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July 10, 2025

The Honorable Marc C. Lemieux, A.J.S.C.
Monmouth County Superior Courthouse
71 Monument Park
Freehold, NJ 07728

Re: State v. Paul Caneiro
Indictment No. 19-02-0283

Dear Judge Lemieux:

Please accept this post-hearing letter brief in lieu of a formal memorandum of law in support of Mr. Caneiro's motion to preclude any ballistics testimony in this case. After the testimonial hearing Your Honor ordered as a result of the ballistics examiners' failure to document how and why they reached the opinions they did, it is even more clear now than it was prior to the hearing that the State—as the proponent of the evidence—has failed to meet its burden. The State has failed to comply with our discovery rules. The State has failed to meet the requirements of N.J.R.E. 703. And the State has failed to demonstrate the as-applied validity of the ballistics analysis in this case under N.J.R.E. 702 and indeed even under N.J.R.E. 401 and 403. As a result, this Court is compelled to exclude all ballistics testimony from Mr. Caneiro's trial.

STATEMENT OF FACTS

Citations to relevant facts are incorporated directly into the legal argument section below.

LEGAL ARGUMENT[1]

PONT I

WITHOUT EVIDENCE DEMONSTRATING THAT A RELIABLE METHODOLGOY WAS RELIABLY APPLIED IN THE FIREARM AND TOOLMARK ANALYSIS IN THIS CASE, THE RESULTS OF THAT ANALYSIS CANNOT BE ADMITTED AT MR. CANEIRO'S TRIAL.

In every case, the court must consider the as-applied reliability of the specific analysis conducted. State v. Olenowski, 255 N.J. 529, 576 (2023) (Olenowski II). In Mr. Caneiro's case, even after the testimonial hearing Your Honor ordered, the State has failed to demonstrate the reliability of the specific analysis that was conducted. The State's proffered ballistics testimony continues to violate our discovery rules as well as N.J.R.E. 702, 703, 401, and 403. Despite the violation of *all* of these rules, as this Court is well aware, a violation of any one of these rules compels the exclusion of this evidence from Mr. Caneiro's trial.

A. Examiner Clayton failed to explain the bases for his opinion, violating Rule 3:13-3, N.J.R.E. 703, and the net opinion rule.

"The purpose of discovery is to prevent surprise, eliminate gamesmanship, and afford a party an opportunity to obtain evidence and research law in anticipation of evidence and testimony which an adversary will produce at trial." State v. Wyles, 462 N.J. Super. 115, 122 (App. Div. 2020) (internal quotation marks omitted). The net-opinion rule, a corollary to N.J.R.E. 703, is violated by an opinion that is unsupported by the necessary, documented, facts. The net-opinion rule "forbids the admission into evidence of an expert's conclusions that are not supported by

[1] All law and argument from the initial defense brief is relied upon in addition to what follows below.

factual evidence or other data." State v. Burney, 255 N.J. 1, 23 (2023) (quoting Townsend v. Pierre, 221 N.J. 36, 53-54 (2015)). The rule "mandates that experts be able to identify the factual bases for their conclusions, explain their methodology, and demonstrate that both the factual bases and the methodology are reliable." Townsend, 221 N.J. at 55 (emphasis added). The rule "requires that an expert give the why and wherefor that supports the opinion, rather than a mere conclusion." Id. at 54 (internal quotation marks omitted). In Burney, our Supreme Court held that the trial court erred in permitting the State's cell site expert to testify about his "rule of thumb" about cell tower ranges "because it was unsupported by any factual evidence or other data" and instead "was based on nothing more than [the expert's] personal experience." 255 N.J. at 25.

Here, even after the testimonial hearing, the State has failed to comply with Rule 3:13-3(b)(1), N.J.R.E. 703, and the net opinion rule. Neither the discovery nor the examiner's testimony at the hearing provided reliable information about the bases of the examiner's opinions or how the examiner formed his opinions.

Consistent with AFTE's own admission that what constitutes "sufficient agreement" is "subjective in nature" and "based on the examiner's training and experience," S-3, Examiner Clayton testified that "sufficient agreement" means whatever he believes it to be in any given case. Specifically, he testified that to qualify as "sufficient agreement" to him, the comparison must meet two criteria: 1) "when we're looking at two patterns, these are the patterns that are consistent. This is ***what I would expect to see*** from two bullets, two cartridge cases that were fired from the same gun" and 2) "That other part of it is, that when I'm looking at these two surface contours, it exceeds the agreement from tool marks produced by tools, meaning that ***I would not expect to see*** this type of agreement on two bullets or two cartridge cases that were fired in different guns." 7/1/2025 Clayton Direct, 199: 7-16. (Emphasis added). Clayton also testified that he and other

examiners no longer use the language "to the exclusion of all [other] firearms" because "[t]o reach that threshold we would have to test fire every gun that was ever made," and of course he doesn't do that because there are 400-500 million guns in the United States today. 7/1/2025 Clayton Direct, 200: 2-3.

Again and again throughout the hearing, he testified that he knew there was "sufficient agreement" when he looked at two items when the agreement was "**what I would expect to see**" if fired from the same firearm and "**not what I would expect to see**" if fired from different firearms. To him, he opinions that it is an identification if "**I would not expect to see** that type of agreement from a bullet or a cartridge case from two different firearms. Never seen it before so it has to hit that criteria to meet an identification." 7/1/2025 Clayton Direct, 201: 1-5. (Emphasis added). Yet, "what I would expect to see" or "what I would not expect to see" in no way communicates the bases for his identification decisions as required by our rules because "what I would expect" or "what I would not expect" is undefined, undefinable, and unfalsifiable.

