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STATE OF NEW JERSEY,

Plaintiff-Petitioner,

v.

JULE HANNAH,

Defendant-Respondent.

SUPREME COURT OF
NEW JERSEY
Docket No. 089819

Criminal Action
Indictment No. 18-03-0226-I

On Certification From:
Superior Court of New Jersey,
Appellate Division
App. Div. No. A-3528-21

Sat Below:
Hon. Patrick DeAlmeida, J.A.D.
Hon. Maritza Berdote Byrne, J.A.D.
Hon. Avis Bishop-Thompson, J.A.D.

PROPOSED BRIEF OF *AMICUS CURIAE* ASSOCIATION OF CRIMINAL DEFENSE LAWYERS OF NEW JERSEY

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INTEREST OF *AMICUS CURIAE*

Amicus curiae the Association of Criminal Defense Lawyers of New Jersey ("ACDL-NJ") is a non-profit corporation organized under the laws of this State to, among other things, "protect and insure by rule of law, those individual rights guaranteed by the New Jersey and United States Constitution; to encourage cooperation among lawyers engaged in the furtherance of such objectives through educational programs and other assistance; and through such cooperation, education and assistance, to promote justice and the common good[.]" *ACDL-NJ By-Laws*, Article II(a), http://www.acdlnj.org/about/bylaws. The ACDL-NJ is comprised of approximately 500 members of the criminal defense bar of this State, including attorneys in private practice and public defenders.

Over the years, the ACDL-NJ has participated as *amicus curiae* in numerous cases in this Court and in the Appellate Division. *State v. Hill*, 256 N.J. 266 (2024); *State v. F.E.D.*, 251 N.J. 505 (2022); *State v. Lodzinski*, 246 N.J. 331 (2021); *State ex rel. A.A.*, 240 N.J. 341 (2020); *State v. L.H.*, 239 N.J. 22 (2019); *State v. Lunsford*, 226 N.J. 129 (2016); *In re State Grand Jury Investigation*, 200 N.J. 481 (2009); *State v. Osorio*, 199 N.J. 486 (2009); *Gannett Satellite Info. Network, LLC v. Twp. of Neptune*, 467 N.J. Super. 385 (App. Div. 2021); *State v. Martinez*, 461 N.J. Super. 249 (App. Div. 2019); *State*

v. Jackson, 460 N.J. Super. 258 (App. Div. 2019), *aff'd o.b.*, 241 N.J. 547 (2020); *State v. Triestman*, 416 N.J. Super. 195 (App. Div. 2010).

In particular, the ACDL-NJ has participated as *amicus* in a number of cases that have addressed the admissibility of forensic evidence, in general, *see, e.g.*, *State v. Olenowski*, 253 N.J. 133 (2023) (examining principles to assess admissibility of Drug Recognition Evaluation testimony in criminal and quasi-criminal cases); *State v. J.L.G.*, 234 N.J. 265 (2018) (considering whether the "Child Sexual Abuse Accommodation Syndrome" has a sufficiently reliable scientific basis to be the subject of expert testimony), and cell site analysis in particular, *see, e.g.*, *State v. Burney*, 255 N.J. 1 (2023) (addressing whether the expert testimony regarding the coverage range of a cell phone tower was admissible). Such cases are critical to assuring that only reliable evidence is admitted against New Jerseyans charged with crimes, *see Olenowski*, 253 N.J. at 143 (recognizing that expert testimony must be sufficiently reliable to be admissible under N.J.R.E. 702); *J.L.G.*, 234 N.J. at 301 (same), a matter which, the ACDL-NJ believes, is of great public importance. ACDL-NJ, whose members regularly address the issues presented by this case, respectfully submits this brief to "assure [] that all recesses of the problem[s] will be earnestly explored." *Whelan v. N.J. Power & Light Co.*, 45 N.J. 237, 244 (1965).

PRELIMINARY STATEMENT

The integrity of a fair trial rests on the reliability of the evidence presented. The Appellate Division correctly reversed defendant Jule Hannah's convictions because the State offered historical cell site analysis through a detective whose testimony exceeded the bounds of proper lay opinion. This Court should similarly conclude that an expert is required to provide testimony interpreting and relying on call detail records for location purposes.

Historical cell site analysis is a complex and technical method for showing a cell phone's proximity to a particular event such as a crime because drawing any conclusion as to the location of a cell phone via historical cell site data requires careful consideration of numerous variables, factors, and limitations. Testimony that fails to account for these critical complexities is inaccurate and misleading. And as many courts have recognized—including this one, at least implicitly—these various factors and limitations are beyond the ken of the average juror. Thus, a lay person is unqualified to testify regarding historical cell site analysis, and this type of testimony falls into the category of complex matters that requires expert testimony.

In this case, the detective's testimony concerning Hannah's historical cell site data was the most prominent evidence offered by the State to place Hannah at the scene of the crime. However, the detective failed to address the intricacies

and limitations of interpreting and relying on historical cell site data for location purposes—nor could he, as he was not qualified as an expert. As a result, the jury was provided with incomplete and unreliable information. The trial court's decision to allow the detective to testify as a lay witness, despite the complex and technical nature of the subject on which he testified and the State's use of that testimony to reach an unsupported conclusion, denied defendant Hannah a fair trial.

