum is the

scientific decision maker and adviser for the ADTU and the Alcohol and Drug Testing Program. He promulgates the procedures and protocols which are followed in the field, approves the equipment and validates any of the equipment required to administer the program, including the Alcotest. He is responsible for any Alcotest data. He examines the data for the Alcotests for quality assurance purposes. His office tests and certifies the simulator solutions used with the Alcotests.

Prior to his employment as Director of the Office of Forensic Sciences, Dr. Baum worked in the Office of the Chief Medical Examiner for the City of New York for eighteen years. In that position he was the First Assistant Director, then Deputy Director of the Forensic Biology Department. He was also in charge of the DNA program at the Office of the Chief Medical Examiner. During "9/11," Dr. Baum had scientific control over all DNA information utilized for the World Trade Center body identifications. Prior to working at the Office of the Chief Medical Examiner, Dr. Baum was employed at Life Codes Corporation, the first forensic DNA laboratory in the United States.

Dr. Baum has held teaching positions as an Adjunct Assistant Professor at New York Medical College and as an Assistant Professor of Forensic Medicine at New York University Medical School. He received a Bachelor of Science degree in

Biology with a concentration in Biochemistry in 1979 from Cornell University. He received a Doctor of Philosophy degree in Biochemistry with a concentration in Molecular Biology from Brandeis University.

Dr. Baum has extensive hands-on laboratory experience, which he gained during laboratory work in Graduate School, while at Life Codes Corporation and while employed by the city of New York. He has done a small amount of hands-on laboratory work while at the New Jersey State Police. He estimates that he has utilized a thermometer during his laboratory work between one hundred thousand to a million times. He has used NIST traceable thermometers. On a very limited basis, he has utilized the digital thermometers manufactured by Control Company and Ertco-Hart.

He has evaluated laboratory equipment and scientific measuring equipment. He was responsible for the evaluation of equipment at Life Codes, in the New York City Medical Examiner's Office, and for the New Jersey State Police. Dr. Baum has received training regarding the Alcotest, including operational certification training from the New Jersey State Police, Draeger Alcotest factory training, training from the ADTU in the laboratory, and one field training during which Alcotest calibrations were performed by a Breath Test Coordinator.

Dr. Baum is certified by the American Society of Crime Laboratory Directors Laboratory Accreditation Board, is an ISO 17025 Laboratory Assessor and is certified by the FBI as a DNA Auditor. A Laboratory Assessor performs field inspections and evaluations of laboratories to determine if they are in compliance with the standards for accreditation. Based upon such inspections and evaluations, accreditation bodies decide whether to award accreditation.

Dr. Baum has testified on more than thirty-five occasions as an expert in DNA testing, molecular biology, forensic DNA testing, statistics and, on one occasion in a New Jersey municipal court, in the area of digital thermometers. He has testified as an expert in New York, Connecticut, Florida and New Jersey.

Dr. Baum was offered as an expert in the New Jersey Breath Testing Program and in scientific measurement. Without objection by the defendants, Dr. Baum was so qualified by the court.

B. New Jersey State Trooper Thomas Snyder

Thomas Snyder has been employed as a Trooper by the New Jersey State Police for twelve and a half years. Trooper Snyder has an Associates Degree in Science from Ocean County College, where he graduated with honors. He has a Bachelor of Arts degree in Criminal Justice from Richard Stockton College and a

Masters Degree from Seton Hall University in Police Graduate Studies.

Trooper Snyder is currently assigned to the New Jersey State ADTU. He has been assigned to that unit since February of 2006.

Within the ADTU, Trooper Snyder is employed as a Breath Test Coordinator and Instructor. In that capacity he calibrates, maintains and trouble shoots the Alcotests for the various police departments and any State Police facilities within his assigned area. Trooper Snyder's assigned area includes portions of Monmouth and Ocean Counties.

Trooper Snyder's training as a Breath Test Coordinator began prior to his assignment to the ADTU and has continued thereafter. He has attended numerous courses, including training programs regarding the operation of the Breathalyzer, the performance of standardized field sobriety testing, drug recognition, and the operation of the Alcotest. His training includes a ten day Alcotest Instructor course which qualified him to perform his duties as an Alcotest coordinator and instructor, a two day Draeger Operator and Maintenance Training course, and attendance at the six day, Robert Borkenstein course on alcohol and highway safety at the University of Indiana. That course was taught by the world's leading experts on alcohol and chemical breath testing.

Trooper Snyder has substantial field training as a Breath Test Coordinator. From the commencement of his assignment to the ADTU in February 2006 until he was qualified as a Breath Test Coordinator by the Attorney General's Office in June of 2006, he obtained field training on the calibration, maintenance and trouble shooting of the Alcotest by accompanying experienced certified coordinators in the ADTU during the performance of their duties. Trooper Snyder is a certified operator, coordinator and trainer on the Alcotest.

Trooper Snyder calibrates the Alcotests which are used by state and municipal law enforcement agencies within his geographical area. He has calibrated approximately 700 Alcotests since he became a Breath Test Coordinator. Trooper Snyder has conducted approximately 300 calibrations using the Ertco-Hart digital thermometer and approximately 400 calibrations using the Control Company digital thermometer. During Trooper Snyder's performance of the 400 recalibrations with the Control Company digital temperature device, he has never had any issues with the operation or performance of the Control Company digital thermometer.

He has testified as an expert in Mercer, Middlesex, Monmouth and Ocean counties, and within numerous municipalities. He was qualified in those cases as an expert in the Alcotest,

Standardized Field Sobriety Testing, and/or as a Drug Recognition Expert.

Trooper Snyder was offered by the State as an expert on the New Jersey Breath Testing Program, Alcotest calibration, and the operation of the Alcotest. Without objection from the defendants, Trooper Snyder was so qualified by the court. Trooper Snyder was not offered as a scientific expert by the State. He does not have knowledge regarding the manner in which the electronics of a digital thermometer work. He is not an expert on the issue of traceability, although he has general knowledge regarding that concept.

IV. The Court's Findings on the Credibility of the Witnesses

The court closely observed Trooper Snyder and Dr. Baum testify at the hearing. The court carefully listened to their testimony and the manner in which it was provided. Based upon those observations, the court finds they each testified in a consistently credible manner. Each witness answered the questions posed in a direct and forthright manner, without hesitation and without any suggestion of falsehood or deception. The court finds their testimony to be credible in all respects. There was nothing in the content of their testimony, or the manner in which it was provided, which causes this court to conclude otherwise.

The court's finding as to credibility is also founded upon the witnesses' qualifications and experience in their respective fields of expertise. Each has substantial training and experience which causes this court to conclude with confidence that the information which they provided during the hearing was correct and credible. On the issues of scientific measurement, the comparability of the digital thermometers, and the requisite functionality of the thermometers, Dr. Baum's academic record, his varied high level of experience as a laboratory scientist, his years of using thermometers for precision measurement in various contexts and his extensive experience as a scientist responsible for the evaluation, selection and purchase of scientific measurement devices provides for this court ample foundation upon which its finding of credibility rests.

V. Calibration of the Alcotests for Ms. Holland and Mr. Pizzo

Most broadly defined, calibration is the process through which a Breath Test Coordinator certifies that an Alcotest is in proper working condition. Each Alcotest must be calibrated every six months. Chun, supra, 194 N.J. at 153. In his role as a Breath Test Coordinator, Trooper Snyder calibrates the various Alcotests within his assigned geographical region at least every six months. Because the calibration of the Alcotest is valid and effective for only a six month period, Trooper Snyder

attempts to perform the calibrations prior to the six month deadline in the event of any "unforeseen possible events coming up." Once the calibration process begins on an Alcotest, the process must be completed, thereby validating the use of the Alcotest for the following six month period. Otherwise, the Alcotest must be taken out of service.