Let's make this concrete by considering an example. Looking at D-18—page 3 of the notes to his January 2, 2019 report that Examiner Clayton marked up, the comparison photo of Bullet #11 to Bullet #17:

- Examiner Clayton testified on direct that he first looked at each item individually to observe and document the class characteristics, describing objectively what they are.
- Then he puts both items onto the comparison microscope.
- He "would find the pattern or group of patterns that I like" and "then I would look at the other bullet and compare other land impressions to see if those patterns correspond at all." 7/1/2025 Clayton Direct, 231: 7-13.

- When "we find two areas that agree[,] [w]e would take a photo of it and then you would annotate it, again describing what you're looking at. And then I would box out the area specifically of where I found that agreement." 7/1/2025 Clayton Direct, 228: 21-25.
    - Consistent with this testimony and the NJSP SOPs repeated direction to look for similarities, there is no evidence in the record that Examiner Clayton ever looked for dissimilarities, much less documented even a single one. See 7/2/2015 Clayton Cross, 314: 10-13.
- The box indicates "the area that I used for sufficient agreement." 7/1/2025 Clayton Direct, 230: 11-13.
- Here, with Bullet #11 to Bullet #17, he was asked by AP Decker if all the land impressions are matching up, to which he answered "No." 7/1/2025 Clayton Direct, 233: 9-13.
    - We know this to be objectively true because in his notes and on cross, he admitted that when he did choose to measure the LIMPS for some of these bullets he says come from the same gun, the measurements were different for each LIMP he chose to measure. See, e.g., S-13, Notes, at 1.
- Nonetheless, he entered the area of agreement as "LIMPS," meaning land impressions. S-13, Notes, at 2.
    - He explained that he is "not making an identification off the land impression;" rather, the land impression is simply "the area that I found those individual characteristics" he deemed sufficient for identification. 7/1/2025 Clayton Direct, 225:25 – 226: 3.

- Yet, even though asked about it on direct and cross numerous times, Examiner Clayton never specified what individual characteristics he allegedly observed within the land impression, how many, of what type, where they were located, or anything else.
- Consistent with his failure to identify the individual characteristics he relied on to determine it was an identification in his opinion, when he marked up D-18, all he did was label the entire boxed area "LIMP," which again is the area where he allegedly found those unspecified individual characteristics **but in no way identifies what those individual characteristics were**, how many he observed, of what type, where they were located within the LIMP, or anything else about those characteristics that allegedly support his identification opinion.

Thus, even after an extensive testimonial hearing, Examiner Clayton still did not provide "the factual bases for [his] conclusions"—these unspecified individual characteristics upon which he based his identification opinions but did not identify at the hearing—or "demonstrate that both the factual bases and the methodology are reliable." Townsend, 221 N.J. at 55. Just as the State's cell site expert in Burney was barred from testifying about his "rule of thumb" about cell tower ranges "because it was unsupported by any factual evidence or other data" and instead "was based on nothing more than [the expert's] personal experience," so should Examiner Clayton be barred from testifying about his identification opinions, which are also "unsupported by any factual evidence or other data" and instead "was based on nothing more than [the expert's] personal experience. 255 N.J. at 25.

Moreover, sticking with this subset of bullets marked #11, #12, #17, #20, and #26, Examiner Clayton testified—repeatedly—that he used transitive inference to match these items to

one another, rather than doing a direct comparison of each item to each other item to which he opined they matched. For instance, on direct, he testified as follows:

> Q 11 matches 17 and then 17 here matches 26?
> A Correct.
> Q Is there a correspondence then between 11 and 26?
> A Correct, sir. So now all three of those bullets are identified as having been fired from the same barrel of a gun.

7/1/25 Clayton Direct, 235:25 – 236:6. On cross, Examiner Clayton changed his testimony—at first saying he doesn't remember what bullets he compared to what other bullets:

> **A** Again I don't document that. When I do a comparison I'll compare the bullets. I don't know what, exactly which ones, but you're intercomparing all of the five bullets.
>
> **Q** I'll ask it again. Is it your testimony today though there's no documentation of this, that you did compare 11 to 12?
>
> **A** Well again, I don't have documentation so no, I can't say that.

7/2/25 Clayton Cross, 282: 4-11. He reiterated again and again that he did not know what he compared to what before deciding he'd seen enough for his identification opinions:

> **Q** So my question is did you compare number 11 to number 12?
>
> **A** I don't know.
>
> **Q** You don't know, okay. And you didn't compare 11 to 20.
>
> **A** I could have. Again, it's not, I don't document that.
>
> **Q** You didn't compare number 11 to number 26.
>
> **A** I don't know.

Q You don't know. Same thing for 12 to 26?

A Yes.

Q Same thing for 17 to 20?

A Correct.

7/2/25 Clayton Cross, 282: 25 – 283: 12. Once Your Honor rightfully expressed concern that Examiner Clayton was testifying about identifications on comparisons he never actually made, he explained to Your Honor that he knows these bullets all match "Because again looking at the pictures, if you go to 11, 17 and then 17 versus 26 –" at which point Your Honor cut him off and again asked him what comparisons he made. 7/2/25 Clayton Cross, 284: 18-19. In light of what appeared to be the Court's obvious disapproval, Examiner Clayton changed his testimony yet again, claiming that he examined each item next to each other item; he just chose not to photograph any of these comparisons. But after more cross, finally Examiner Clayton reverted to his original testimony—that in fact he did **not** compare each item to each and every other item to which he opined were a match, but rather used inference to determine all items were identified to the other items in the group:

Q According to you today that's inaccurate because it wasn't a comparison of 10 versus 14. According to you today it was a comparison of 10 to 14 but also 10 to 13, 10 to 15, 10 to 16, 10 to 18, 10 to 4 19, 10 to 21.

A It's an inference. So again that 14 was already identified to those cartridge cases, right. It has extractor marks, it has chamber marks. So I used number 14, it has the extractor mark. That's the one I used to compare against number 10. It has the same extractor mark.

Q Okay, so you compared number 10 to number 14?

A Yes.

Q And then you used inference.

A Yes.

Q All right.