Additionally, a police officer deciphering call detail records from a cell phone carrier engages in a process beyond the ken of the average juror, relying on training and experience to interpret the information. Lay opinion cannot be grounded in an officer's training and experience because it is limited to what the witness perceived firsthand. Here, the detective, based on his training and experience, testified that Hannah's cell phone connected to certain cell towers along a specific path—one that was also taken by the victim—and the State used that testimony to argue that Hannah was at or near the scene of the crime of which he was convicted. Because interpretation of the call detail records called for the detective to use his training and experience, it was, in reality, expert opinion.

For these reasons and those set forth more fully below, *Amicus* the ACDL-NJ respectfully urges the Court to affirm the Appellate Division's decision.

STATEMENT OF FACTS AND PROCEDURAL HISTORY

Amicus adopts the detailed facts and procedural history described in defendant Hannah's Supplemental Brief. Briefly stated, at around 8:30 a.m. on January 15, 2017, Tina Acevedo heard a loud bang outside of her home on Spruce Street in Bridgeton. Psa4.[1] She looked out her window and saw a man hurriedly walking away from a car that had crashed into her neighbor's tree. *Id*. Miguel Lopez, the victim, was found deceased in the driver's seat with four gunshot wounds. *Id*. The State theorized that Mr. Lopez was shot by someone sitting in the passenger seat. Db7. Hannah was later tried and convicted of first-degree murder, possession of a weapon for an unlawful purpose, and unlawful possession of a weapon. Da7-9.

Prior to trial, the State moved to admit testimony on historical cell site analysis through Detective Kenneth Leyman, whom the prosecution initially sought to qualify as an expert witness, but ultimately agreed to limit his

[1] In accordance with Rule 2:6-8, citations are as follows:
Psa – State's Supreme Court petition appendix
Psb – State's supplemental brief, filed on May 12, 2025
Dsb – Defendant's supplemental brief, filed on June 9, 2025
Db – Defendant's Appellate Division brief, filed on July 25, 2023
Da – Defendant's Appellate Division appendix
5T – transcript of June 22, 2021
6T – transcript of June 23, 2021
8T – transcript of June 25, 2021
11T – transcript July 1, 2021
13T – transcript of November 30, 2021

testimony to "only lay witness testimony regarding his review, interpretation, and plotting of the location of cell towers on a map from the defendant's historical cell site data records." Da6. Thus, the trial court expressly prohibited Leyman from testifying as to "the azimuth of any antenna or any cell tower sector accessed by any call within the defendant's call detail records," as well as any testimony "regarding the location of cell towers upon the termination of calls." *Id*. In so ruling, the court recognized that "cell tower switching is a complicated issue," which "depends on signal strength" and requires expert testimony. (6T10-18 to 20). Indeed, the court determined that "it's clear that in order to get any directional data from a cell tower dump you're going to need an expert to explain to the jury how the cell tower works." (6T13-23 to 14-1). And the court expressed concern that presenting such testimony through a lay witness would affect the defense's "ability to b[are] before the jury the limitations of that type of technology and that type of data." (6T14-4 to 12).

At trial, Leyman testified as to how he retraced the victim's path on the morning of his death using surveillance footage, travelling from Atlantic City to Bridgeton. (8T52-9 to 56-1). Thereafter, the State elicited testimony from Leyman that placed Hannah in Bridgeton and connected the victim's path of travel to the cell towers to which Hannah's cell phone connected. For example, Leyman testified multiple times that Hannah's cell phone connected to towers

moving toward Bridgeton. (*See, e.g.*, 8T157-19 to 157-21; 8T159-6 to 159-8; 8T161-8 to 161-10). As one example, Leyman testified that surveillance footage placed the victim near a Rite-Aid located in Upper Deerfield Township at 8:03 a.m., while at the same time exact time, Hannah's cell phone connected to a tower located nearby—1.6 miles if traveling by road—on the Upper Deerfield Township water tower. (8T167-18 to 169-25).

Leyman derived this information from his review and analysis of Hannah's call detail records. (8T138-19 to 139-11). Leyman, in his "training and experience," was "able to learn how to read phone records, call detail records and the information contained therein." (8T19-1 to 19-5). In particular, Leyman was familiar with the cell phone records of Sprint—Hannah's cell phone carrier—as he had reviewed Sprint's cell phone records at other times during his career. (8T140-10 to 140-15).

The prosecution relied heavily upon Leyman's testimony in its summation, arguing that Hannah's cell phone "hit off of the tower that [the victim] was close to at all other points in time" and that the historical cell site data "clearly show[ed] that [Hannah] was in the car with the victim and he was picked up with the victim." (11T91-12 to 92-24).

Hannah moved for a new trial, arguing that Leyman's testimony went beyond the lay testimony permitted by the Court's pre-trial order. *See* Psb11.

The trial court denied that motion, concluding that "all [Leyman] did was reiterate the information received from the cell tower provided. It was not an interpretation. . . . It was just that on this time that cell tower pinged off that phone." (13T12-21 to 13-4). Hannah appealed, and the Appellate Division reversed his conviction, holding that the trial court erred in permitting Leyman—a lay witness—to provide what amounted to expert testimony on historical cell site analysis. *State v. Hannah*, A-3528-21 (App. Div. August 9, 2024). The State petitioned for certification and, on March 28, 2025, this Court granted that petition. *State v. Hannah*, 260 N.J. 214 (2025).