The process involved in an Alcotest calibration was described in detail in the Special Master's report. Findings and Conclusions of Remand Court, Feb. 13, 2007, reprinted in 2007 N.J. Lexis 39, 35-51 (hereinafter Special Master's Report). Moreover, the Appellate Division also described the calibration process in its opinion in this matter. Holland, supra, __ N.J. Super. __ (slip. op. at 7-10). It is unnecessary for this court to again describe the process or the manner in which Trooper Snyder performed it. That is because neither Ms. Holland nor Mr. Pizzo contends there was any deficiency in the process as performed by Trooper Snyder to calibrate the Alcotests which yielded their respective BAC readings. Exhibit S-2 in evidence was identified by Trooper Snyder as the "calibration check procedure for the Alcotest 7110 MKIII-C" device which he followed in his calibration of the Alcotests.

Trooper Snyder utilized a Control Company digital thermometer during the calibration of the separate Alcotests which yielded the BAC results at issue here. The Control

Company digital thermometer was used to measure the temperature of the various simulator solutions as part of the control and linearity tests during the respective calibrations of the Alcotests in Neptune City and Sea Girt.² The Control Company digital thermometers are employed for the sole purpose of insuring that the temperature of the various simulator solutions is 34.0 degrees Celsius at the time the control and linearity test portions of the calibrations process are conducted. There is a permissible tolerance of 0.2 degrees Celsius. As such, the temperature of the various simulator solutions used during the various stages of the calibration process must be between 33.8 and 34.2 degrees Celsius.

As Trooper Snyder obtains the temperatures of the various simulator solutions during the calibration process, he does not record the temperatures. He observes the temperatures on the digital read out device which is attached to the temperature probe by the cord. After confirming a simulator solution is at the correct temperature, Trooper Snyder turns the digital

² There are other "temperature probes" which are used during the calibration process. They include the Breath Test Coordinator's "Black Key" temperature probe and the local law enforcement agency's temperature probe. While those temperature probes are used during the calibration process, there is no issue presented in this matter regarding their use during the calibration of the Alcotests which yielded the BAC readings for Ms. Holland and Mr. Pizzo.

thermometer off, removes the temperature probe and returns it to its padded plastic container.³

There are four documents produced during the Alcotest calibration process. The first is the "Calibration Record." The second is the "Part I Control Tests" certificate. The third document is the "Part II-Linearity Tests" certificate. The fourth document is the "New Standard Solution Change Report." The Alcotest device prints each of those documents. In this case, those documents were introduced into evidence as Exhibit S-3 for the Neptune City Alcotest calibration performed by Trooper Snyder on May 26, 2009. See (S-3). Those documents for the Sea Girt calibration performed on March 6, 2009, were introduced into evidence as Exhibit S-4. See (S-4).

The Alcotests utilized to obtain the BAC results for Ms. Holland and Mr. Pizzo had been calibrated by Trooper Snyder prior to the administration of the respective breath tests of the defendants.

³ Trooper Snyder testified there could be situations during which a simulator's internal temperature measuring system reflects that the simulator solutions are within the necessary temperature range, but the digital thermometer reflects that the solutions are not within the required range. In such instances, the calibration process stops until Trooper Snyder determines if the problem is with the digital thermometer or with the simulator's internal temperature measuring system. Trooper Snyder described the manner in which he would resolve such a problem. No such circumstances were presented during the calibration of the Alcotests at issue in this matter. Therefore, this court does not address those possible circumstances.

A. The Holland Alcotest Calibration

Ms. Holland was arrested in Neptune City, Monmouth County, on June 24, 2009, and charged with Driving While Intoxicated, contrary to N.J.S.A. 39:4-50, and various other motor vehicle offenses. State v. Holland, No. MA 09-069 (Law Div. May 25, 2010) (slip. op. at 2). The Alcotest which was utilized to obtain Ms. Holland's BAC in connection with that arrest was Alcotest 7110, MKIII-C, serial number ARXD-0018. Trooper Snyder calibrated that Alcotest device on May 26, 2009, which was within six months of the administration of the Alcotest breath test upon Ms. Holland. (S-3).

Page 1 of Exhibit S-3 is the "Alcotest 7110 Calibration Record" for calibration of Alcotest device serial number ARXD-0018 conducted on May 26, 2009. (S-3 at 1). Page 2 of Exhibit S-3 is the "Alcotest 7110 Calibration Certificate" for the "Part I-Control Tests" portion of the calibration conducted on May 26, 2009. (S-3 at 2). Page 3 of Exhibit S-3 is the "Alcotest 7110 Calibration Certificate" for the "Part II-Linearity Tests" portion of the calibration done on May 26, 2009. (S-3 at 3). Those tests were performed by Trooper Snyder. Page 4 of Exhibit S-3 is the "Calibrating Unit New Standard Solution Report" for Alcotest serial number ARXD-0018 for the Neptune City Police Department conducted on May 26, 2009. (S-3 at 4).

B. The Pizzo Alcotest Calibration

Mr. Pizzo was arrested in Sea Girt, Monmouth County, on May 25, 2009, and charged with Driving While Intoxicated, contrary to N.J.S.A. 39:4-50, and various other motor vehicle offenses. State v. Pizzo, No. MA 09-078 (Law Div. May 21, 2010) (slip. op. at 1).

The Alcotest which was utilized to obtain Mr. Pizzo's BAC in connection with that arrest was Alcotest 7110, MKIII-C serial number ARXC-0081. Trooper Snyder calibrated that Alcotest device on March 6, 2009, which was within six months of the administration of the Alcotest breath test upon Mr. Pizzo. (S-4). Page 1 of Exhibit S-4 is the "Alcotest 7110 Calibration Record" for Alcotest serial number ARXC-0081 for the calibration conducted on March 6, 2009. (S-4 at 1). Page 2 of Exhibit S-4 is the "Alcotest 7110 Calibration Certificate" for the "Part I-Control Tests" portion of the calibration conducted on March 6, 2009. (S-4 at 2). Page 3 of Exhibit S-4 is the "Alcotest 7110 Calibration Certificate" for the "Part II-Linearity Tests" conducted on March 6, 2009. (S-4 at 3). Those tests were performed by Trooper Snyder. Page 4 of Exhibit S-4 is the "Calibrating Unit New Standard Solution Report" for Alcotest serial number ARXC-0081 for the Sea Girt Police Department conducted on March 6, 2009. (S-4 at 4).

Trooper Snyder does not have any independent recollection of the performance of the calibration procedures reflected on Exhibits S-3 and S-4. Exhibits S-3 and S-4 represent the record of the results obtained during the calibrations.

On the separate calibration records for Neptune City and Sea Girt, Trooper Snyder wrote in the serial numbers of the Black Key Temperature Probe and the "Digital NIST Temperature Measuring System" he utilized during the calibration processes. He used the same Black Key temperature probe and same "Digital NIST Temperature Measuring System" during the Neptune City and Sea Girt calibrations. The serial number of the "Digital NIST Temperature Measuring System" he used to calibrate the Neptune City and Sea Girt Alcotests which yielded Ms. Holland and Mr. Pizzo's respective BAC readings was 80637577. "Digital NIST Temperature Measuring System" is the term utilized to refer to the Control Company digital thermometer at issue in this matter. Each separate temperature probe has a separate and distinct serial number which is inscribed or written on the temperature probe.

VI. The Replacement of the Ertco-Hart Digital Thermometer

While the decision to replace the Ertco-Hart digital thermometer with one manufactured by Control Company is not an issue in this matter, the reasons for the decision provide

context for the first issue the Appellate Division directed this court to address -- whether the defendants have met their burden of showing "whether and how" any "differences in the [thermometers] had any impact at all" upon the "working order" of the Alcotests. Holland, supra, ___ N.J. Super. ___ (slip op. at 18).

When Dr. Baum commenced his employment as the Director of the Office of Forensic Sciences, the Ertco-Hart digital thermometers used during Alcotest calibrations were being calibrated by Draeger Safety, Inc. ("Draeger"). Draeger supplied an NIST Certificate of Traceability with each calibration. During the hearing a copy of a Draeger Safety NIST traceable certificate of calibration for an Ertco-Hart digital thermometer bearing serial number "A29881" was marked into evidence as D-1. Dr. Baum testified that D-1 was a sample of the Draeger Scientific Report provided in connection with its calibrations of the Ertco-Hart digital thermometers.