7/2/25 Clayton Cross, 302: 25 – 303: 15.

This transitive inference is all the more troubling because Examiner Clayton did not even make apples to apples comparisons when he made the transitive leap between items. As he testified to on direct and cross, Examiner Clayton said he used a different land impressions for Bullet #11 to Bullet #17 than he did for Bullet #17 to Bullet #26. Contrast D-18 (labeled LIMP) with D-19 (labeled LIMP 2). Thus, not only did he not compare each item to each and every other item to which he opines it matches, he did not even compare like to like as he jumped between items.

Thus, even after the testimonial hearing, Examiner Clayton failed to specify what individual characteristics he allegedly observed within the areas of agreement to form his identification opinions, how many he found or based his opinions on, what kind of marks these individual characteristics were, where specifically they were located within the areas he identified, or anything else about the individual characteristics themselves that caused him to believe these marking were "what I would expect" to find in items fired from the same gun. Moreover, Examiner Clayton could not identify how he matched specific individual characteristics between items to reach his identification conclusions because his testimony revealed that he did not even compare all items to one another, much less describe the specific marks within the areas of agreement that supposedly matched between each item and every other item. Accordingly, the State has failed to

comply with Rule 3:13-3(b)(1), N.J.R.E. 703, and the net opinion rule, and Examiner Clayton's identification opinions must be excluded from Mr. Caneiro's trial.

B. The ballistics examination that was performed in this case fails to meet either prong 2 or prong 3 of N.J.R.E. 702.

N.J.R.E. 702 provides that "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise." In order for evidence to be admissible under N.J.R.E. 702, three requirements must be met:

> (1) the intended testimony must concern a subject matter that is beyond the ken of the average juror;
>
> (2) the field testified to must be at a state of the art such that an expert's testimony could be sufficiently reliable; and
>
> (3) the witness must have sufficient expertise to offer the intended testimony.

State v. Kelly, 97 N.J. 178, 208 (1984). In this case, neither prong (2) nor prong (3) have been met as applied to this expert's testimony.[2]

"Reliability is critical to the admissibility of expert testimony. Indeed, '[a]n expert opinion that is not reliable is of no assistance to anyone.'" State v. Olenowski (Olenowski I), 253 N.J. 133, 150 (2023). In assessing whether a methodology is sufficiently reliable to be admissible, our courts must now analyze the Olenowski factors, which include but are not limited to the Daubert factors:

> (1) whether the scientific theory or technique can be, or has been, tested;
> (2) whether it "has been subjected to peer review and publication";
> (3) "the known or potential rate of error" as well as the existence of standards governing the operation of the particular scientific technique;

[2] The defense does not concede that the field as a whole is reliable, but this brief mounts only an as-applied challenge.

and (4) general acceptance in the relevant scientific community. Ibid. (quoting Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 580 (1993)).

The determination Your Honor must make is explicitly one of admissibility, not weight. Trial judges serve as "gatekeepers" to "ensure that proceedings are fair to both the accused and the victim. In that role, they must assess whether expert testimony is sufficiently reliable before it can be presented to a jury." State v. J.L.G., 234 N.J. 265, 308-09 (2018). Trial courts must make a preliminary assessment "of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." Olenowski I, 253 N.J. at 147. That assessment requires trial courts to directly "examine actual measures of reliability," which include both "the soundness of the methodology" and "the accuracy of the theory or technique in practice." Olenowski I, 253 N.J. at 150. Once that assessment has taken place, it is then the trial court's duty to ensure that "expert witnesses demonstrate that they have reliably applied [their] methodology" in the case at bar. State v. Olenowski (Olenowski II), 255 N.J. at 616.

i. The State has failed to prove that Prong 3 of N.J.R.E. has been met in this case.

After the hearing, it is now clear that Examiner Clayton does not have sufficient expertise to offer the intended testimony. Prior to the hearing, we challenged him on the basis that while he may be qualified as an expert, he has not shown that he used his expertise in this case because he did not document his analysis—how he came to his conclusions—and thus there was no basis in the discovery for us to conclude that he used his purported expertise to form his opinions in this case. Now, in addition to still being in the dark as to what specific individual characteristics led him to form his identification conclusions in this case, we know that he has no education in physics, statistics, or chemistry. Contrast with Examiner Smith, who has taken college courses in all of

these fields and with ANSI/ASB Standard "Minimum Education Requirements for Firearm and Toolmark Examiner Trainees," at 1 ("The trainee shall be required to have taken coursework from an accredited college or university, or international equivalent, in physics, statistics, and general chemistry by the completion of their training program if it was not part of their bachelor's degree.").

Examiner Clayton also fails to meet prong 3 of N.J.R.E. 702 because, as he readily admitted, while there are 400-500 million guns in the United States today, he was trained on less than 4000 guns. 7/2/2015 Clayton Cross, 261:18 – 263:1. Thus, his training only covered 0.001% of the guns in existence in the United States today. Ibid. Therefore, he does not have sufficient expertise to opine on whether the degree of similarity or dissimilartiy would be expected across the other 99.999% of firearms. Moreover, even if you add in the 3000 examinations he has performed in his career on top of his training, that percentage only goes up to 0.00175%. And, as he again readily admitted, his work is rarely reviewed outside of his unit; the NJSP Ballistics Unit has no known error rate; and he himself has no known error rate, which could be "10 percent of the time or 20 percent of the time or 30 percent of the time." 7/2/2015 Clayton Cross, 175: 10-11. Therefore, we have no idea how good Mr. Clayton actually is at making ballistic comparisons.

