**IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF MARYLAND**

**UNITED STATES OF AMERICA \***

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**v.**

**JOVON LOVELLE MEDLEY,**

**Defendant**

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**CRIMINAL NO. PWG-17-242**

**CORRECTED1 MEMORANDUM OPINION AND ORDER**

Jovon Lovelle Medley has been charged with one count of carjacking resulting in serious bodily injury, in violation of 18 U.S.C. § 2119(2); one count of using, carrying, brandishing, and discharging a firearm, during and in relation to a crime of violence, in violation of 18 U.S.C.

§ 924(c)(1)(a)(iii); and one count of felon in possession of a firearm and ammunition, in violation of 18 U.S.C. § 922(g)(1). He has filed a series of motions *in limine* challenging evidence that the Government intends to introduce at his trial. One particular challenge focuses on the scope of the testimony of FBI Special Agent Richard Fennern regarding his analysis of historical cell site information obtained from the service provider for Medley’s cell phone. Def.’s Mot., ECF No. 54. The Government intends to offer SA Fennern’s testimony as an expert witness to place Medley in the general vicinity of the scene of the carjacking and shooting that are the centerpiece of the charges against him. Because the carjacker wore a mask that concealed his face, the victim was unable to identify his assailant. Accordingly, the Government understandably views SA Fennern’s testimony as critical to proving that Medley was the carjacker.

1 This Corrected Memorandum Opinion and Order simply corrects a typographical error and does not make any substantive changes.

Medley does not seek total exclusion of SA Fennern’s testimony, nor does he challenge his impressive credentials and qualifications2 to testify as an expert regarding analysis of historical cell site location evidence. Rather, he argues that SA Fennern’s testimony “should be limited, as the data compiled in relation to the cellular telephone at issue cannot support the conclusion the government proposes during [sic] its disclosures produced to [the] Defense.” Def.’s Mot. 3. In particular, Medley challenges various charts prepared by SA Fennern showing the geographic layout of the various cell towers to which Medley’s phone supposedly connected at the time and date of the carjacking. Medley contends that “[s]uch illustrations are very open to impermissible inferences that do not comport with the data, such as the cellular telephone at issue being located within the shaded area when the purported purpose of the shaded area serves an entirely different aim” *Id*. at 3. The Government filed an opposition to the motion, ECF No. 77, and a hearing was held on May 2, 2018, during which SA Fennern testified. For reasons that are explained below, Medley’s motion is granted in part and denied in part. SA Fennern will be permitted to testify as an expert, subject to the requirements set out in this Memorandum Opinion that he explain the limitations on the ability of his methodology to determine the location of the cell phone attributed to the defendant with respect to the site of the charged carjacking and shooting. Before detailing the ruling, it would be helpful to set the stage regarding the admissibility of historical cell site location evidence as it is used in criminal cases.

2 Fennern has worked for the FBI since June 2009, “provid[ing] cellular record analysis and technological assistance to local, state, and federal law enforcement including mapping and analyzing records and “train[ing] law enforcement officers and attorneys on cellular technology and record analysis.” Fennern Curriculum Vitae 1, Gov’t Opp’n Ex. 9, ECF No. 77-9. He has performed these functions as part of the FBI’s Cellular Analysis Survey Team National Asset since October 2017. *Id.* Fennern has “[r]eceived over 600 total hours [of training] in the use of cellular phones in investigations, cellular network setup, and cellular phone protocols” and provided expert testimony in 59 cases. *Id.* at 1–2.

*Admissibility of Historical Cell Site Location Information in Criminal Cases*

Cell phone use is ubiquitous. The rudiments of how cell phones operate are common knowledge—they “communicate” via radio waves with individual cell towers arrayed in a geographic network called “cells.” Cell towers are more densely found in urban areas (where each cell may cover an area of only a half mile to a mile) than in rural areas (where a cell may cover an area of thirty miles or more). Aaron Blank, *The Limitations and Admissibility of Using Historical Cellular Site Data to Track The Location of A Cellular Phone*, 18 Rich. J.L. & Tech. 3, 5 (2011).

It also is widely known that companies offering cellular phone services keep records regarding the cell towers a user’s cell phone connects to, and the duration of the call for business purposes—to accurately impose roaming charges and to monitor the volume of cell phone traffic by location. *Id*. State and federal law enforcement officers long have used the historical records of cell phone use maintained by cellular phone companies to determine the approximate location of a cell phone at a particular time and place, and both state and federal courts frequently have admitted this evidence. *See, e.g.*, *United States v. Jones*, 918 F. Supp. 2d 1, 4-6 (D.D.C. 2013) (giving examples of courts that have found historical cell site location evidence reliable and admissible); *United States v. Hill*, 818 F.3d 289, 297 (7th Cir. 2016) (“District courts that have been called upon to decide whether to admit historical cell-site analysis have almost universally done so.”).