ARGUMENT

I. THE INTRODUCTION OF UNRELIABLE LAY WITNESS TESTIMONY ON HISTORICAL CELL SITE ANALYSIS DENIED DEFENDANT A FAIR TRIAL.

The ACDL-NJ agrees with, joins and adopts the well-supported arguments of Hannah's counsel, and the conclusion of the Appellate Division that Leyman's unreliable lay witness testimony on historical cell site analysis was essentially expert testimony, the admission of which denied Hannah a fair trial, and that the error was not harmless. The ACDL-NJ will not repeat the arguments set forth in Hannah's briefs but seeks here to supplement that discussion in order to underscore the complex and technical nature of using historical cell site data for location purposes, a matter which is beyond the ken of the average juror, and

thus the importance of introducing historical cell site analysis through a qualified expert, to ensure that the jury does not draw unsupported conclusions based on misleading and incomplete evidence and without the safeguards that are required for the introduction of such testimony.

A. Historical Cell Site Analysis Is a Complex and Technical Method for Showing a Cell Phone's Proximity to a Crime, and It Must Be Opined on by an Expert.

As Hannah has argued, and the Appellate Division held in granting him a new trial, Leyman should not have been permitted to provide lay testimony concerning historical cell site data. To be sure, a lay witnesses may offer opinion, as well as fact testimony. *State v. McLean*, 205 N.J. 438, 456-62 (2011). Fact testimony is "ordinary fact-based recitation by a witness with first-hand knowledge." *Id.* at 460. Similarly, admissible lay opinion testimony must be "rationally based on the witness' perception" and "assist in understanding the witness' testimony or determining a fact in issue." N.J.R.E. 701. The requirement that the lay witness testify as to "personal knowledge" or "perception" depends on "the acquisition of knowledge through one's own senses . . . of touch, taste, sight, smell or hearing." *See State v. Sanchez*, 247 N.J. 450, 466 (2021); *McLean*, 205 N.J. at 457. This perception has been described as "the product of reasoning processes familiar to the average person in everyday life." *State v. Brockington*, 439 N.J. Super. 311, 322 (App. Div.

2015) (citation omitted); *State v. Bealor*, 187 N.J. 574, 586 (2006) (lay opinion testimony permits a witness to offer an opinion "on matters of common knowledge and observation"); *State v. Derry*, 250 N.J. 611, 632 (2022) (lay opinion testimony is limited to opinions or inferences that are based on the witness's perception and do not require any specialized knowledge).

By contrast, expert testimony is governed by N.J.R.E. 702, which provides: "If 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." Although N.J.R.E. 702 uses permissive language, expert testimony is routinely required to explain "complex matters that would fall beyond the ken of the ordinary juror." *See State v. Fortin*, 189 N.J. 579, 596 (2007) (collecting cases); *see also* Biunno, Weissbard & Zegas, Current N.J. Rules of Evidence, comment 2.3 on N.J.R.E. 702, at 775 (2025) ("Expert testimony is required in criminal cases where the State seeks to have the jury draw inferences from evidence beyond the ken of the average juror."). Rule 702 "embodies the salutary policy that a lay finder of fact should be permitted to have the assistance of an expert's explanatory testimony when making determinations in areas of specialized knowledge." *Phillips v. Gelpke*, 190 N.J. 580, 590 (2007). "The primary justification for

permitting expert testimony is that the average juror is relatively helpless in dealing with a subject that is not a matter of common knowledge." *State v. Kelly*, 97 N.J. 178, 209 (1984).

Significantly, when expert testimony is introduced, a number of important safeguards come into play, including advance disclosure requirements and limiting jury instructions. That is, expert testimony, including the qualifications of the expert witness and the substance of his or her testimony must be disclosed in advance of trial, *see R.* 3:13-3(b)(1)(I), a requirement that does not pertain to lay opinion testimony. *State v. Watson*, 254 N.J. 558, 600 (2023) (noting that N.J.R.E. 701 does not require advance disclosure of lay opinion testimony, unlike expert requirements under N.J.R.E. 702). Moreover, the trial court plays the critical role as "gatekeeper" to ensure that the "expert witnesses demonstrate that they have reliably applied the [proper] methodology." *State v. Olenowski*, 255 N.J. 529, 616 (2023); *In re Accutane Litig.*, 234 N.J. 340, 399-400 (2018) ("[P]roper gatekeeping in a methodology-based approach to reliability for expert scientific testimony requires the proponent to demonstrate that the expert applies his or her scientifically recognized methodology in the way that others in the field practice the methodology.").