We also now know that proficiency examinations to which he was subject tell us almost nothing about his proficiency to conduct casework of the same complexity as the comparisons at issue in this case. First, the CTS proficiency exams consist of only a single question (and thus provide a very limited data set and an attendant high interval of uncertainty), do not all test ballistic comparisons as opposed to other tool mark comparison, and nearly all test takers get perfect scores year over year, an indication that the exams are so easy that anyone could pass them. Indeed, as Examiner Clayton testified "To my knowledge, no one has failed a proficiency test as of yet but if

they did, it would be documented and that person would have to get retrained." 7/1/2025 Clayton Direct, 185: 9-12. Second, when your Honor questioned Examiner Clayton about why none of his proficiency tests were accompanied by answers, he testified without hesitation that results are not recorded or kept in any manner by any person:

> **Q** . . . Is there something that's written, documented, kept in your file, kept in any other person's file that says yeah, this is what happened on these particular days. Yeah, these are the results that we got for each one of the tests?
>
> **A** There's not, no, Your Honor. We just have, this is what we have to document the proficiency testing, the report.

7/1/2025 Clayton Direct, 185: 18-25. We know that to be untrue because we later saw year after year of his CTS results, designated by his participant number, as well as Examiner Smith's results from 2023, designated by his participant number. But what is also troubling about Examiner Clayton's testimony 'that the results don't exist' is that it indicates he was never informed of his results and thus never able to learn from them or be retrained if his answers so merited. Third, we know that he did not take a proficiency exam in 2020—during the analyses in this case—and that he failed to submit his inconclusive results to CTS for the 2023 proficiency exam. And fourth, we know that examiners act differently in proficiency testing—namely that they are more conservative in their opinions—than when they are unaware they are being tested. See D-46, Scurich, "The Hawthorne effect in studies of firearm and toolmark examiners."

Before dismissing the 2023 test as an outlier, I urge the Court to consider that the 2023 exam is actually the only exam that comes even close to the difficulty of the comparisons Examiner Clayton had to make in this case. In the 2023 exam, Examiner Clayton was asked to compare

bullets from two guns of the same make and model. He was unable to come to a definitive conclusion. In this case, Examiner Clayton testified on cross that he knew right away based on class characteristics that the crime scene evidence could only have come from the two Sig Sauer pistols—#6 and #7—guns of the same make and model, just as the guns in the 2023 exam were of the same make and model. While he ultimately concluded that the crime scene evidence came from one of the Sig Sauers, it is not clear from the record that he didn't just conclude one of these Sig Sauers was a better match than the other and therefore chose that one as the one to which he identified the bullets and the casings in this case. That is why it is so concerning that the false identification rate of the 2023 exam—which again looked at guns of the same make and model as in the case at bar—was 21.78%. And when inconclusives are counted as well in determining the error rate—which are incorrect when compared to ground truth, the error rate for guns of the same make and model skyrockets to 68.57%. Thus, the only evidence we have in the record about how Examiner Clayton performs in a situation similar to the casework at issue in this case is that the error rate under those conditions is nearly 70%.

Thus, the State has failed to satisfy prong 3 of N.J.R.E. 702 as it relates to Examiner Clayton. He lacks the requisite education in all three key fields of study; his training and experience encompass 0.00175% of guns in the United States today; and on the proficiency exam closest to the case at bar, his answers were inconclusive or, in non-technical terms, "I don't know."

Microscopic Examiner Deady will be addressed in more detail below, but the State has also failed to satisfy prong 3 of N.J.R.E. 702 as it relates to him. We do not know if he has the requisite education in physics, statistics, and chemistry; we received no proficiency tests or results in discovery as to Examiner Deady; and we have no information as to the number of guns he was trained on or has examined in casework.

ii. The State has failed tso prove that Prong 2 of N.J.R.E. has been met in this case.

Prong 2 of N.J.R.E. 702 requires that the proponent of the evidence demonstrate that the expert reliably applied a reliable methodology. Although the defense did not mount a foundational challenge to the reliability of ballistics comparison, the concerns about the reliability of the field as a whole relate directly to the reliability of the analysis in this case: because ballistics comparison is a subjective, unstandardized field that is prone to cognitive bias and has no known rate of error, the inability for Mr. Clayton to specifically explain whys and wherefores of his opinion is even more concerning that it would be in a field with objective criteria and the ability to determine ground truth.

Since the filing of our initial brief on 5/6/25, the Oregon Court of Appeals reviewed the AFTE Theory of Identification method in detail and held that "the state failed to show that the AFTE method is scientifically valid." State v. Adams, 340 Or. App. 661, 663 (2025). While this Oregon ruling is certainly not binding on this Court, this ruling does show that courts are currently assessing this question of reliability of the AFTE method. In addition, this Court's analysis of the shortcomings of the AFTE method—the method upon which Examiner Clayton testified he relied on exclusively to form his opinions—is instructive as it relates to the findings Your Honor must make under prong 2 of N.J.R.E. 702.

When considering whether the State has met its burden with regard to prong 2 of N.J.R.E. 702, I would also point your Honor's attention to D-47, a November 2024 article in which the authors conclude that "statements about the common origin of bullets or cartridge cases that are based on examination of 'individual' characteristics do not have a scientific basis." D-47, Cuellar, "Methodological problems in every black-box study of forensic firearm comparisons," at 1. When you combine this finding that there remains no scientifically based field-wide error rate for

ballistics with the fact that there is no known error rate for the NJSP Ballistics Unit nor for Examiner Clayton in particular, there is no evidence in the record upon which prong 2 can be satisfied in this case.

Moreover, there were no quality control measures in effect at NJSP Ballistics Unit at the time of the analyses here. Indeed, the NJSP Ballistics Unit was not accredited by any body at the time of the analyses in this case. And even now, it's not clear why the NJSP Ballistics Unit isn't accredited by the National Accreditation Board—as the NJSP DNA and Toxicology labs are—but Examiner Clayton speculated that it could be because the Ballistics Unit applied for accreditation by the National Accreditation Board, failed to get accredited by them, and had to be satisfied with the AL2A private accreditation they ultimately were able to obtain in 2024. As Dr. Kukucka testified, independent verification is another essential quality control measure. But here, as will be discussed more below, because there is no documentation of how Examiner Deady performed his microscopic review and because Examiner Deady did not testify at this hearing, there is no evidence in the record that any of the three 2019 reports and opinions therein were verified at all.