Draeger manufactures the Alcotest. It did not manufacture the Ertco-Hart digital thermometer. Draeger, however, calibrated the Ertco-Hart digital thermometers which were being utilized by the State Police to calibrate Alcotests. Dr. Baum recalled that at a point in time, Draeger decided it would no longer produce certificates of calibration. In response, Dr. Baum unsuccessfully attempted to find another laboratory to

perform the requisite calibrations of the digital thermometers in accordance with standards he felt were required. He was able to locate laboratories which would conduct a "performance check," but not a proper calibration. A "performance check" consists of an examination of the thermometer, without making any requisite adjustments to insure that it reads the proper temperature.

Dr. Baum began looking for a new thermometer because, by 2008, the Ertco-Hart digital thermometer was considered old-fashioned. It was what Dr. Baum described as "big, clunky, and heavy." Dr. Baum testified that, in fact, the Ertco-Hart digital thermometer previously used by the State Police is no longer made. Dr. Baum sought to obtain a more modern thermometer than the ones which had been used for the previous ten years. He sought a smaller digital thermometer because it would be easier to work with and less expensive because of newer and better technology. Dr. Baum reviewed a "VWR" catalog in search of an appropriate replacement digital thermometer. "VWR" is a company which sells scientific equipment. "VWR" was selected as a possible vendor because the State of New Jersey has a contract with "VWR" and, as such, the State Police is not required to bid out the purchase of the thermometers.

Prior to selecting a replacement digital thermometer, Dr. Baum considered the characteristics of the functions the

thermometer was required to perform during the Alcotest calibration process. Dr. Baum focused on the temperature characteristics the digital thermometers were required to measure during an Alcotest calibration and reviewed the Alcotest manual to determine the temperature characteristics needed.

Based upon his review of that information, and his thirty years of experience working with thermometers in various scientific and laboratory environments, he developed requirements for a replacement digital thermometer. Dr. Baum determined that the foremost requirement was that the digital thermometer provide a precise and accurate temperature.

He also determined the thermometer had to be traceable to the National Institute of Standards and Technology (NIST). The NIST is part of the U.S. Department of Commerce. It sets the standards for all measurement in the United States and defines what each unit of measure is in the United States. NIST traceability assured Dr. Baum that the thermometer would give an accurate result and that it would be correct.⁴

In an interoffice memorandum dated December 23, 2008 (S-11), Dr. Baum listed the characteristics he required of any replacement thermometer. First, he required that the digital thermometer accurately read a degree and that it was the right

⁴The Office of Forensic Sciences is required by its accreditation to have all of its laboratory equipment, if possible, NIST traceable.

degree. Second, he required the digital thermometer to be calibrated properly by a laboratory which complied with "Inter ISO," which is the International Standard Organization, standards 9001, 17025, and ANSI Z540-1. Dr. Baum required that the thermometer be calibrated by a laboratory which was accredited and complied with international standards for the calibration of thermometers.

An "accredited laboratory" is a laboratory that undergoes periodic inspections to insure its work product is both accurate and reliable. Periodic inspections include a major inspection every five years and what is called a surveillance visit every year. As such, accredited laboratories are inspected each year with a major inspection every five years.

If an inspection revealed that a laboratory did not meet either the international standards or was not following its own protocol, the laboratory would be required to remediate any problems and notify customers of any issues. Any identified issues must be corrected. Reports regarding any corrections must be made to the accrediting body so it can determine whether the corrections are sufficient. If a problem is successfully remediated, accreditation may continue. If any issues have not been corrected, accreditation could be removed or the laboratory could receive other sanctions including requiring additional inspections.

Lab accreditation provides an important assurance to scientists that the work produced by the laboratory is reliable.

Dr. Baum required calibration by an accredited laboratory because he sought to insure that accrediting bodies, independent and external to the laboratory, had performed external and independent inspections of the laboratory. It is through that process, and the independent scrutiny it provides, that a scientist is assured of a quality product from the laboratory. Such a requirement provided to Dr. Baum an assurance that any scientific equipment he purchased was accurate and reliable.

The third requirement for the replacement digital thermometer was that it could only be used for an Alcotest calibration during the period between its "calibration date" and its "calibration due date" (i.e., the date on which the calibration of the digital thermometer expires). As part of the accreditation process, the accrediting bodies consider and approve the time periods for which a laboratory certifies its calibrations.

The fourth requirement for the replacement digital thermometer imposed by Dr. Baum related directly to the functioning necessary to calibrate an Alcotest. More specifically, Dr. Baum required an accurate thermometer which could distinguish between 0.01 degrees Celsius between "0.0 to 110.0" degrees Celsius. While the calibration of the Alcotest

permitted a range for the simulator solutions of between 33.8 to 34.2 degrees Celsius, Dr. Baum required that the replacement thermometer read to the one-hundredth of a degree. This would enable it to distinguish between, for example, 33.99 degrees and 34.00 degrees. A very precise thermometer was required for that measurement.

In his consideration of the factors required for a replacement thermometer, Dr. Baum noted that the Draeger Safety calibrations of the Ertco-Hart digital thermometers did not include any representation or evidence that Draeger Safety was an accredited laboratory.

Dr. Baum found more than one thermometer which met his requirements, but chose the Control Company digital thermometer because it satisfied all of the requirements and could be purchased directly from "VWR" under the State contract.

VII. Defendants Failed to Meet Their Burden of Showing
"Whether and How the Differences" Between the Ertco-
Hart and Control Company Thermometers "Had any
Impact at All"

As detailed by the Appellate Division, the State's production during discovery of the foundational documents and introduction into evidence of three core documents in the Holland and Pizzo matters, shifted the burden of production to the defendants to "show why the [Alcotests were] not in working order" and more specifically with regard to those matters,

"whether and how the differences in the [digital thermometers] had any impact at all." Holland, supra, ___ N.J. Super. ___ (slip. op. at 18).

During the hearing, evidence was introduced regarding the differences between the two thermometers. This court's findings with regard to each of the identified differences are set forth separately below. A consideration of the differences, individually and collectively, causes this court to conclude that the Ertco-Hart and Control Company digital thermometers are comparable in all material respects and identical in the performance of the singular function required. They both accurately read and report the temperatures of the simulator solutions during the Alcotest calibration process. Defendants failed to "show" that any alleged differences "had [or have] any impact at all" upon the proper functioning of an Alcotest.

Ibid.

A. Differences Between the Ertco-Hart and Control Company Digital Thermometers

The differences between the two thermometers, as found as a matter of fact by this court (and as argued by the defendants), are set forth separately as follows:

Size and Weight: The digital thermometers are different in size and weight. The Ertco-Hart digital thermometer is heavier and larger. The Control Company digital thermometer does not

perform as many functions as the Ertco-Hart, but the State of New Jersey utilizes the Control Company digital thermometer only to perform one function - to read an accurate temperature.

The Control Company digital thermometer consists of a metal temperature probe which is nine and three quarter inches long. Attached to it at one end is a cord sixty-three and a half inches long. The cord plugs into a light weight plastic digital read out device which is five and a half inches long, three and a quarter inches wide and one and one quarter inches deep. The Control Company digital thermometer is stored in a hard plastic carrying case with a soft foam interior. The carrying case is ten inches long, seven and a quarter inches wide and three and a half inches deep.

The Ertco-Hart digital thermometer consists of a metal temperature probe which is nine and three quarter inches long and is thicker and heavier than its Control Company counterpart. It too has a cord attached at one end. The cord is seventy-one inches in length and plugs into a metal encased digital read out device which is six and a half inches long, five and a quarter inches wide and two and a quarter inches deep. The metal digital read out device is heavier than the corollary Control Company digital read out device. The Ertco-Hart digital thermometer is not supplied with a carrying case.