Curiously, despite the frequent admission of historical cell site location evidence by trial courts in criminal cases, “[n]o federal court of appeals has yet said authoritatively that historical cell-site analysis is admissible to prove the location of a cell phone user.” *Hill*, 818 F.3d at 297. And the Circuit Courts that have considered admissibility of this evidence have split in their

assessment of its reliability, and consequent admissibility. For example, the Sixth Circuit has been quite critical of the methodology used by federal law enforcement agencies to estimate the location of a cell phone based on analysis of historical cell site location data:

Cellular technology relies on radio waves to carry transmissions between a cellphone and a cell site, also known as a cell tower. Each tower typically has three antennae, each responsible for covering a 120-degree wedge. A cell site

“sector” refers to the area contained within a (usually) hexagonal array of cell towers. A cellphone generates “historical” cell-site data when it places a call and connects to a specific cell tower. Such data includes the particular cell-tower antenna to which the cellphone connected and the duration of the call. The “one- location” tracking approach assumes that the cellphone connected to the closest tower because that tower is most likely to produce the strongest signal. As most cell towers have three antennae facing different directions, the data generally indicate the direction of the caller relative to that tower—i.e. the 120-degree wedge serviced by the antenna—and thereby estimate the cell-site sector from which the call originated. While cell phones are designed to connect to the tower with the strongest signal, that tower might not actually be the closest because factors such as weather, obstructions, and network traffic can cause a call to connect to a tower farther away. FBI historical cell-site tracking does not account for these factors.

*United States v. Reynolds*, 626 Fed. App’x 610, 614–15 (6th Cir. 2015) (internal citations omitted). The *Reynolds* Court further was skeptical of the argument frequently used by the Government to justify admissibility of historical cell site location data based on the fact that many federal trial courts have found that it was reliable.

However, “judges are not scientists and do not have the scientific training that can facilitate the making of [scientific] decisions.” For this reason, *Daubert* identified the “scientific community,” rather than federal courts, as the relevant group in which acceptance is an indicator of a technique’s reliability. But there is controversy as to whether cell-site tracking can pinpoint a call’s origin to a specific cell-sector.

*Id*. at 616 (internal citations omitted).

Similarly, the *Reynolds* Court rejected the reasoning of the Fifth Circuit in *United States*

*v. Schaffer*, 439 Fed. App’x 344, 347 (5th Cir. 2011), which had held that historical cell site location analysis was reliable because it had been tested and accepted by the *law enforcement*

*community*, noting that the methodology had been tested successfully over a thousand times in locating suspects with historical cell site tracking data. The Reynolds Court concluded:

This claim appears to be precisely the sort of “*ipse dixit* of the expert” testimony that should raise a gatekeeper’s suspicion. While being successfully employed “1000 times” may sound impressive, the claim is not subject to independent peer review and fails to establish an error rate with which to assess reliability because there was no information on how many times the technique was employed *unsuccessfully*.

*Reynolds*, 626 Fed. App’x at 616 (internal citation omitted; emphasis in original). But despite its insistence that the proper cohort to assess the reliability of the use historical cell site location data was the *scientific community*, not the judicial or law enforcement communities, the Sixth Circuit did not resolve whether the methodology had been accepted by the scientific community as reliable, because in the case before it, the evidence had been used to show where the users of various cell phones were *not* located, rather than where they *were* located. *See id.* at 617.

Further compounding the confusion, there is disagreement among the circuit courts whether witnesses who testify about cell site location information (usually representatives of cellular service companies or law enforcement officers) testify as lay witnesses, or expert witnesses. In *United States v. Graham*, the Fourth Circuit concluded that certain portions of the testimony of the records custodian for Sprint/Nextel (who testified about how cell towers communicate with cell phones) and an FBI agent (who testified about how he prepared maps locating various cell towers accessed by the defendants’ cell phones based on cell site location data) were lay testimony, not expert testimony. 796 F.3d 332, 364–66 (4th Cir. 2015), *reversed in part on other grounds on rehr’g en banc*, 824 F.3d 421 (4th Cir. 2016). A careful reading of this opinion, however, suggests that this conclusion was based on the court’s view that the records custodian was not offering *opinion* testimony, but rather facts known by virtue of his employment and experience. But this analysis puts too much emphasis on the difference