Because the State has failed to show the AFTE method can produce reliable results and in fact did so in this case; because the State has failed to establish scientifically-based, field-wide error rates or error rates the NJSP Ballistics Unit or error rates for Examiner Clayton, Examiner Deady, or Examiner Smith; and because there is no evidence in the record that effective quality assurance measures were in place at the time of the analyses in this case, the State has failed to show that prong 2 of N.J.R.E. 702 has been met in this case.

a. Examiner Clayton did not comply with minimum standards in the field.

Given that the field of ballistics is entirely based on the subjective visual judgment of the examiner, it is particularly concerning that in this case Examiner Clayton did not comply with the

minimum standards in the field. By way of example, according to the AFTE Technical Procedures Manual—with which Examiner Clayton agreed:

> Good laboratory practice dictates that clear examination records and documentation shall be prepared over the course of evidence examination. Examination records should be such that in the absence of the original examiner, another competent examiner could evaluate what was done and interpret the data, as well as verify that proper procedures were followed. Examination records should be of a permanent nature, and corrections should not be made through obliteration or erasure.

D-7, at 7. Yet, in this case, we know that he did not, in fact, keep records over the course of his examination that would allow another examiner to "evaluate what was done and interpret the data" understand, much less "verify that proper procedures were followed." Id. And both he and Examiner Smith testified that the NJSP Ballistics Unit definitively does not keep the original examination reports and notes but, rather, only keeps the final drafts.

By way of another example, looking at the SWGGUN Standard titled "Guidelines for the Standardization of Comparison Documentation," Examiner Clayton testified on direct that he followed this standard. 7/1/2025 Clayton Direct, 213: 19-25. Section 2.2 of this standard provides: "At a minimum, the documentation must include depictions or descriptions of the agreement or disagreement of individual and/or class characteristics to the extent that another qualified firearm and toolmark examiner, without the benefit of the evidence itself, can review the case record, understand what was compared, and evaluate why the examiner arrived at the reported conclusion." S-4.

Yet, as Examiner Clayton himself admitted at the hearing, another examiner would need to review the physical evidence to evaluate why he arrived at his reported conclusions—and, concerningly, just looking at the documentation he chose to create would not be sufficient.

Moreover, Examiner Clayton himself was not able to rely on the documentation he chose to create to recall exactly what evidence he actually compared. 7/2/25 Clayton Cross, 282: 4-11; 282: 25 – 283: 12. This standard permits "supporting documentation of one comparison may be used for additional evidence within a case, provided the agreement described or depicted is representative of the additional comparison(s)." S-4, at 2.3. But as discussed above with regard to the bullet comparisons between #11, #12, #17, #20, and #26, Examiner Clayton did not even take photographs depicting the same area of agreement, the same LIMP, to justify his opinion that all five of these bullets were identified to one another, much less take photographs of which ones he could see the individual characteristics within that area upon which he allegedly formed his identification opinions. Contrast D-18 (LIMP) with D-19 (LIMP 2).

Lastly, by way of example, Examiner Clayton testified about and adopted ANSI-ASB "Standard for Verification of Source Conclusions in Toolmark Examinations." D-11. That standard provides as follows:

> The following information shall be documented and preserved:
>
> – the identity of the verifier (e.g., the first and last name);
>
> – the date(s) of verification;
>
> – the basis for the verifier's source conclusion (e.g., what marks were compared);
>
> – the verifier's conclusion(s);
>
> – affirmation of the verifier's item identity check;
>
> – the method of review [e.g., light comparison microscopy (LCM), virtual comparison microscopy(VCM), blind verification, non-blind verification];

– any disagreement of source conclusions and their resolutions, including any change(s) to original conclusion(s).

D-11, "Standard for Verification, at 3. Yet, once again, that standard was not adhered to in this case. In fact, the only item on that list that was adhered to was the documentation as to the identity of the verifier, whom Examiner Clayton hand selected. The dates of the verifications were not documented or preserved; the basis for the verifier's source conclusion (e.g., what marks were compared) was not documented or preserved; the verifier's conclusion(s) was not documented or preserved; affirmation of the verifier's item identity check was not documented or preserved; the method of review [e.g., light comparison microscopy (LCM), virtual comparison microscopy(VCM), blind verification, non-blind verification] was not documented or preserved; and any disagreement of source conclusions and their resolutions, including any change(s) to original conclusion(s) was not documented or preserved.

Thus, the record before your Honor is replete with examples of minimum standards in the field of ballistics to which neither Examiner Clayton nor NJSP Ballistics Unit writ large adhered. Because these minimum standards are required "to ensure the reliability of Firearm and Toolmark examination results," D-9, SWGGUN "Systematic Requirements," at 1, and because these minimum standards were repeatedly ignored throughout both the examination and the microscopic verification that purportedly happened here, the State has failed to show that prong 2 of N.J.R.E. 702 has been met in Mr. Caneiro's case.

b. The NJSP SOPs are too permissive to reliably channel discretion, rendering the examiner's opinions unreliable.

Given that AFTE's theory of identification "does not provide a specific protocol," NRC Forensics Report at 155, and "the lack of a precisely defined process" has been described as a

"fundamental problem" with firearm examinations, ibid., it is all the more important that the examiner and the verifier have robust, detailed standard operating procedures to ensure the reliability of the analysis. It is up to the laboratory to provide a step-by-step methodology on how to "define" and "compare" these features in a way that produces reliable results.