Power Source: The Control Company digital thermometer is battery operated. It is powered by a nine volt replaceable battery. The Ertco-Hart digital thermometer is capable of being battery operated or plugged into an electrical outlet. The battery required to operate it was described by Dr. Baum as the size of a "car battery." As used by the State Police, the Ertco-Hart device was plugged into a standard electrical outlet for its power source. The Ertco-Hart digital thermometer which was entered in evidence as Exhibit S-9 did not include the cord which would be required to supply it with the requisite electrical power.

Trooper Snyder has never experienced any issues related to the Control Company digital thermometer's battery power. The digital read out device will only display a temperature reading if there is sufficient battery power. The Control Company digital thermometer's digital read out device indicates when the battery is running low and requires replacement. When the battery power runs low or needs replacement, a message ("BAT") is displayed and the digital thermometer will not function. If the battery is without power, the digital read out device will not turn on. In such instances, the back of the digital readout device is removed and the battery is replaced with a new one.

The Control Company digital thermometer is easier to use. It is smaller, more portable and does not require a nearby

electrical outlet. The fact that the Control Company digital thermometer is battery powered does not have any effect on the accuracy of the temperatures obtained by it. Evidence presented indicated that there are almost no "plug in" thermometers being manufactured at the present time.

The Ertco-Hart's power source presents it with potential issues which do not exist for the Control Company digital thermometer. Power fluctuations can damage the thermometer when it is plugged into a wall. The Ertco-Hart Operator's Manual provides that if a main power supply power fluctuation occurs, the thermometer should be immediately turned off. (S-6 at 7). It also provides that power bumps from brown outs and black outs can damage the thermometer. (S-6 at 7). Such issues do not exist for the Control Company digital thermometer because it is never plugged into an outlet.

Subject to Changing Conditions: Defendants contend that the validity of the calibration of the Control Company digital thermometer is subject to conditions which are not applicable to the Ertco-Hart digital thermometer. Defendant's point to the "Traceable Certificate of Calibrations For Digital Thermometer" provided for the Control Company digital thermometer used to calibrate the Alcotests which yielded Ms. Holland's and Mr. Pizzo's BAC readings. The "Traceable Certificate of Calibrations For Digital Thermometer" was entered in evidence as

Exhibit S-5. The certificate includes the following language:
"Maintaining Accuracy: In our opinion once calibrated your Digital Thermometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Digital Thermometers change little, if any at all, but can be affected by aging, temperature, shock and contamination." (S-5).

This language does not in any manner distinguish the Control Company digital thermometer from the Ertco-Hart digital thermometer. Maintenance of the accuracy of the Ertco-Hart digital thermometer was subject to almost identical uncertainties. The Platinum Resistance Thermometer and Operator's Manual for the Ertco-Hart digital thermometer were entered into evidence as Exhibit S-6. The Platinum Resistance Thermometer, which is the temperature probe component of the Ertco-Hart digital thermometer, includes a section on "Handling" which reads as follows: "Platinum Resistance Thermometers (PRT's), are precision instruments and should be handled accordingly. Extensive service life can be expected *in the absences of high vibration, extreme temperature, and rough handling*. Unless specifically ordered, PRT's are not bendable." (S-6 at 3). (Emphasis added).

Similarly, Section 2.2 of the Ertco-Hart Operator's Manual is entitled "Environment Conditions" and identifies various

conditions which can adversely affect the operation of the device and other requirements, which if not met, could adversely affect the operation of the device. (S-6 at 4). The Ertco-Hart Operators Manual also includes a section entitled "Safety Guidelines" which includes the following language: "[t]he thermometer is a precision instrument. Although it has been designed for optimum durability and trouble free operation, it must be handled with care. The instrument should not be operated in wet, oily, dusty or dirty environments." (S-6 at 7).

These provisions of the Ertco-Hart operator's manual reflect that the care, handling and conditions to which the Ertco-Hart digital thermometer might be subject could affect its accuracy. Such conditions and caveats regarding the accuracy of the Ertco-Hart digital thermometer are not different in any significant manner, and in fact are almost identical, to those conditions which were defined as having the potential to affect the accuracy of the Control Company digital thermometer as referenced in the "Maintaining Accuracy" section of the Traceable Certificate of Calibrations For Digital Thermometer. (S-5).

There was no evidence presented that the manner in which the care, operation and maintenance may adversely affect the operation of the devices subsequent to their calibrations is

different in any meaningful way. The fact that the Control Company Traceable Certificate of Calibrations For Digital Thermometer makes reference to such conditions, and the certificates provided by Draeger Safety for the Ertco-Hart's did not (D-1), does not convert the potential such conditions create into something more significant for the Control Company digital thermometers. In contrast, the fact that the Draeger Safety certificates failed to make mention of such conditions, when they are otherwise detailed in the Ertco-Hart manual, only raises an issue as to the completeness of the Draeger Safety certificates, and nothing more.

Self-Testing: When Trooper Snyder first turns on the Control Company digital thermometer during a calibration, he waits a minute for the Alcotest to warm up before inserting the temperature probe into the simulator. Before the temperature probe is inserted, the digital read out device reflects room temperature. Trooper Snyder had no knowledge regarding whether the Control Company digital thermometer conducts any "self tests" when it is first turned on. The Control Company digital thermometer Operator's Manual does not make reference to any "self test" at start up. (S-7).

In contrast, the last page of the Ertco-Hart digital thermometer Operator's Manual includes the following language: "[o]n power up, the 850 performs a self test of several of its

key components. A failure of a component will cause an error message to display, such as ERR4." (S-6). Self-testing was required with the Ertco-Hart digital thermometer because it was an older device with more circuits. The self testing of that thermometer takes a second or two to perform after it is first plugged in or turned on. There was no evidence presented that because the Control Company digital thermometer may not perform a "self-test", it cannot or does not properly and reliably measure temperatures during the calibration process.

Optimal Humidity: The Ertco-Hart digital thermometer Operator's Manual (S-6) defines the optimum ambient humidity conditions for the operation of the Ertco-Hart digital thermometer. The Control Company "instructions" (S-7) do not provide such specificity. There was no evidence presented that the digital thermometers operate differently under divergent ambient humidity conditions. There was no evidence presented that the Control Company digital thermometer in this matter was adversely affected by ambient humidity conditions at the time of the relevant Alcotest calibrations.

Accuracy and Resolution: The Ertco-Hart digital thermometer is more accurate than the Control Company digital thermometer, but in a way which is not relevant to the use of the thermometers in the Alcotest calibration process. The Ertco-Hart digital thermometer is accurate to 0.006 degrees

Centigrade at 0 degrees Centigrade and its resolution is 0.001 degree Centigrade. (S-6 at 3). "Accuracy" is determined by how close a temperature reading is to what it actually should be. Resolution is the smallest difference that an instrument can detect. The "resolution" of the Control Company digital thermometer is the same as the Ertco-Hart.

The accuracy for the Control Company thermometer is to one hundredth of a degree Celsius. While the Ertco-Hart digital thermometer is more "accurate," (i.e., to six thousandths of a degree) the difference in accuracy is not scientifically significant for purposes of Alcotest calibrations because the Breath Test Coordinators measure in tenths of a degree, and not in the thousandths of a degree. The Breath Test Coordinators utilize a permissible range of 33.8 degrees to 34.2 degrees when taking the temperatures of the simulator solutions. As a result, it is irrelevant if the temperature might be at 33.806 degrees (which could be determined with accuracy by the Ertco-Hart digital thermometer) or 33.80 degrees (which can be determined with accuracy by the Control Company digital thermometer).

Voltage Maintenance: The Ertco-Hart digital thermometer manual reflects that it maintains voltage within "plus or minus" ten percent of normal. The Control Company digital thermometer materials make no reference to voltage maintenance. This is

because the Control Company digital thermometer uses a battery, where the voltage is constant, while the Ertco-Hart digital thermometer is plugged into an electrical outlet where the voltage of the electrical power is subject to fluctuation. Voltage maintenance is irrelevant to the operation of the Control Company digital thermometer because it does not use electrical current from an electrical outlet.