And, with regard to expert testimony, trial courts must "give a limiting instruction to the jury 'that conveys to the jury its absolute prerogative to reject

both the expert's opinion and the version of the facts consistent with that opinion,'" *Derry*, 250 N.J. at 634 (quoting *State v. Torres*, 183 N.J. 554, 580 (2005)); Model Jury Charge (Criminal), "Expert Testimony" (rev. Nov. 10, 2003) ("You are not bound by such expert's opinion[.] . . . It is always within the special function of the jury to determine whether the facts on which the answer or testimony of an expert is based actually exist. . . . Your acceptance or rejection of the expert opinion will depend, therefore, to some extent on your findings as to the truth of the facts relied upon."), while model jury charges on lay opinion testimony and witness credibility instead use the more general, less cautionary language applicable to all witnesses. Modern Federal Jury Instructions (Criminal), 4.09, "Opinion Evidence (Lay Witnesses) (F.R.E. 701)" (2024) ("The opinion of this witness should receive whatever weight you think appropriate, given all the other evidence in the case and the other factors discussed in these instructions for weighing and considering whether to believe the testimony of witnesses."); *see generally* Model Jury Charge (Criminal), "Credibility of Witnesses" (rev. Sept. 1, 2022) ("[A]s the judges of the facts, you weigh the testimony of each witness and then determine the weight to give to it. Through that process you may accept all of it, a portion of it or none of it."). In this way, the rules applicable to expert testimony reflect the unique and impermissible risk—which the trial court is obligated to address—that the jury

may give greater deference to expert testimony simply by virtue of the witness's status as an expert. *See Townsend v. Pierre*, 221 N.J. 36, 55 (2015) (recognizing trial court's role to ensure proper expert testimony, given the weight that a jury may accord to it).

Here, those various safeguards are necessary and critical because, although it may be commonly understood that cell phones operate by connecting to cell towers and that carriers maintain records of those connections, inferring a cell phone's particular location based on its connection to a specific tower presents a significantly more complex issue. That is, as this Court recognized in *Burney*, drawing a conclusion as to the location of a cell phone via historical cell site data is not a straightforward matter—it requires careful consideration of numerous variables, factors, and limitations. 255 N.J. at 21. As a result, the proximity of a cell phone and the cell tower to which it connects is not within the common understanding of the average juror, and introduction of such evidence necessitates specialized knowledge and techniques, which can only be done by a qualified expert.

Specifically, in *Burney*, this Court recognized that historical cell site analysis "uses cell phone records and cell tower locations to determine, within some range of error, a cell phone's location at a particular time." *Id*. (quoting *United States v. Hill*, 818 F.3d 289, 295 (7th Cir. 2016)). Not to be confused

with the more precise location data provided by a Global Positioning System (GPS), historical cell site analysis "simply confirms that the phone was somewhere within the coverage radius of the cell tower during the recorded activity." *Id*.

Critically in this regard, cell phones do not necessarily connect to the closest tower, but rather will generally connect "to the cell site with the strongest signal." *Id*. Determining which cell site has the "strongest signal" requires consideration of numerous factors. Although the "proximity of the user to the cell site" is "a significant factor in determining which cell tower has the strongest signal," other relevant factors may affect why the cell phone connected to a particular tower, including "geography and topography, the angle, number, and directions of the antennas on the sites, the technical characteristics of the relevant phone, and 'environmental and geographical factors.'" *Id*. (quoting *Hill*, 818 F.3d at 295-96).

Indeed, this Court's recent decision in *Burney* implicitly recognized that the interpretation of such technical data falls within the realm of expert testimony. Thus, in *Burney*, the Court rejected the testimony of an expert who attempted to use historical cell site analysis to support the same conclusion that the State asserted here in Hannah's trial—that the defendant's cell phone was likely near the crime scene. The expert in *Burney* testified based on an

unverified "rule of thumb" that Sprint cell towers have a one-mile range. *Id*. at 12. The Court emphasized that the expert failed to account for critical factors, including the tower's height, its rated power capacity, or the antenna's orientation. *Id*. The Court recognized that the expert witness's testimony "was unsupported by any factual evidence or other data," and held that the trial court erred in allowing the jury to hear this testimony. *Id*. at 25.

The *Burney* case underscores the complexities of inferring a cell phone's particular location based on historical cell site analysis, demanding more of expert witnesses who testify on the subject. But assumed in this analysis is that these complexities, which are obviously beyond the ken of the average juror, will come from an expert. *See id*. (concluding that trial court erred in allowing jury to hear testimony concerning range of cell tower because it was "based on nothing more than personal experience") (quoting *United States v. Evans*, 892 F. Supp. 2d 949, 956 (N.D. Ill. 2012) (estimating cell tower coverage "requires scientific calculations that take into account factors that can affect coverage")). Indeed, other courts have specifically so held.

For example, the Seventh Circuit recognized that testimony about the operation of cell towers "fits easily into the category of expert testimony," *Hill*, 818 F.3d at 296; that is so because historical cell site analysis is a science-based technique, *see id*. at 298. The "technique requires specialized training" and "has

been subjected to publication and peer criticism, if not peer review." *Id*. Indeed, "the science and methods upon which the technique is based are understood and well documented." *Id*. at 299. And an expert can testify as to the "advantages, drawbacks, confounds, and limitations of historical cell-site analysis" which is necessary for the evidence to be reliable and admissible. *See id*.