In this case, the NJSP SOPs that purport to govern how ballistics comparisons are made are markedly insufficient to perform their function of guiding examiner and verifier discretion to ensure the reliability of the results obtained. The SOPs rely heavily on the examiner's intuition and subjective judgment to determine whether an identification can be made. Indeed, the SOPs are rife with non-objective suggestions like "recommended," "once satisfied," "may," "possible," "if applicable," "sufficient," and "at the discretion of the examiner." S-10, at 55-61. When it comes to verification, the SOPs do not delineate at all how verifications are to be performed. See id. at 61-62. There is no step-by-step instruction for how microscopic comparisons are to be made. In contrast to the testimony of the examiners, every indication within the SOPs suggests a non-blind, non-independent microscopic verification process: "All comparison conclusions will be verified by another qualified examiner except as noted in the below paragraph. Verifiers will initial the photographs used or that represent those areas directly viewed to arrive at the conclusion." Id. at 62. Thus, the NJSP SOPs specifically direct verifiers to look at the photos of the examiner—a clear indication of what that examiner deemed important and thus a non-blind review process. Likewise, there is no step-by-step instruction as to how technical and administrative reviews are to be made. And there is no mention of cognitive bias in the NJSP SOPs, and we have no evidence in the record that the NJSP employs any bias mitigation procedures. Because the NJSP SOPs are too meager and too permissive to fulfill their function of guiding examiner and verifier discretion, the State

cannot demonstrate the as-applied validity of the ballistics analysis that was performed in Mr. Caneiro's case.

c. The known exposure to task-irrelevant information renders the opinions in this case unreliable.

Even more concerning is the known exposure of the examiner and all reviewers to task-irrelevant information that the scientific research Dr. Kukucka testified about shows can and does change examiner opinions about the physical evidence they examine. The examiners and reviewers in this case were not shielded by NJSP from the task-irrelevant and highly inflammatory information in the evidence receipts. See D-12, D-13, D14. Examiner Clayton even specifically remembered AP Decker's November 2018 letter to the Ballistics Unit that contained both task-irrelevant and highly inflammatory information. See D-17. Examiner Clayton also admitted exposure to task-irrelevant information from this case from a variety of new organizations. And Examiner Clayton testified that while it is common practice for other labs at the NJSP to keep "Communication Logs," documenting all of their interactions with the prosecutor's office, he chose not to keep such logs or document his communications with the prosecutor's office in any other way. Cf. D-15, D-16. As a result, the true extent of his exposure to task-irrelevant information is unknown. What we do know, because he stated it on cross, is that he not only communicated with the prosecutors before his testimony at this hearing but that he, in fact, even read the briefs moving to exclude his testimony and the submission by Dr. Kukucka in support of that motion.

Given this continuing exposure to task-irrelevant information, it is unsurprising that Examiner Claton testified that yes, he was exposed to task-irrelevant information but that he didn't think it affects him: "the outside information, it's there but it doesn't matter to us when we're doing, conducting the examination." 7/1/2025 Clayton Direct, 141: 20-22. Unfortunately, whether

Examiner Clayton thinks it affects him or not, the scientific research shows us that task-irrelevant information does affect examiner decisions, a fact accepted even by AFTE in their 2024 Report. D-6, at 20; see also D-45, at #16 ("Despite ample evidence to the contrary, many forensic analysts still believe that willpower, training, and/or experience can create immunity to cognitive bias. Conversely, some studies suggest that expertise can actually increase vulnerability to cognitive bias insofar as experts rely more heavily on "cognitive shortcuts" that allow them to process information more quickly but also limit their mental flexibility.").

In Mr. Caneiro's case, there is no evidence in the record that NJSP Ballistics Unit, Examiner Clayton, Examiner Smith, or Examiner Deady utilized any bias control measures or attempted to mitigate the known influence of cognitive bias in any way. And in fact, we know they were exposed to task-irrelevant, highly inflammatory, biasing information before their analyses, during the over a year the analyses were ongoing, and after their analyses prior to this hearing. As a result, the extent to which the conclusions in this case are the result of cognitive bias cannot be determined, and the State has not—and cannot—prove that the opinions reached in this case are reliable.

d. Examiner Clayton's failure to sufficiently document his analyses at the time of his analyses renders his testimony more than 5 years later unworthy of trust.

Moreover, we cannot have confidence in the reliability of Examiner Clayton's or Examiner Smith's testimony because of the extreme passage of time between their work in 2019 and 2020 and this hearing. As Dr. Kukucka testified, common sense teaches us, and Examiners Clayton and Smith both admitted, memory doesn't get better over time. To be clear, even if only a couple of years had passed since the initial examination, the same concerns regarding passage of time and erosion of memory would still be present. On top of that, both examiners experienced a high level

of retroactive interference, averaging 100-300 cases per year since their work in this case over 5 years ago, work that predates the pandemic. And while Examiner Smith readily acknowledged over and over again during his testimony the limits of his memory about this particular case, Examiner Clayton was reluctant to do the same.

Yet, whether Examiner Clayton acknowledges the limits of his human brain or not, his failure to document how he came to his conclusions back in 2019 and 2020 prevented him from explaining at this hearing what items he compared to which other items and from explaining which individual characteristics—rather than merely the areas in which he found them—he relied on to form his identification opinions in this case. As a result, we argued in our initial brief that Examiner Clayton would not be capable of curing his failure to document how he came to his opinions in 2019 and 2020, and now having had the benefit of his testimony, the record shows that to be true and falls short of what is required for a finding of reliability under prong 2 of N.J.R.E. 702.

e. The complete lack of information about Microscopic Reviewer Deady and his alleged verification renders the opinions reached by Examiner Clayton unverified and unreliable.

At the outset, it should be noted that the defense objects to the termination of the hearing without the testimony of Mr. Deady. That is because, without this testimony, this Court does not have any information about the verification process, how it was conducted, and/ or whether it was performed reliably. Thus, the claim that the work was verified by Mr. Deady cannot be used to aid the State in meaning its burden given the total lack of information about that review and the deprivation of the opportunity to question Mr. Deady about that review.