Warm Up Drift: "Warm up drift" occurs when a device is first plugged into an electrical outlet and until the device reaches a constant voltage. The time of the "warm up drift" can be from milliseconds to a few seconds. In the case of the digital thermometers, having a short "warm up drift" period is of no significance because the thermometers are not used as soon as they are plugged in. In addition, the digital thermometer temperature probe is inserted in the simulator solutions for a period of one minute before any temperatures are taken by the Breath Test Coordinators.

The Ertco-Hart digital thermometer Operator's Manual indicates it has a warm up drift of less than five parts per million. There is no similar indication as to the warm up drift for the Control Company digital thermometer. Based upon the manner in which the thermometers are actually used, including the one minute period of time they are inserted into the simulator solutions before a reading is taken, any differences

between "warm up drift" periods is irrelevant. No evidence to the contrary was presented.

Lead Resistance: The Ertco-Hart digital thermometer has a wire connection that eliminates "lead resistance." Dr. Baum was unaware of what constituted "lead resistance." He also was unaware whether the Control Company digital thermometer was similarly equipped or required any similar feature. Defendants did not present any evidence that this possible difference between the two thermometers was of any significance or had "any impact" upon the calibration of the Alcotests, generally, or, more specifically, in the Holland and Pizzo matters.

Calibration Time Periods: The Ertco-Hart digital thermometer is required to be calibrated annually, while the Control Company digital thermometer requires calibration every two years. There was no evidence presented that the difference in these time periods is significant with regard to the operation or accuracy of the thermometers. This court accepts Dr. Baum's testimony that accredited laboratories make such determinations based upon information available to them and that such determinations are subject to inspection, analysis and examination as part of the accreditation process. There was no evidence to the contrary presented during the hearing.

Moreover, in the comparison of the two thermometers, there is no evidence as to the manner in which the Ertco-Hart digital

thermometer's one year period of certification was determined. As was clear from Dr. Baum's testimony, which is accepted by this court, such determinations are made by the laboratories as part of the calibration certification process. The accreditation of the laboratory provides the scientifically accepted manner of assuring that such certifications are provided in the proper manner.⁵ There was no evidence presented that Draeger was an accredited laboratory during the time it calibrated the Ertco-Hart digital thermometers.

Defendant Holland contends that the stated two year effective period of the Control Company's calibration of its digital thermometer cannot be accepted by this court because a distributor of the thermometer provides only a one year warranty for the thermometer. Defendant relies upon Exhibit D-8 in evidence to support this contention. Exhibit D-8 appears to be a page from a product catalog from a vendor, "Davis Instruments." In Davis Instruments' marketing of the Control Company digital thermometer, a small icon on the page contains the words "year" and "warranty" with the number "1" inserted between them. Fairly read, the words suggest that Davis Instruments provides a one year warranty with its sale of the

⁵ While the court finds defendants have failed to establish that the difference in the calibration periods has "any impact at all," it is noted that the calibration of the Control Company digital thermometer in this matter took place on November 18, 2008. (S-5). The calibration of the Alcotest in the Holland matter occurred on May 26, 2009 (S-3) and the calibration in the Pizzo matter occurred on March 6, 2009 (S-4). Each was within one year of the calibration of the Control Company digital thermometer.

Control Company digital thermometer. This reference is irrelevant in this matter. It is wholly unrelated to the calibration of the digital thermometer. It does not define, and does not purport to define, the proper period of calibration of the thermometer. It is not a statement by a laboratory, accredited or otherwise. The Davis Instruments advertisement defines solely what it, as a vendor, chose to provide as a warranty. It provides no support for defendant's contention that the Control Company digital thermometer cannot be properly calibrated for an effective period of two years by an accredited scientific laboratory.

Optimal Temperature Range for Operation: The Ertco-Hart digital thermometer specifies an "optimal operating temperature range" from between 16 degrees to 30 degrees Celsius. The Control Company digital thermometer materials do not similarly specify an optimal operating temperature range. Those materials do, however, reflect that the Control Company digital thermometer will operate over the range of 0 to 100 degrees Celsius. There was no evidence presented in this matter that the lack of any specific delineation of an "optimal operating temperature range" in the materials which are provided with the Control Company digital thermometer renders it less capable of accurately providing temperatures during the Alcotest calibration process generally or during the specific

calibrations of the Alcotests used to obtain the BAC of Ms. Holland and Mr. Pizzo.

Electrical Noise: Dr. Baum defined "electrical noise" as "noise" from plugging a device into an electrical outlet with the resultant spiking of electrical current "up and down." The Ertco-Hart digital thermometer has an electrical noise filter. There was no evidence as to whether the Control Company digital thermometer is similarly equipped, but there is no issue of electrical noise with regard to the Control Company digital thermometer because it is not plugged into an electrical wall outlet.

Electrical noise can be generated by radio interference or other transmissions, but with the use of the Ertco-Hart and Control Company digital thermometers, the Breath Test Coordinators are required during Alcotest calibrations to insure there are no electrical devices or transmission devices in the room. This is done to insure there is no electrical noise which could affect the calibration. There is no evidence in this matter that the possible lack of an electrical noise filter in the Control Company digital thermometer could affect the accuracy of the temperatures taken during the Alcotest calibration process generally or more specifically during those processes for the Alcotests used in the Holland and Pizzo matters.

Password Protection: The Ertco-Hart digital thermometer was password protected so an operator could not accidentally change critical parameters set on the thermometer. While the Control Company digital thermometer is not similarly password protected, it does not matter because an operator of the thermometer has no access to such parameters even with a password. The critical parameters cannot be changed by the operator because they are completely "locked out." The operator has no ability to change the parameters, with or without a password.

Cost: There are cost differences between the two digital thermometers. The Ertco-Hart digital thermometer costs about \$1,700 to \$2,000. The Control Company digital thermometer costs approximately \$200 to \$300. The price of the calibration of an Ertco-Hart digital thermometer was \$700 to \$800. The State does not calibrate Control Company digital thermometers. They are discarded upon the expiration of the time period for their calibrations and new thermometers are purchased.

B. The Digital Thermometers are Comparable

The court concludes the defendants have failed to sustain their "burden of production" to "show" the manner in which any differences between the digital thermometers "had any impact at all" upon the proper calibration of the Alcotests. While the defendants attempted to establish differences between the two

thermometers, they simply failed to present any evidence that any of those differences could have "any impact" upon the calibrations of the Alcotests generally or did have an "impact" upon the calibration of the Alcotests in the Holland and Pizzo matters.

This court finds no differences of significance between the two thermometers. They are comparable in all necessary and important respects in the performance of their singular function of accurately measuring the temperatures of the various simulator solutions during the Alcotest calibration process. No evidence to the contrary was presented. Therefore, the change of manufacturers of the digital thermometers "holds no significance" and the Control Company digital thermometer is comparable in all salient respects to its "Ertco-Hart-manufactured counterpart." Holland, supra, ___ N.J. Super. ___ (slip op. at 22). As perhaps best stated by Dr. Baum, and as this court finds as a matter of fact, while the thermometers look different and are different, "[t]he bottom line is, they both measure temperature. They both measure accurate temperature. The Ertco-Hart is accurate in measurement for the temperature and the Control Company [digital thermometer is] equivalent for that."

VIII. The Alleged "Facial Irregularity" of the Control Company Certificate of NIST Traceability

The second issue the Appellate Division directed this court consider was the purported existence of "facial irregularit[ies]" on the Control Company Traceable Certificate of Calibration for Digital Thermometer (S-5) for the digital thermometer (Serial Number 80637577) used to calibrate the Alcotests used in the Holland and Pizzo matters. More specifically, there were issues raised in the Holland matter regarding the meaning and interpretation of information reflected on the certificate. See id. (slip. op. at 21). Of particular importance was whether the proper interpretation of the terms and references on the certificate confirmed that the Alcotest calibrations occurred during the period of time covered by the certificate for the digital thermometer. Ibid.

A. The Control Company Certificate

Exhibit S-5 is the Control Company Traceable Certificate of Calibration for Digital Thermometer for the digital thermometer (Serial Number 80637577) used to calibrate the Alcotests used in the Holland and Pizzo matters. While the certificate contains a substantial amount of information which the court will detail below, the certificate confirms: (a) that the Control Company digital thermometer was calibrated prior to its use in connection with the calibration of the Alcotests, and (b) that

the certification of calibration was effective on the dates the Alcotest calibrations occurred in the Holland and Pizzo matters. In their post hearing briefs, neither defendant contends otherwise.