between *opinion* testimony and *fact* testimony—a distinction which Fed. R. Evid. 702 itself does not draw. The introductory sentence of Rule 702 unambiguously states that “[a] witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion *or otherwise* . . . .” Fed. R. Evid. 702 (emphasis added). The characteristic that differentiates expert testimony from lay testimony is not the *form* in which the testimony is presented (opinion versus fact) but rather the *subject matter* of the testimony itself—whether it involves scientific, technical or specialized knowledge. And, if the subject matter of the testimony does involve scientific, technical, or specialized knowledge, then it is outside the scope of permissible lay opinion testimony, as Fed. R. Evid. 701 itself makes crystal clear. *See* Fed. R. Evid. 701 (“If a witness is not testifying as an expert, testimony in the form of an opinion is limited to one that is: (a) rationally based on the witnesses’ perception; (b) helpful to clearly understanding the witness’s testimony or to determining a fact in issue; and (c) *not based on scientific, technical, or other specialized knowledge* within the scope of Rule 702.” (emphasis added)). Similarly, the *Graham* Court concluded that the FBI agent’s testimony about how he created maps based on the cell site data provided by Sprint/Nextel showing the locations of cell sites accessed by the defendants’ cellphones at the time of the offenses, as well as the locations of the crime scenes and the home of one of the defendants did not amount to an expert opinion. *Graham*, 796 F.3d at 365.

When a cellular services company’s records custodian testifies about how a cellular phone network operates (and, more specifically, how a cell phone connects to a particular cell tower within that network), it is hard to believe that the custodian’s testimony does not involve technical knowledge. And, even more tellingly, it is difficult to imagine how this testimony can meet the requirement of Rule 701(a) that it be “rationally based on the witness’s perception”—

since “perception,” as used in Rule 701, contemplates knowledge derived through first-hand observation. Advisory Committee Note to Fed. R. Evid. 701 (1972) (“Limitation (a) is the familiar requirement of first-hand knowledge or observation.”). A records custodian cannot “observe” how a cell phone uses radio waves to connect to a particular cell tower. Nor can this testimony be based on the custodian’s personal knowledge, unless the custodian has the knowledge, training, or education to explain how these devices and networks operate. And it simply strains credulity to describe this as anything other than “scientific, technical, or specialized” knowledge—removing it from the province of lay witness testimony, and putting it squarely within the scope of expert testimony.

The same can be said about what is involved when an FBI agent or other law enforcement witness testifies about the steps they took to prepare location maps based upon cell site data provided by a cellular phone provider and plotted out the cell towers involved, the geographic sectors covered by each, and the approximate location of a defendant’s cell phone at the critical times when the crimes were committed. *See United States v. Jones*, 918 F. Supp. 2d 1, 3 (D.D.C. 2013) (Government offered FBI agent as an expert witness to explain how he took cell tower location data and plotted it on maps showing the cell towers involved with a series of telephone calls and the geographic sector covered by each tower).

And this is the reason why other Circuit Courts that have considered this issue after the *Graham* opinion was decided have parted company with the Fourth Circuit’s analysis. *See United States v. Hill*, 818 F.3d 289, 296 (7th Cir. 2016) (“Agent Raschke’s testimony in this case included statements about how cell phone towers operate. In our view, this fits easily into the category of expert testimony, such that Rule 702 governs its admission.”); *United States v. Natal*, 849 F.3d 530, 533 (2d Cir. 2017) (“[W]e hold that testimony on how cell phone towers operate

constitutes expert testimony and may not be introduced through a lay witness.”). And, to be fair, the Fourth Circuit itself recognized that when the testimony of a cell phone company records custodian transitions beyond merely describing how cell phones and cell towers interact in general to “explanations of how cell phones connect to a cellular network for the completion of calls,” it becomes expert testimony. *Graham*, 796 F.3d at 365 (“The admission of other aspects of Strohm’s lay testimony is more concerning. Strohm provided explanations of how cell phones connect to a cellular network for the completion of calls, going, at times, into technical details about operations performed by cell sites and how calls are routed through network switches. Such testimony was clearly ‘based on scientific, technical, or specialized knowledge within the scope of Rule 702.’”).