Next, because Examiner Deady did not document his alleged microscopic verification in any manner—he wrote no reports, took no notes, and took no photographs—and because the Court concluded the hearing before hearing from microscopic examiner Deady—to which the State, as

the proponent of the evidence did not object, there is no evidence in the record upon which this Court can find that an independent verification did in fact occur in this case.

Your Honor heard extensive testimony from Examiner Clayton, Examiner Smith, and Dr. Kukucka about the vital importance of independent verification as a quality assurance mechanism. Yet, in this case, there is no evidence such an independent verification actually occurred. We have no evidence in the record that Examiner Deady is generally qualified as an expert in ballistics (see Subsection B(i) above); we have no evidence of the extent to which Deady was exposed to task-irrelevant information from the case materials or from working in close proximity to Clayton or from speaking with the prosecutor's office or from watching or readying the news; we have no evidence as to what Examiner Deady recalls Examiner Clayton said to him or how he responded when Clayton specifically selected Deady to verify his work; we have no evidence of how Deady conducted his examinations, if he did indeed conduct them; we have no evidence as to whether Deady recalls initial disagreement with any of Clayton's opinions; and we have no evidence as to how Deady recalls they resolved those disagreements.

Examiner Clayton testified that he selected Examiner Deady specifically to perform the microscopic review of all his 2019 work in this case, yet his recollection as to the specifics of his interactions with Deady before, during, and after those reviews was spotty at best. Moreover, because his recollection of conversations with Deady could only ever provide one side of a two-sided story, a full and fair hearing requires testimony from both Clayton and Deady and the Court's credibility assessments to determine who Your Honor believes where their testimony differs. Because the Court ended the hearing before hearing from Deady, the Court has no evidence of what Deady saw or knew or thought or how he reached his conclusions or if those conclusions

differed from Clayton's, and this complete lack of information prevents this Court from finding that an independent, reliable microscopic review actually occurred in this case.

One last point on this topic: when the Court decided to end the hearing without the benefit of Microscopic Reviewer Deady's testimony, the Court justified that decision by relying on a belief that examiners all do their examinations the same. This was a concerning characterization because that is precisely the opposite of what we heard from the examiners in this case and what the scientific research reveals about how examiners do their work. Because the AFTE method is subjective and identifications are based on the specific training and experience of each examiner rather than an objective threshold, "firearms examiners' judgments of the same items are highly variable." D-45, at 19. As Dr. Kukucka wrote in his report and explained in more detail during his testimony:

> Research has shown that firearms experts often reach different opinions of the same items, evincing poor reproducibility and poor repeatability. To illustrate, a study in which experienced examiners compared over 11,000 bullets and cartridges found that:
>
> > the repeatability [i.e., within-examiner consistency] of comparison decisions was 78.3% for known matches and 64.5% for known nonmatches [and the] reproducibility [i.e., between-examiner consistency] was 67.3% for known matches and 36.5% for known nonmatches.

> Stated otherwise, independent firearms examiners reached different opinions of the same items between 32.7% and 63.5% of the time (demonstrating poor reproducibility), and individual examiners' opinions of the same items changed over time between 22.7% and 35.5% of the time (demonstrating poor repeatability). Real-world data likewise suggest alarming rates of disagreement between firearms examiners: In two analyses28 of 721 peer-review decisions at a firearms laboratory over the course of 11 years, colleagues reached different opinions of the same items in 17.3% of cases.

D-45, at 18. And indeed, one need not rely on the scientific research to know that is true because the two examiners who testified here both testified about how they each go about their work—specifically speaking about themselves only because each examiner does things differently. By way of example, Examiner Clayton testified about the difference between when microscopic verifications would ideally happen and what happens in the real world: "in an ideal world, if when I've done my examination, microscopic comparison it would go right to someone else right away and verified at the same time, it should. In practicality, it doesn't always happen that way." 7/1/2025 Clayton Direct, 204: 11-15. Examiner Smith testified repeatedly that every examiner does their work their own way and limited his testimony accordingly to what he specifically does:

> **Q** That's okay. Then tell me what happens next?
>
> **A** They take it to their desk. They use the LIMS electronic program to scan it in LIMS to their custody. They open the box. And begin examining the evidence. So I can tell you how I do it, if you want to hear that.

Q Please do. Because you wouldn't know how somebody else does it specifically, right?

A Yeah.

Q Unless you're standing over them.

A Right.

Q Okay, so just tell me how you do it.

A Yeah, so I look at each piece individually . . . That's really helpful to give me an idea of what different classes of evidence there are. So that's what that looks like for me.

7/3/2025 Smith Direct, 61: 6 – 62: 11. When speaking about what examiners choose to compare, Examiner Smith also testified that some examiners compare each item to one another and others use transitive inference like Examiner Clayton:

Q And you're asking that because sometimes you compare one to four and then four to three and then say, well, one and three match because they both match to four; right?

A That is one way to perform a comparison. Yes. And that's because, well, a number of variables, but the short way to say it is that every piece of evidence doesn't get marked the same way every single time. So there's, there's a lot of variables that can affect that, but what you're saying is accurate.

Q So in your experience some examiners will look at one, match it to four; right?

A Yes.

Q And then match four to three; right?

A Yes.

Q And then say, well, therefore one matches three because they both match four?

A Exactly correct.

7/3/2025 Smith Cross, 96: 3-20. With regard to microscopic review in particular, Examiner Smith again underlined the variability not just in the examination that occurs but also in how the microscopic reviewer gets the evidence—and thus the opportunities for what should be an independent review to become a non-independent review due to communications between the examiner and the reviewer: "So I'll scan it to -- there's a couple of ways it has been done. It can be scanned to a pending locker and they can retrieve it from there, or it can be given directly to them." 7/3/2025 Smith Direct, 65: 3-6. And with regard to technical and administrative review, once again Examiner Smith was careful to limit his testimony to what he does and how he likes to do it: "So I usually start on then notes pages with the firearm stuff first, because I have the firearm and that's just how I like to do it." 7/3/2025 Smith Direct, 73: 23-25. Thus, what the record reveals in this case is that each examiner looks at the evidence until they feel good enough to declare an identification, that there are a number of variables that affect how they do their examinations, and that they each do their examinations as they like to do them because the NJSP SOPs do not prescribe a strict step-by-step process for examination, microscopic review, or technical and administrative review.