Because the issue of the alleged "facial irregularity" of the certificate was grounded upon uncertainty regarding the references and abbreviations on the certificate, this court makes the following findings of fact regarding the meaning of those references and abbreviations.

Instrument Identification: The certificate includes a section entitled "Instrument Identification" which, as its name suggests, provides the identity of the instrument which is the subject of the certificate. This section includes a reference to "Model Number" followed by "61220-601." This is the model number of the Control Company digital thermometer used by the State Police. Following the Model Number in the "Instrument Identification" portion of the certificate are the letters "S/N" with a number, "80637577." (S-5). This is a reference to the serial number of the thermometer being calibrated. The Model Number" refers to the generic number identifying the thermometer, but each thermometer has a unique serial number. While calibration certificates will change every time the thermometer gets calibrated, the serial number for each thermometer stays with the thermometer.

The final reference in the "Instrument Identification" section of the certificate is to the "Manufacturer." In this case, the certificate reflects that the manufacturer of the instrument which was calibrated was "Control Company." The "Instrument Identification" section, therefore, reflects that the instrument which was the subject of the calibration was Control Company instrument Model No. 61220-601, bearing serial number "80637577."

The certificate is for the Control Company digital thermometer which was used to calibrate the Alcotests in the Holland and Pizzo matters. That is confirmed on the first page of S-3 and S-4 where there are references to the NIST Temperature Measuring System (i.e., "digital thermometer") serial number for the digital thermometer used to calibrate the respective Alcotests. In both instances, Trooper Snyder recorded the serial number "80637577" which is the serial number of the Control Company digital thermometer. Trooper Snyder obtained the serial number from the piece of equipment. On the back of the digital read out device which is part of Exhibit S-8, there is a blue sticker which reads "S/N 80637577."

Evidence of Accreditation: At the top of the corner of the certificate (S-5) is a symbol which reads "ILAC MRA." "ILAC" is a reference to the International Laboratory Accreditation Corporation. "MRA" refers to the Multi-lineal

Recognition Arrangement. Dr. Baum describes MRA as the international body that accredits accrediting bodies. MRA is a world wide organization which checks accrediting bodies to make sure the accrediting body properly performs its functions.

To the right of the "ILAC MRA" symbol on the certificate is a reference to the "A2LA" (American Association of Laboratory Accreditation). That is another accrediting body. A2LA is the organization which formally performs the accreditation of the laboratory performing the calibration, which in this case is Control Company. A2LA is a member of ILAC and receives its accreditation approval from ILAC. A laboratory is permitted to use an accreditation body's symbol on its certificates if it is accredited by that accreditation body. The designations on the certificate (S-5) reflect and confirm that the Control Company is accredited by A2LA which is an American association. The word "calibration" under the symbol means that Control Company is accredited as a calibration laboratory. The reference to "Certificate No. 1705.01" under the symbol confirms that Control Company has been issued an accreditation certification from A2LA. Digital thermometers are within the scope of Control Company's accreditation by A2LA.

The certificate includes the following language,
"Calibration complies with ISO 9001, ISO/I-IEC 17025 and ANSI/NCSL Z540-1." Standard 9001 is the governing standard for

good management practices and good laboratory practices. ISO/I-IEC 17025 is a substandard of standard 9001, which is specific for calibration laboratories and measurement laboratories. ANSI/NCSL Z540-1 is another set of standards which Control Company is required to meet. References to these standards indicate that Control Company has been accredited with regard to their compliance with those standards. ILAC establishes the various standards which must be met for accreditation.

At the bottom of the certificate, further evidence of accreditation is provided. The document refers to Control Company as an ISO17025 "Calibration Laboratory Accredited by (A2LA) the American Association for Laboratory Accreditation" with a certificate number 1750-D1. It also indicates that Control Company is ISO 90001 certified by Det Norske Veritas ("DNV"), another international accreditation body. Reference to the certificate issued by DNV as a result of its accreditation is also included. (S-5).

The certificate also includes a reference to a "Cert. No." followed by "4000-2035919." That is the "certificate number" for the calibration of the specific thermometer. Each time a thermometer is calibrated, it receives a new certificate with a distinct certificate number.

Traceability to NIST Standards: The certificate is labeled a "Traceable Certificate of Calibration for Digital

Thermometer." This reference confirms that calibration of the digital thermometer was performed with instruments traceable to NIST standards. The body of the certificate confirms this. It includes the following: "[t]his instrument was calibrated using Instruments Traceable to National Institute of Standards and Technology." (S-5).

Standards and Equipment: The third section of the certificate provides a description of the standards and equipment utilized during the calibration process. The first column is labeled "description" and has a list of equipment under it. The list includes a description of each piece of equipment used during the process of calibrating the digital thermometer. Each of the pieces of equipment listed was used to calibrate Control Company digital thermometer with serial number "80637577."

In the next column, the serial numbers of the respective pieces of equipment used during the calibration process are listed. That information is provided so it can be precisely determined which pieces of equipment were used during the calibration process.

The third column in the "Standards/Equipment" section provides the expiration dates for the calibrations of the respective pieces of equipment used during the calibration process. These dates are provided to insure that the Control

Company digital thermometer (Serial Number 80637577) was calibrated prior to the expiration dates (i.e., "due dates") of any of the pieces of equipment used during the calibration process. The "due dates" are the dates for the next required calibration of the respective pieces of equipment listed as being used during the calibration process. Those due dates are unrelated to the calibration of the Alcotests in the Holland and Pizzo matters. They are relevant only to the extent they establish that the calibration of the Control Company thermometer occurred prior to their expiration.

The two "Temperature Calibration Baths" listed do not have "due dates" because they are not temperature measuring devices. They are water baths which heat and cool water. The temperatures of the baths are obtained through the use of the other pieces of equipment listed, which are calibrated and have calibration "due dates."

The last column in the "Standards/Equipment" section, provides an "NIST Traceable Reference" for each of the pieces of equipment which are calibrated and have due dates. Again, there are no "NIST Traceable Reference" numbers for the two water baths because they are not measuring devices. These alphanumeric references are to the NIST traceable standards which were used for the particular measuring device listed.

Certificate Information: The following section of the certificate is entitled "Certificate Information." It includes a reference to the "Technician" followed by the number "68". This reference is to the person who actually performed the calibration. While the person is not identified by name, the numerical designation permits the identification of the individual, if it is necessary. Dr. Baum testified that being able to identify a person performing a calibration is a requirement of the accrediting bodies.

This section of the certificate also includes a reference to the "Procedure" used for the calibration. The procedure used was "CAL-06." While the procedure is not set forth in full, the reference permits a determination as to the precise procedure, if required. The certificate also provides the conditions under which the calibration occurred. The certificate reflects the "Test Conditions" as 25 degrees Centigrade, 34 degrees relative humidity and an isometric pressure at 1031 millibars. (S-5).

To the right of the reference to the "Procedure" is the term "Cal Date" followed by the date "11/18/08." This reference is to the date the "technician" (i.e., "68") actually performed the "procedure" (i.e., "CAL-06") to calibrate the digital thermometer. The "Cal Date" is followed by a reference to a "Cal Due: 11/18/10." This reference is to the expiration date of the calibration. The digital thermometer which was the

subject of the calibration cannot be used after the "Cal Due" date. The "Cal Due" date is determined by the laboratory performing the calibration and providing the certification. The time period during which the certification is valid is subject to examination and approval during the accreditation process. In this case, the two year period of certification set forth in the certificate would have been approved by A2LA during the accreditation process.

This portion of the certificate confirms that the Control Company digital thermometer was calibrated on November 18, 2008, and was certified for a two year period until November 18, 2010. The calibrations of the Alcotests in the Holland (i.e. May 26, 2009) and Pizzo (i.e., March 6, 2009) matters were both completed within the two year period of the thermometer's certification. See (S-3 and S-4).