The Second Circuit reached a similar conclusion. Thus, in *United States v. Natal*, the court rejected the testimony of a lay person concerning the cell towers to which an individual's cell phone connected based upon the various factors that would influence a cell tower connection, including that the cell phone looks for the "strongest available signal" or that a connection is influenced by radio frequency or tower availability. 849 F.3d 530, 536-37 (2d Cir. 2017). The witness, by asking the jury to draw a conclusion as to an individual's location based on the tower to which his cell phone connected, was required to testify as to "the possible ranges of any relevant cell phone towers and how they operate." *Id*. at 536 & n.5. However, the court recognized that this type of testimony does not "result[] from a process of reasoning familiar in everyday life" and is "based on scientific, technical, or other specialized knowledge within the scope of Rule 702." *Id*. at 537. Thus, the Court held that such testimony "requires expertise" and "must be offered by an expert witness." *Id*.

Other courts are in accord. *See, e.g., United States v. Smith*, 110 F.4th 817, 840 n.15 (5th Cir. 2024) ("[T]his court has accepted historical cellular site analysis in the past as the subject of expert testimony"; recognizing that the expert used his "extensive knowledge, skill, experience, training, and education" to discuss the data); *United States v. Reynolds*, 626 F. App'x 610, 614 (6th Cir. 2015) ("Testimony concerning how cell phone towers operate constitute[s] expert testimony because it involve[s] specialized knowledge not readily accessible to any ordinary person."); *State v. Payne*, 104 A.3d 142, 154 (Md. 2014); *State v. Johnson*, 797 S.E.2d 557, 566 (W. Va. 2017) (holding that a witness "must be qualified as an expert under Rule 702 of the West Virginia Rules of Evidence in order to present evidence of cell phone historical cell site data"); *People v. Ortiz*, 91 N.Y.S.3d 90, 91 (App. Div. 2019) (disallowing a lay witness to testify as to the proximity of the defendant's cell phone to a particular cell tower because "an analysis of the possible ranges of cell phone towers and how they operate is beyond a juror's day-to-day experience and knowledge").

Of course, these decisions, requiring admission of historical cell site testimony through an expert, are correct because "lay witnesses are without sufficient information for the defense to cross-examine." *Johnson*, 797 S.E.2d at 564 (quoting Alexandra Wells, *Ping! The Admissibility Of Cellular Records To Track Criminal Defendants*, 33 St. Louis U. Pub. L. Rev. 487, 516 (2014)).

Often, as is the case here, the records are the strongest evidence placing the defendant near the crime scene. *See* Wells at 517. But presenting this evidence through a lay witness prevents defense counsel from meaningfully cross-examining the witness, particularly with regard to the factors that influence whether a cell phone will connect to a particular tower, whether there were other towers in the area, or the area covered by the particular cell tower to which the cell phone did connect. *See id*. Requiring that historical cell site testimony be presented through an expert thus vindicates the constitutional right of confrontation, even as it assures that a jury is provided with much more reliable evidence. For this reason, historical cell site analysis, when used to show proximity of a cell phone to a cell tower—as the State sought to do here—must include a consideration of various factors, and because a lay person is unqualified to conduct that analysis, it follows that historical cell site analysis falls into the category of complex matters that requires expert testimony.

B. Leyman's Testimony Provides a Prime Example of the Injustice That Results From Permitting a Police Officer to Provide Lay Opinion as to Historical Cell Site Data.

This case shows why historic cell site analysis requires expert testimony. Here, Leyman's testimony failed to include discussion of the various factors that require analysis in order to ascertain whether and how cell site data may support a finding with regard to the location of a cell phone. As a result, his testimony

was inadmissible and, of greater concern, was unreliable and misleading, resulting in an unfair and reversible result.

Specifically, the State introduced Hannah's call records from the morning of January 15, 2017—the day of the victim's death. The first call that the State referenced occurred at 7:12 a.m. (8T146-9 to 11). Leyman testified that the call connected to a tower in Franklinville, New Jersey that was "in proximity to the location where the defendant was involved in his motor vehicle accident in Monroe Township," which accident, as an eyewitness recalled, occurred at around 7:00 or 8:00 a.m. that day. (8T147-18 to 23; 6T217-8 to 22). The second call at 7:27 a.m. connected to a different tower, which tower was also "in proximity" to "the motor vehicle accident the defendant was involved in." (8T148-17 to 20, 8T149-17 to 20).[2]

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[2] Recognizing that Leyman's testimony concerning "proximity" to the car accident in which Hannah was purportedly involved went beyond the bounds of proper lay testimony, the Court, immediately after this testimony, provided the jury with a limiting instruction, stating:

> I want to make it clear to you that while they can show you those locations and how far apart they are that evidence does not establish where that phone was at any -- at that time that that call connected. Do you understand? It doesn't -- just because there is a cell tower somewhere proximate to something else doesn't mean that that phone was located any particular spot within any particular distance from that tower. Does everybody understand that?
>
> [(8T152-2 to 153-9)].