Thus, even after the hearing, we have no evidence in the record as to what Microscopic Reviewer Deady did, if anything, in this case. The mystery of what Microscopic Reviewer Deady did, if anything, in this case, the extent of the task-irrelevant information to which he was

exposed, what conclusions he reached initially, how he reached his conclusions, how he communicated with Examiner Clayton, and how disagreements, if any, were resolved falls woefully short of what is required to establish as-applied validity under N.J.R.E. 702.

C. The ballistics examination that was performed in this case also fails to meet the requirements of N.J.R.E. 401 and 403.

N.J.R.E. 403 bans the admission of evidence that is substantially more prejudicial than probative. As the Court unequivocally held in Olenowski I, "an expert opinion that is not reliable is of no assistance to anyone." 253 N.J. at 150. Indeed, an "expert" opinion has no probative value at all if it is not based on a sound scientific methodology that has been demonstrated to have been reliably applied in this case. At the same time, expert opinions are incredibly prejudicial, especially because of the amount of deference and trust juries give to so-called expert testimony. State v. Jamerson, 153 N.J. 318, 342 (1998) ("The aura of special reliability and trustworthiness surrounding expert testimony, which ought to caution its use, especially when offered by the prosecution in criminal cases, poses a special risk when it involves the question of a defendant's guilt.") (internal quotation marks omitted)); see also Mark A. Godsey & Marie Alao, She Blinded Me with Science: Wrongful Convictions and the "Reverse CSI Effect," 17 Tex. Wesleyan L. Rev. 481, 495 (2011) (noting that "jurors in this country often accept state forensic testimony as if each prosecution expert witness is the NASA scientist who first put man on the moon").

While this Court was holding this testimonial hearing, a trial court in Illinois barred the admission of identification ballistics testimony in an as-applied challenge under Rule 403, finding that while the identification opinion testimony "would be probative to some extent," "based on concerns regarding error rate accuracy, potential bias concerns, and [the examiner's] incorrect conclusion in an annual proficiency exam, this Court finds under IRE 403 that such evidence would

create a risk of prejudice, confusion, and misleading the jury so as to substantially outweigh the probative value of [the] expert opinion testimony." IL v. Kimberley, at 59. So reasoning, the trial court barred the State "from offering [the expert's] firearms identification opinion testimony at trial," but ruled that "the State will be allowed, so long as the requisite foundation is laid, to present evidence that the cartridge cases were all .40 caliber." Id. While this Court is certainly not bound by the Illinois trial court's decision, we bring this case to the Court's attention to show again that 1) courts around the country are currently grappling with whether to admit ballistics identification opinions and 2) how this Illinois court ruled on an as-applied challenge, which was in the same procedural posture as Mr. Caneiro's motion to exclude.

In Mr. Caneiro's case, because Examiner Clayton relied exclusively on AFTE's Theory of Identification Method—which AFTE itself explicitly acknowledges is "subjective in nature" and "based on the examiner's training and experience," S-3—and because, even after his testimony, we still don't know what individual characteristics Examiner Clayton relied upon to decide there was enough quantity and quality of these individual characteristics to come to his identification opinions, the State has failed to show that the ballistics examination in this case passes muster under N.J.R.E. 401. And because the bases for Examiner Clayton's identification opinions remain unarticulated even after the hearing, his "just-trust-me" identification opinions are clearly barred by N.J.R.E. 403 as they are substantially more prejudicial than probative given the great weight jurors lend to anyone called as an expert witness at trial. Thus, in addition to being inadmissible under Rule 3:13-3, N.J.R.E. 702, and N.J.R.E. 703, the ballistics evidence is also inadmissible at Mr. Caneiro's trial because it violates both N.J.R.E. 401 and 403.

POINT II

IN THE ALTERNATIVE, BASED ON THE CONCERNS DISCUSSED HEREIN, THE COURT SHOULD LIMIT THE TESTIMONY OF THE BALLISTICS EXAMINER.

In the alternative, the Court should limit the ballistics testimony in the following ways. First, the Court should only permit the examiner to testify to the comparisons that he made an attempt to document. Second, rather than allowing the examiner to testify to a "match," the Court should only permit the examiner to testify that based on his examination and the consistency of the class characteristics and microscopic toolmarks, the recovered firearm "**cannot be excluded**" as the source of the recovered bullets / casing. This phrasing of the testimony more accurately reflects the evolving understanding of the scientific certainty and limitations within the field of firearm and toolmark identification. See, e.g., United States v. Tibbs, 2019 WL 4359486, at *21 (D.C. Super. Ct. 2019); United States v. Shipp, 422 F.Supp. 3d 762, 765-66, 783 (E.D.N.Y. 2019).

CONCLUSION

Even after the testimonial hearing, there remains a lack of any meaningful, reliable information about how the examiner formed his opinions, a complete lack of information about the peer review of those conclusions, a marked absence of quality assurance mechanisms that provide some assurance of quality work, undisputed exposure to known task-irrelevant, biasing information before, during, and after the examiner's analyses in this case, and a lack of standard operating procedures that fulfill their function of guiding examiner and verifier discretion to ensure reliable results. Accordingly, there are insufficient case-specific indicia of reliability to allow the admission of the firearm and toolmark identification evidence at Mr. Caneiro's trial, and it must be excluded. Considered individually or together, our discovery rules and N.J.R.E. 702, 703, 401, and 403 require this exclusion.

Respectfully submitted,

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