Calibration Data: New Instrument: The following section of the certificate contains "Calibration Data." This information is provided in the form of a table. The reference to "New Instrument" is because the Control Company digital thermometer was new and being calibrated for the first time. The first column provides the "unit(s)" of measurement, which the certificate reflects will be "C" or Centigrade. The second column, labeled "Nominal," is blank because the instrument being calibrated is new. There would only be information placed in

this column if the instrument being calibrated had been previously calibrated. For the same reason, the column labeled "As Found" and the first column labeled "In Tol" are blank.

The fifth column is labeled "Nominal." The instrument is calibrated by using water baths at four different temperatures (or some other fluid). As a result, the calibration is considered a "four point" calibration. The process involves checking the temperatures yielded by the digital thermometer at four different degrees between 0 and 100 degrees Centigrade. The columns reflected on the Calibration Data section of the certificate reflect the readings in each of the water baths. The listed "nominal temperatures" are those obtained during the calibration process by the temperature probes listed in the "Standards/Equipment" section of the certificate. Those temperatures become the benchmark for the calibration of the digital thermometer. The listed "as left temperatures" are obtained from the digital thermometer which is being calibrated. To the extent that the "nominal temperatures" are different from the "as left" temperatures, the Control Company digital thermometer, which is being tested, is adjusted to read the same as the "nominal temperatures." In that manner, the digital thermometer is calibrated.

The following column, labeled "In Tol," reflects whether the temperatures yielded by the digital thermometer are within

the acceptable range of permissible tolerances. A "Y" reflects readings within tolerance. An "N" would reflect they are not. Exhibit S-5 reflects that all of the temperatures obtained from the Control Company digital thermometer were within tolerance. The minimum and maximum temperatures which define the ranges are listed in the columns labeled "Min" and "Max."

The next column in this section of the certificate refers to "plus and minus the uncertainty." This quantifies the amount of uncertainty in the measurement. Every scientific process has a measurement of uncertainty associated with it. Uncertainty cannot be defined exactly. It may be in the tenth decimal place or, as in this case, it is to the hundredths decimal place. The measurement of uncertainty reflected on the certificate is thirteen one-thousandths of a degree. This means that the calibrated thermometer is accurate within thirteen one-thousandths of a degree for three of the temperatures taken and to eighteen one-thousandths of a degree for one of the temperatures taken during the calibration process.

The last column in the "Calibration Data" is designated by "TUR." This refers to the test uncertainty ratio. The test uncertainty ratio is the uncertainty divided by the measuring range. This calculation is done to insure that the uncertainty is at a reasonable value -- that it is significantly smaller than the value sought to be measures.

Beneath the "Calibration Data" table, the certificate includes text which explains that the digital thermometer was calibrated using instruments traceable to the National Institute of Standards and Technologies. The traceable instruments to which reference is made are to the measuring devices listed in the "Standards/Equipment" section. The balance of the text explains portions of the content of the data reflected in the data table.

The Certificate is signed by Wallace Berry, who is identified as the "Technical Manager." He is responsible for Control Company's thermometer calibrations.

Based upon the evidence presented, this court finds that there is no "facial irregularity" on the Control Company "Traceable Certificate of Calibration for Digital Thermometer" as suggested before the municipal court in the Holland matter and to which reference was made by the Appellate Division in its opinion. Each reference and abbreviation in the certificate is clear and pertains to applicable aspects of the calibration process. This court finds as a matter of fact that the certificate confirms the calibration of the Alcotests in the Holland and Pizzo matters took place while the certification of the Control Company digital thermometer was valid and effective -- that is, between the "Cal Date" and "Cal Due" listed on the certificate.

B. References to Temperature Probe "149"

In his appeal, Mr. Holland raised an issue regarding the meaning of references to a temperature probe bearing serial number "149" as indicated on the Control Company certificate. S-5. More particularly, the certificate reflects that the temperature probe with serial number "149" had a March 6, 2009 "due date" for "re-certification." Holland, supra, ___ N.J. Super. ___ (slip op. at 19). The Appellate Division noted that the Control Company digital thermometer at issue had serial number "DDXAP2-149." Based upon the duplicate references to "149", the Appellate Division raised the issue of whether the "due date" for the Control Company thermometer might be the March 6, 2009 "due date" listed for the temperature probe with serial number "149" as listed on the certificate. Ibid.

As explained above, the temperature probe listed in the "Standards/Equipment" section of the certificate is different than the Control Company digital thermometer which was the subject of the calibration. That each has a serial number including the number "149" is coincidental and of no significance.

The temperature probe bearing serial number "149" was used during the calibration of the Control Company digital thermometer bearing serial number "DDXAP2-149." The "due date" listed for the temperature probe bearing serial number "149" is

March 6, 2009. The temperature probe was used during the calibration of the Control Company digital thermometer which took place on November 18, 2008. The temperature probe bearing serial number "149" was used in the calibration of the Control Company digital thermometer prior to the temperature probe's "due date" for recalibration. Therefore, the temperature probe was properly used prior to its "due date" in the calibration process for Control Company digital thermometer bearing serial number "DDXAP2-149."

C. The Control Company Certificate Provides More Information Than the Draeger Certificate.

The Control Company certificate includes and provides much more information than that provided on the Draeger certificate, a representative sample of which was entered into evidence as Exhibit D-1. The Draeger certificate which was supplied as verification of the calibration of the Ertco-Hart digital thermometer included the serial number of the digital thermometer which was the subject of the calibration, but did not identify the model number of the thermometer.

Moreover, while the Control Company certificate reflects a four point calibration, the Draeger certificate indicated the performance of only a one point calibration. The Draeger certificate also did not make reference to any assessment of "tolerance," while the Control Company certificate provides

detailed information regarding this part of the calibration process. As a result, the Draeger certificate did not permit a determination as to whether a calibration was within tolerance. The Draeger certificate provided no information regarding the testing conditions under which the digital thermometer was calibrated.

The Draeger certificate includes the serial numbers of the equipment used during the calibration process and the serial number of the digital thermometer which was the subject of the calibration, but does not include the calibration due dates for each piece of equipment used during the calibration process. The lack of that information makes it impossible to determine, based upon a review of the certificate, if the equipment used in the calibration was within its calibration due dates. The Draeger certificate lacks specific reference to NIST standards for the equipment used to calibrate the digital thermometer which is the subject of the certificate.

The Draeger certificate does not include minimum and maximum temperatures. As a result, it does not provide information which permits an independent assessment of tolerance. The Draeger certificate provides no information regarding uncertainties. As a result, the uncertainty ratio cannot be determined.

The Draeger certificate provides the initials of the technician who performed the calibration, but does not identify the procedure utilized during the calibration process. It also provides a calibration date (which is referred to as the "certification date") and a due date. (S-6). The Draeger certificate was effective for a one year period. The certificate does not, however, contain any indication of accreditation by any accreditation body. The Draeger certificate makes no representation as to an accreditation of Draeger at all. As a result, it cannot be determined from an examination of the Draeger certificate if the one year period for the certification is supported by the scrutiny and independent approval which accreditation provides.

In sum, the Control Company certificate does not suffer from any "facial irregularity" which would render the use of the Control Company digital thermometer improper. It provides substantially more information, and more relevant information, regarding the calibration process than a Draeger certificate provided. The Draeger certificate lacks information regarding the calibration process, the "due dates" for the equipment used during the calibration process and other pertinent scientific data which is set forth by Control Company on its certificate. There is nothing set forth on the Control Company certificate which the defendants argue render the certificate "facially

irregular" or upon which this court might determine that the certificate should not be accepted as a proper foundational document regarding the calibration of the digital thermometer as required by the Supreme Court in Chun.

IX. The State is Not Obligated to Present Evidence to Establish NIST Traceability

In addition to the issue of "facial irregularity" of the Control Company Certificate of NIST Traceability which the Appellate Division directed this court to consider, defendants argue the Appellate Division's directive that this court determine the "validity" of the certificate requires consideration of matters beyond the information set forth on the certificate. Defendants contend the Control Company Traceable Certificate of Calibration for Digital Thermometer is invalid because the State failed to present evidence, and failed to establish by clear and convincing evidence, each of the elements necessary to "establish" NIST traceability under published NIST requirements.