At some point, witnesses who testify about cell site location data stop doing so as laymen and enter the realm of scientific, technical, or specialized knowledge that Rule 702 reserved to experts. Trying to pinpoint when this happens is risky business. As the Second Circuit recently cautioned:

We need not hold that *all* evidence related to cell phone towers necessarily requires expertise. But we caution that the line between testimony on how cell phone towers operate, which must be offered by an expert witness, and any other testimony on cell phone towers, will frequently be difficult to draw, and so both litigants and district courts would be well advised to consider seriously the potential need for expert testimony.

*Natal*, 849 F.3d at 536 (emphasis in original). For this reason, the Government was wise (and in my view, correct) in this case to designate Special Agent Fennern as an expert witness, and it is in this capacity that his proffered trial testimony must be evaluated.

*Standard for Admissibility of Expert Testimony: Fed. R. Evid. 702*

Ever since the Supreme Court’s decisions in *Daubert*, *Kumho Tire*, and *Joiner*,3 and the 2000 amendments to Fed. R. Evid. 702 that incorporated the themes of these decisions, the standards governing admissibility of expert testimony have become familiar. Experts having the requisite qualifications are permitted to testify in the form of opinions, or otherwise, regarding matters involving scientific, technical, or specialized knowledge only if (1) they have sufficient facts or data to support their opinions; (2) the methods or principles that they applied to reach their opinions are reliable; and (3) the methods or principles reliably have been applied to the facts of the particular case. Fed. R. Evid. 702. When considering the “reliability” requirements of Rule 702, the trial court functions as an evidentiary gatekeeper and takes into consideration the so-called *Daubert* factors: (1) has the methodology been tested?; (2) is there a known error rate associated with the method or principles used?; (3) has the methodology been subject to peer-review by appropriate scientific, technical or specialized publications?; (4) have the methods or principles used achieved general acceptance as reliable within the relevant scientific, technical or specialized field?; and (5) if there are standards or procedures governing the methodology or principles used, have they been complied with? *United States v. Hassan*, 742 F.3d 104, 130 (4th Cir. 2014); *see United States v. Crisp*, 324 F.3d 261, 265-66 (4th Cir. 2003) (quoting *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 593–94 (1993)). Depending on the particular case, not all of these factors may be applicable.

Since expert testimony is only necessary when the subject matter is beyond the scope of common lay knowledge, the essence of Rule 702 is to avoid misleading the jury with unreliable

3 *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136

(1997); *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

evidence (which, by its very nature, is irrelevant, because unreliable evidence has no tendency to make a fact that is of consequence to the litigation more probable than it would be without the evidence, and irrelevant evidence fails to be helpful to a jury). Opinions that are solidly grounded in the facts of a particular case, employ reliable methodology or principles, have passed scrutiny by other experts in the same field, and which were reached by strict adherence to established standards and procedures are helpful. Those that are not amount to nothing more than scientific or technical guesses.

Applying these factors to the present case, there is no challenge to Special Agent Fennern’s qualifications, as already noted. The next issue is whether he had sufficient facts upon which to base his opinion. Here, as well, Medley does not challenge the sufficiency of the factual basis for SA Fennern’s opinions, and his written report and revision thereto, Fennern Rept. & Fennern Revised Rept., Gov’t Opp’n Exs. 10 & 11, ECF Nos. 77-10 & 77-11, and his testimony at the evidentiary hearing make it clear that he obtained the call detail records from Defendant’s cell phone provider, as well as their records regarding the cell towers and cell sectors servicing calls made by their customers. Fennern Rept.; Fennern Revised Rept. The Government’s Fed. R. Crim. P. 16 disclosure states that SA Fennern used these records “to *approximate* the location of the Defendant’s cellular phone at various times during the day [of the carjacking and shooting].” Gov’t Ltr. 1, ECF No. 77-12 (emphasis added). And, his expert report and testimony make it clear that, at trial, the most that he intends to testify to is that “at 10:50 a.m. on December 30, 2016, 10 minutes before witnesses described the crimes alleged in the Indictment as having taken place, the Defendant’s cellular telephone was located in the *general area* where the crime was committed.” *Id*. (emphasis added); *see also* Fennern Rept.; Fennern Revised Rept. These self-imposed restrictions on the scope of SA Fennern’s trial

testimony are quite important. As the Seventh Circuit noted in *Hill*, 818 F.3d at 298, when a law enforcement agent purports to be able to testify that the defendant actually was in a particular place on the date and time of a crime based on an analysis of historical cell site location data, this is problematic, because the opinion exceeds the scope of what this methodology reliably can support. At best,

[h]istorical cell-site analysis can show with sufficient reliability that a phone was in a general area, especially in a well-populated one. It shows the cell sites with which the person’s cell phone connected, and the science is well understood. . . .