The State continued to plot the calls from Hannah's cell phone records from 7:34 a.m. to 7:53 a.m., and elicited testimony from Leyman that the calls headed south towards Bridgeton. (8T157-15 to 165-25). After testimony about a call ("call twelve") at 7:53 a.m., the State elicited testimony that the tower to which call twelve connected was one-and-a-half miles from the known location of the victim's car at 7:54 a.m. (8T166-1 to 167-4). The State then focused on call fifteen, which connected to a cell tower at 8:03 a.m., (8T167-6 to 16, 8T167-18 to 14), and elicited testimony that, at the same time, the victim's car passed a Rite-Aid located near the cell tower to which call fifteen connected, (8T169-9 to 170- 10). The final call occurred at 8:25 a.m., and connected to a tower in Bridgeton. (8T171-20 to 8T172-7). Directionally from the prior tower, call sixteen connected to a tower "heading towards Spruce Street"—the street on which the victim was killed. (8T173-6 to 10).

The State argues, based on this chronology, that Leyman was merely testifying to what is shown in the cell phone records by identifying which tower Hannah's cell phone connected to and then offering lay testimony about that

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The necessity of this impromptu, but confused and confusing, instruction at the very outset of Leyman's testimony on Hannah's cell phone records underscores that this type of testimony falls outside the scope of what is proper for a lay witness. Of course, the sole purpose of this testimony was to place Hannah's cell phone at a specific location, but the instruction informed the jury that it could not do that, raising the question of why it was, accordingly, allowed in the first place.

tower's general location relative to other events presented to the jury, including the victim's path of travel. *See* Psb19-21. The unmistakable implication of this testimony was that Hannah's cell phone—and thereby Hannah—was in a specific location relative to the tower that placed him near the victim. But the caselaw discussed above makes clear that, however logical this testimony appeared to be, it ought not have been introduced without consideration of necessary factors, such as other towers in the area to which Hannah's cell phone could have connected, but did not for any number of unexplored reasons, or the angle, number, and directions of the antennas on the towers. *See Burney*, 255 N.J. at 21; Section I.A., *supra*. But in summation, the State urged the jury to conclude based on Leyman's testimony not only that Hannah was near the towers to which his cell phone connected, but that he was actually in the car with the victim:

> And the way we know that [a]t all points in time that the phone of the defendant was in close proximity to the towers is because you have two points of confirmation.
>
> Confirmation point number 1 is from the very first call that was highlighted to you. . . . You know the defendant was in very close proximity to that tower because you know where he was and you know where the tower was. . . . Based on that it's fair to conclude that the defendant's phone had to hit off of the tower that he was close to at all other points in time.
>
> Confirmation point number 2 is common sense and your personal experiences. . . . So ask yourselves in

> 2021, we've all had cell phones[.] . . . Common experience dictates that you have to be close to a tower in order to connect to a call.
>
> Based on all of this, folks, I would say it's a fair conclusion that the defendant was in proximity to all of the towers, all of the towers that you see where he's moving, or rather -- rather, where the towers are going point by point by point by point, Monroe Township, moving, moving to the City of Bridgeton. That clearly shows that he was in the car with the victim and he was picked up by the victim.
>
> [(11T91-12 to 92-24).]

However, the State could only urge the jury to reach this conclusion because Leyman—who, again, was not testifying as an expert—did not describe the limitations of underlying historical cell site analysis. Thus, any inference drawn by the jury regarding Hannah's location was flawed because it was based on inaccurate, misleading information that purported to be more accurate that it truly was. *See Kelly*, 97 N.J. at 209 ("The primary justification for permitting expert testimony is that the average juror is relatively helpless in dealing with a subject that is not a matter of common knowledge."); *Fortin*, 189 N.J. at 596 (same).

In this regard, the Seventh Circuit, in *Hill*, specifically warned of the risk that juries will overestimate the value of information derived from historical cell site data analysis. *Hill*, 818 F.3d at 299. The court accordingly recognized that a trial court may well abuse its discretion if it admits historical cell site evidence

that overstates the technique's accuracy or fails to acknowledge its flaws. *Id*. The *Hill* court therefore cautioned that the Government should not present historical cell site evidence "without clearly indicating the level of precision—or imprecision—with which that particular evidence pinpoints a person's location at a given time." *Id*. In *Hill*, however, the Agent's testimony on both direct and cross "made the jury aware not only of the technique's potential pitfalls, but also of the relative imprecision of the information he gleaned from employing it in this case." *Id*. Thus, the court concluded that admitting the testimony did not constitute an abuse of discretion.

The complex and technical nature of this type of evidence renders testimony, like Leyman's, connecting a defendant to a cell tower that was in close proximity to the scene of the crime, without informing the jury of the limitations of historical cell site analysis, as described in *Burney* and similar cases, creates a serious, yet avoidable, risk that the jury will reach a conclusion based on unreliable evidence—just as it did in this case. Such evidence should be excluded given its potential to result in an inaccurate verdict, precisely the result that the Constitution, laws, and Rules that apply to criminal cases are meant to avoid. *See, e.g.*, *Perry v. New Hampshire*, 565 U.S. 228, 237 (2012) ("The Constitution . . . protects a defendant against a conviction based on

evidence of questionable reliability"; when evidence is "extremely unfair" the Due Process Clause precludes its admission).

C. A Police Officer Deciphering CDRs Engages in a Process Beyond the Ken of the Average Juror, Relying on Specialized Training and Experience to Interpret the Information.