During the hearing, Dr. Baum was questioned extensively regarding the content of a website which purports to include various requirements and information related to the establishment of NIST "traceability."⁶ A copy of the website was

⁶The date listed on the website is May 13, 2011. There was no testimony presented that the website existed on the dates pertinent to the Holland and Pizzo matters or that the information included on the website was valid for

introduced into evidence as Exhibit D-7. Most of the questioning of Dr. Baum regarding the website consisted of defense counsel's reading of portions of the website followed by requests that Dr. Baum advise whether he "agreed" with what was being read. Dr. Baum consistently responded by testifying that he did not dispute that the website read as defense counsel indicated.

It is unnecessary for this court to find facts regarding the content of the website. It was admitted into evidence. It speaks for itself. Most broadly described, the website purports to contain responses to "frequently asked questions" regarding the issue of NIST "traceability." (D-7). Some of the questions to which responses are provided include: "what is traceability?", "what is involved in establishing traceability?" and "what is meant by the phrase 'traceable to NIST?'" (D-7). The responses to those, and many other questions, are included on the website. (See D-7).

Based upon defense counsel's questioning of Dr. Baum regarding the contents of the website, defendants assert the State failed to establish the measurements made by the Control Company thermometer are NIST traceable and, as such, the Control Company certificate is not valid. In support of this argument,

the pertinent dates in the two cases. For this reason alone, defendants' reliance on the website is rejected.

defendants argue that the State failed during the hearing to present evidence "that the Control Company digital thermometer 'meets the Special Master's requirement of traceability to internationally recognized standards.'" (Def. Pizzo's Br. 30 (quoting Holland, supra, ___ N.J. Super. ___ (slip op. at 22))). More particularly, defendants argue the State failed to establish NIST traceability of the digital thermometer's measurements because the State failed to provide sufficient proofs to support a "claim of traceability." (Def. Pizzo's Br. 32 (quoting Holland, supra, ___ N.J. Super. ___ (slip op. at 22))). Acceptance of the defendants' argument would require this court to impose upon the State an obligation which is not required under the standards set forth in Chun, would be inconsistent with the Court's holding in Chun, and is neither contemplated nor required by the Appellate Division remand.

Defendants implicitly rely upon that portion of the Appellate Division's decision which provides that the State will establish that "the Control Company, Inc. temperature probe is comparable to its Ertco-Hart-manufactured counterpart and meets the Special Master's requirement of traceability to internationally-recognized NIST standards." See Holland, supra, ___ N.J. Super. at (slip op. at 22). Defendants take that language from the Appellate Division and couple it with the directive on remand for the court to consider the "validity" of

the Traceable Certificate of Calibration for Digital Thermometer in an attempt to re-define what Chun and the Special Master required. In doing so, defendants invite this court to redefine the Chun standards and requirements. The invitation is declined.

Based upon the findings of the Special Master, the singular requirement imposed upon the State by the Court in Chun regarding the Ertco-Hart digital thermometer was the production of the "Draeger Safety Ertco-Hart Calibration Report" during discovery. Chun, supra, 194 N.J. at 153; see also Special Master's Report, supra, at 282 (the proposed language by the Special Master was "Draeger Safety, Ertco-Hart Digital Temperature Measuring System Report of Calibration, NIST traceability"). In this matter, the Appellate Division reaffirmed this requirement, but held the name "Ertco-Hart" was merely an identifier. The Appellate Division held that certification of NIST traceability was the only "discernable characteristic" which was required. Holland, supra, ___ N.J. Super. ___ (slip op. at 12-16).

The "Draeger Safety, Ertco-Hart Digital Temperature Measuring System Report of Calibration, NIST traceability," which the Special Master found satisfactory, and the Supreme Court directed be produced during discovery, certifies the digital thermometer has "been tested for accuracy with

instrumentation that is traceable to" the NIST. (D-1). The Control Company certificate provides an identical certification. It represents that the digital thermometer "was calibrated using Instruments Traceable to National Institute of Standards and Technology." (S-5). The Control Company certificate, therefore, includes the precise representation as to calibration using "instrumentation" traceable to NIST which the Special Master and the Court in Chun required.

Most simply stated, the Chun Court did not impose upon the State the burden to present evidence of each element required by the NIST to establish "traceability" as described on a "website" or otherwise. If the Court had chosen to impose such an obligation, it would have done so directly and expressly. It did not.

It was not, and is not, the State's obligation to prove NIST "traceability" beyond the production of a certificate of calibration comparable to the Draeger certificate to which express reference is made in Chun. The State presented such a certificate here during discovery. In doing so, the State met its only burden under Chun, at least with regard to the calibration of the Control Company digital thermometer.

Defendants also argue the State did not produce during discovery documents and information related to NIST traceability for the Control Company digital thermometer. That the State did

not produce such information or documentation is irrelevant for two reasons. First, as described above, the State had no burden to prove NIST traceability beyond the production of the requisite certificate of calibration. Second, the State is not the entity claiming NIST traceability in this matter. The State did not calibrate the digital thermometer using instruments which are traceable to the NIST. The State Office of Forensic Sciences did not perform the calibration of the digital thermometer. Control Company did so as an accredited laboratory. The Control Company certificate confirms this fact. Control Company, therefore, would have the documents necessary to establish the calibration was performed with instruments traceable to NIST standards. The State would not.

The fact the State did not have the information or relevant documentation is to be expected. The State had no burden to produce them. Defendants' contention the State did not produce such documents and information during discovery sufficient to establish traceability under the NIST "website" does not render the Control company certificate of traceability invalid.⁷

⁷ For the same reasons, defendants' argument that the State failed to produce evidence Control Company was actually accredited at the time the digital thermometer was calibrated is rejected. It is defendants' claim the documents produced by the State during discovery confirmed only that Control Company accreditation was valid after the date of the calibration of the Control Company digital thermometer at issue in this matter. The Traceable Certificate of Calibration for Digital Thermometer (S-5) reflected the fact of accreditation. Evidence of accreditation would be in the possession of Control Company, and not necessarily with the State. Footnote 47 in Chun

Defendants' new found contention (i.e., there is no evidence the issue was raised previously in either matter) that the State failed to produce sufficient evidence of Control Company's compliance with each of the myriad of requirements the NIST indicates in a "website" are required to "establish" NIST Traceability is rejected. The State does not bear such a burden under Chun.

Moreover, the defendants' traceability argument is founded upon a contention which is also not supported by Chun. Defendants contend it was the State's obligation to prove that the measurements made by the Control Company digital thermometer were NIST traceable. Again, defendants argue the State's failure to presents such evidence renders the Control Company certificate invalid. While defendants' contention is rejected for each of the reasons set forth above, it is rejected for a separate, but equally dispositive, reason.

Contrary to the defendants' assertions, the Special Master and the Chun Court did not require a certificate representing that the digital thermometer's measurements were NIST traceable. The Draeger certificate which was found acceptable by the Court, and which must be produced as a foundational document, did not represent that any measurements were NIST traceable. Instead, it

permitted the defendants to obtain such information through the issuance of a subpoena. In this case, they did not.

included only a representation that the calibration of the digital thermometer was undertaken using instruments which were NIST traceable.

Defendants' attempt to have this court impose upon the State a new and additional obligation to prove that measurements made by the Control Company digital thermometer are NIST traceable is rejected. The State bears no such burden under the recommendations of the Special Master and under the dictates of Chun.

X. Conclusion

For each of the foregoing reasons, this court finds the Control Company digital thermometer is comparable in all material respects to the Ertco-Hart digital thermometer previously used during the Alcotest calibration process. This court further finds that the Control Company certificate is facially valid and satisfies the requirements as a foundational document as required in Chun. The court also rejects defendants' contention that the State had a burden to present evidence as to each of the elements required to prove NIST traceability.