A mathematical error rate has not been calculated, but the technique has been subject to publication and peer criticism, if not [exactly] peer review.

*Id.* (citing Matthew Tart*, et al.*, *Historical Cell Site Analysis—Overview of Principles and Survey Methodologies,* 8 Digital Investigation 185–86 (2012); Blank, *supra*, at 3–5; Herbert B. Dixon Jr*.*, *Scientific Fact or Junk Science? Tracking A Cell Phone Without GPS*, 53 JUDGES’ J. 37 (2014)).

But, though perhaps reliable enough for Rule 702 to show the *general location* of a cell phone in relation to the cell towers connected to at a particular time and date, there are factors that limit the reliability of any location testimony that should be accounted for. These include

(1) whether the expert was aware of and took into consideration the power and characteristics of the cell tower with which the defendant’s phone connected; (2) the direction in which its antennae connected to were facing; (3) and whether the agent performed any tests of the towers’ area of signal coverage. *Id.*

Failure to do so may render the opinion of the expert unreliable. As noted by the *Hill*

Court:

Our concern is that the jury may overestimate the quality of the information provided by this analysis. We therefore caution the government not to 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. The admission of historical cell-site evidence that overpromises on the technique’s precision—or fails to account adequately for its potential flaws— may well be an abuse of direction [for the trial court to admit].

*Id.* at 299.

The reason for this cautionary approach lies with the characteristics of how cell phones communicate with the cell towers of a cellular network, and the many factors that can influence whether the cell site connected to (the one with the *strongest* signal) is actually the one *closest* to the phone at the time that it connected. A widely cited law review article explains why this is so.

[M]any . . . factors may affect the signal strength between a cell phone and site.

First, the technical characteristics of cell sites may affect signal strength:

1. the number of sites available; (2) maintenance or repairs being performed; (3) the height of the cell tower; (4) height above sea level; (5) wattage output; and (6) range of coverage. Second, technical characteristics of the antennas on the cellular sites may affect signal strength such as the number of antennas, the angle and direction the antenna is facing, height of each antenna, and call traffic processed through each antenna. Third, technical characteristics of the phone, such as the wattage output and generation of the phone’s broadband capacity, may affect signal strength. Fourth, signal strength may depend upon environmental and geographical factors including the weather, topography, and level of urban development. Finally, indoor or outdoor use of the phone may alter the strength of the signal.

Blank, *supra*, at 7; *see also* Matthew Tart, *et al.*, *Historic Cell Site Analysis—Overview of Principles and Survey Methodologies*, 8 Digital Investigation 185, 186 (2012) (“The service area of a given cell is dependent on many factors including the height of the antenna (aerial), the power used, the location of other cells and the geography of the land (hills, trees, etc.) including surrounding buildings.”).

Furthermore, juries should understand that there are varying ways in which law enforcement officials can track the location of cell phones—in decreasing order of accuracy: “(1) GPS (Global Positioning System) technology; (2) capturing real-time cell site data; and (3) interpreting historical cell site data.” Blank, *supra*, at 9. The most accurate is GPS tracking,

which “can track in real-time or make a record of its location with accuracy up to a few meters.” *Id*. After GPS tracking, “real-time” tracking is the next most accurate method. “Real-time cell site data is gathered as a cell phone constantly scans the cellular network for the site with the strongest signal. Law enforcement can interpret the data to try and determine the present location of a cell phone.” *Id*. Last, and least (accurate) is historical cell site data, where law enforcement officials interpret the call data obtained from the billing records of a cellular service company to approximate the location of the cell phone at a past given date and time. *Id*. As always will be the case when law enforcement undertakes to determine the location of a cell phone after the crime has been committed, historical cell site data—the least accurate means of doing so—will be all that is possible to use.

Moreover, historical cell site location analysis can be accomplished with varying degrees of accuracy. The most accurate method is through “triangulation.” Here is how it works:

A cell phone’s signal will often be received simultaneously by more than one cell site when operating in areas with high concentration of cell sites and overlaps in coverage. When this occurs, a mathematical process called triangulation may determine the phone’s location if either: (1) three points receiving the signal are known; or (2) two points receiving the signal are known, along with the direction in which the cell site received the signal. The accuracy of triangulation varies depending on a number of factors such as the density of cell sites. Urban areas tend to have a higher density of cell sites; therefore triangulation is most feasible in those areas.