The State contends that Leyman provided appropriate lay testimony in that he "simply testifie[d] to what the cell-tower records themselves show: which calls connected to which towers and when." Psb27. However, the State's contention fails to consider the substance of those records and a lay person's ability to interpret it. Thus, Leyman derived his testimony from the "call detail records" or CDRs generated by T-Mobile, Verizon, and Sprint. (8T19-1 to 19-24; 8T20-12 to 20-15; 8T139:3 to 139:11). And he learned to read these records in his training and experience as a detective. (8T19-2 to 4; 5T59-13 to 19).

A CDR is a string of data that is automatically generated any time a cell phone sends or receives a communication. *State v. Steele*, 169 A.3d 797, 810 (Conn. App. Ct. 2017); *Payne*, 104 A.3d at 154. As an example, a string of data may take the following form:

> E00QQ_5E|MTC1TST0000QQ5ESS00000720000008
> 42000000652004022923483477875558911787555771
> 800787590000000000000006341000001551I0N000000
> 08170000000000000000000000000000000000000000
> 00000000000000000088400000868

> [Victoria Saxe, *Junk Evidence: A Call to Scrutinize Historical Cell Site Location Evidence*, 19 U.N.H. L. Rev. 133, 141 (2020).]

Plainly, this string of data is unintelligible to the average person. Only a knowledgeable reader can decipher the pertinent information. *See id*.; *see also Payne*, 104 A.3d at 154 (recognizing that a CDR "contains a string of data unfamiliar to a layperson and is not decipherable based on 'personal experience'").

In this case, the CDRs were formatted as multiple pages of an Excel spreadsheet with numerous columns, each representing different categories of information. The import of the information, however, was not apparent on its face and could only be deciphered using a key located elsewhere in the extensive records. (*See* Psa19-23; Psa25-77; 8T142-19 to 145-14 (explaining the meaning of the NEID, first cell, and last cell columns and that the list of towers is elsewhere in records)). Thus, as is thoroughly described in Hannah's supplemental brief, (Dsb21-25), the CDRs, which are only a subset of the hundreds of pages of records introduced during trial, are difficult for the average person to understand and interpret. Expert testimony was clearly required.

Moreover, and significantly, although CDRs indicate the cell tower to which the cell phone connected, they do not indicate the location of the cell phone in relation to the cell tower, or if the cell phone was in range of another

cell tower to which it did not connect. *Id*.; Thomas J. Kirkham, *Rejecting Historical Cell Site Location Information As Unreliable Under Daubert and Rule 702*, 50 U. Tol. L. Rev. 361, 362 (2019). That is because CDRs are intended for billing and network monitoring—not to track users' locations. *See Payne*, 104 A.3d at 151; *Steele*, 169 A.3d at 811; Saxe at 142. As one commenter warns: "Only law enforcement employs CDRs for that purpose." Kirkham at 372.

The issue, then, is whether Leyman, or a similarly situated police officer, is required to be qualified as an expert in order offer testimony on this technical information. In *McLean*, this Court faced a comparable issue of whether a police officer who believed, based on his training and experience, that a defendant engaged in a narcotics transaction, was permitted to testify about that belief as a lay witness. 205 N.J. at 453, 459. The Court concluded that the officer's opinion did not fall within the "narrow bounds" of lay testimony. *Id*. at 456, 463. In reaching its conclusion, the Court declined to accept the argument that a lay opinion could be grounded in an officer's "training and experience," and held that lay opinion testimony is limited to what the witness "directly perceived"—for example, that the officer saw the defendant hand a person an item from a bag and receive money in exchange. *Id*. at 459-60. Conversely, an officer, with the proper qualifications, may be permitted to testify as an expert

in order to explain the implications of certain facts that fall outside the scope of what an ordinary juror will understand, such as the significance of certain drug packaging or the roles played by individuals in a drug distribution ring. *Id*. at 460. Thus, the Court held that the officer's testimony, "because it was elicited by a question that referred to the officer's training, education and experience," in reality called for expert opinion. *Id*. at 463; *see also Derry*, 250 N.J. at 636 (holding that police officer's testimony should have been treated as expert testimony where it was "undoubtedly based on his training, experience, and supervision of the investigation, and not solely on his listening to the calls and reading the messages").

This principle has been applied to the interpretation of CDRs received from cell phone carriers. For example, in *Payne*, the Maryland Supreme Court, addressing CDRs, rejected the argument that a lay person reading such reports could have determined the cell towers to which the cell phone connected. 104 A.3d at 154-55. In particular, the court noted the complexity of CDRs, and held that the officer had to rely on specialized knowledge or experience to decipher the records, eliminate extraneous information, and identify the relevant calls. *Id*. at 154-55. The court concluded that "additional training and experience were required to parlay the process from which [the detective] derived the communication path of each call." *Id*. at 154; *see also State v. Edwards*, 156

A.3d 506, 522-23, 526 (Conn. 2017) (holding that a detective acted as an expert witness when he "relied on data he obtained from Verizon to conduct his analysis, the process he used to arrive at his conclusions was beyond the ken of average juror[, and] even the trial court acknowledged that [the detective] had an expertise that allowed him to be more knowledgeable on the subject of cell phone data than the average juror").

The Supreme Court of West Virginia reached the same conclusion with regard to Sprint cell phone records in *Johnson*, where the trial court permitted a police officer to testify as a lay witness that the defendant's "cell phone was in the vicinity of the crime scene at the time of the murder" based upon the officer's interpretation of historical cell site data. 797 S.E.2d at 561. The court rejected the "minority approach" that allows an officer to testify as a lay witness concerning the CDRs obtained for a defendant's cell phone and the location of cell towers used by the defendant's cell phone in relation to other locations relevant to the crime. *Id*. at 566. The court expressed its concern that "lay witnesses not only read the records to the jury, but they draw the ultimate conclusion that the records could show the caller was in a specific location," *id*. at 566 (cleaned up), and it focused on the officer's testimony that he was able to interpret the records based upon his "training"— he "implicitly admitted that he could not testify about historical cell site data" without some form of training,

id. at 569. Thus, the court concluded: "It is abundantly clear that [the officer's] testimony was based on scientific, technical, or other specialized knowledge within the scope of Rule 702." *Id*. at 569-70 (internal quotes omitted).

The cases cited by the State, by contrast, failed to meaningfully address the complexity of the CDRs or to confront the level of training and experience required by officers to accurately interpret them. *See Torrence v. Commonwealth*, 603 S.W.3d 214, 218, 225 (Ky. 2020) (believing that "anyone could read the records . . . and obtain the same results" and noting that the detective was not asked about his experience or training); *Burnside v. State*, 352 P.3d 627, 636 (Nev. 2015) (engaging in no discussion of complexity of cell phone records); *State v. Blurton*, 484 S.W.3d 758, 771 (Mo. 2016) (same). Other cases cited by the state either did not address the issue or actually support Hannah's position. *See State v. Sinnard*, 543 P.3d 525, 542 (Kan. 2024) (declining to reach the merits of defendant's call records objection due to State-specific rule preventing Court from addressing the issue due to defendant's failure to preserve objection); *United States v. Evans*, 892 F. Supp. 2d 949, 954 n.5 (N.D. Ill. 2012) (noting that "the court respectfully disagrees with those courts that have allowed law enforcement officers to provide lay opinion testimony as to how cellular networks operate or the use of call data records to determine the location of a cell phone"); *Collins v. State*, 172 So. 3d 724, 744

(Miss. 2015) (recognizing that "some specialized knowledge beyond that of the average, randomly selected adult is required to analyze cellular phone records and other data to determine the location, general or specific, of a certain cell phone," which testimony the detective provided, and was required to be qualified as an expert).

Here, Leyman acknowledged to the jury that he "learn[ed] how to read" CDRs through his "training and experience," (8T19-1 to 5), and that he had "reviewed Sprint cell phone records before in the past during [his] career." (8T140-13 to 14). The hearing concerning whether to qualify Leyman as an expert further confirmed that his testimony was based on his training and experience. During that hearing, Leyman stated that he "was trained early. As a detective [he] was trained how to read them [cell phone records]," and that a lot of his understanding came "directly from the people who work for these phone companies," (5T59-13 to 19), with whom he was in contact "numerous times" in order to understand the records, which allowed him "to provide [the] information that [he is] providing" in this case. (5T59-13 to 61-18).

As to the Sprint CDRs at issue in this case, Leyman explained to the jury the rows of the columns contained in the CDRs, including columns that had no apparent common meaning—titled "NEID" "1ST CELL" and "LAST CELL"—all of which contained only a series of numbers. According to Leyman, "N-E-

I-D refers to a regional bank of towers where Sprint has multiple regions that they're servicing and multiple banks of towers within those regions. This identifies what bank of towers we're dealing with on this phone call." (8T142-23 to 143-1). The number in the column refers to a "bank" or "region," and the records separately include a list of towers that are located in that region. (8T143-10 to 16).

Of course, this type of analysis falls squarely within the realm of expert testimony, as, by Leyman's own words, it required specialized knowledge to understand the meaning of the records. The average juror would not know what the series of numbers mean or where to find the key to decipher that meaning. Moreover, and critically, Leyman acknowledged that he learned how to read these records in his "training and experience," including his interactions with Sprint in the past. (8T19:1-5; 5T60-22 to 61-2; 5T62-11 to 19). Thus, in order to "preserve the distinction between lay and expert testimony," with all of the safeguards inherent in the latter designation, the Court should prohibit the State from offering what is essentially an "expert witness in lay witness clothing," *see Payne*, 104 A.3d at 153, and conclude that a police officer must be qualified as an expert to provide historical cell site analysis.

CONCLUSION

Often, as here, historical cell site analysis is the strongest evidence placing a defendant at the scene of the crime. It is therefore of paramount importance to ensure that only reliable cell site evidence is presented to the jury. Historical cell site analysis requires consideration of numerous variables, factors, and limitations for an accurate interpretation. This process is complex and technical, and can only be opined on by an expert. Moreover, deciphering the cell phone records on which that analysis is based requires specialized training and experience, which calls for expert testimony. Thus, Leyman's testimony regarding the cell towers to which Hannah's cell phone connected and Hannah's proximity to the crime scene called for an expert opinion, which he was not qualified to provide. For the reasons set forth above, *amicus curiae* the ACDL-NJ respectfully urges the Court to affirm the Appellate Division's decision.

Respectfully submitted,

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