*Id*. at 11.

But, as often happens, if the “cell site records only indicate the date, time, and duration of calls, whether the calls are inbound or outbound, and show the originating and terminating cell sites for calls placed on the phone,” triangulation will not be possible “because either the phone connected with only one site (i.e., the originating and terminating cell sites are the same) or only two sites are known at different times (i.e., at the beginning and end of the call) without

directional information.” *Id*. at 13. In these circumstances, the best that can be determined about the location of the cell phone at a particular time and date will be to place it somewhere within the geographic area of the sector served by the particular cell site to which the billing records show it connected. In urban locations with many cell sites located close to each other, the size of that sector may be relatively small. In areas with fewer cell sites, located farther from each other, the size of the area may be much larger.

With this understanding of how cell phones connect with cell sites, what conclusions can be drawn about the admissibility of historical cell site analysis under Rule 702? First, with all due respect to the *Graham* opinion, testimony about how location may be determined from historical cell site billing records (whether from employees of the cellular services company or law enforcement) is best regarded as expert testimony, not lay testimony, because it necessarily involves scientific, technical, or specialized knowledge. And the government would be wise to regard it as so, and make the required disclosures under Fed. R. Crim. P. 16.

Second, provided that the sponsoring witness has the qualifications to explain the process of how the historical billing records were used to approximate the location of the cell phone, including the strengths and limitations of the particular method used to do so (for example, triangulation, as compared to estimating location based only on the date, time duration and direction of the connection between the phone and the cell site), there is sufficient evidence that these methods are accurate enough and well accepted enough within the appropriate fields of science, technology and specialized knowledge to allow admissibility. *See United States v. Hill*, 818 F.3d 289, 298 (7th Cir. 2016) (“Historical cell-site analysis can show with sufficient reliability that a phone was in a general area, especially in a well-populated one. It shows the cell sites with which the person’s cell phone connected, and the science is well understood. A

mathematical error rate has not been calculated, but the technique has been subjected to publication and criticism, if not peer review. . . . . The advantages, drawbacks, confounds, and limitations of historical cell-site analysis are well known by experts in the law enforcement and academic communities.”). But it is worth repeating that this conclusion is predicated on a candid explanation of the accuracy of the particular location method used, which must, by necessity, include its limits as well as strengths. *Id.* at 299 (“The admission of historical cell-site evidence that overpromises on the technique’s precision—or fails to account adequately for its potential flaws—may well be an abuse of discretion.”).

*Testimony of Special Agent Richard Fennern*

FBI Special Agent Richard Fennern testified as the Government’s designated expert witness during the hearing held on May 2, 2018. As noted, the defendant does not challenge his qualifications to testify in the form of an opinion or otherwise, and his experience and training easily meet the requirements of Rule 702. Neither does the defendant challenge the ability of SA Fennern to testify as to (a) how cell phones connect to cell towers (in general) and (b) how various business records maintained by a cellular phone company may be used by law enforcement to identify the general location of a cell phone based on the cell tower(s) to which it connected at a particular time and date. Rather, the defendant challenges the specificity with which SA Fennern can place the cell phone subscribed to by the defendant in relation to key locations in this case—the scene of the carjacking and shooting, and addresses where the defendant is known to associate himself.

In this regard, SA Fennern testified that, once assigned to this case, he obtained various records from Sprint Corporation (defendant’s cell phone provider). Those records included: (1) call detail records (for example, Fennern Rept. at JLM\_00742 (identifying the cell phone number

initiating a call, the number called, whether the call was outgoing or incoming, the start and end date and time of the call, the duration of the call, the call type (text, voice), and the Network Identifier Number (“NEID”) designating the cell tower group and sector involved in the call));

1. cell site location records (for example, *id.* at JLM\_00752 (identifying the cell site involved in the call, its NEID, latitude, and longitude)); and (3) Per Call Measurement Data (“PCMD”) records (for example, *id.* at JLM\_00673 (giving information regarding the cell towers involved and the distance involved in the call between the first cell site and last cell site contacted (if different from the first))).

SA Fennern then entered the data from these records into a computer mapping program, which populated the map with the locations of the relevant cell towers contacted by the phone. He then was able to add the latitude and longitude of key locations in the case (for example, the crime scene) to produce a map that combines all this information and portrays the cell towers and sectors used by the defendant’s cell phone at key times before and after the carjacking and shooting (for example, *id.* at JLM\_00640–42). From these maps, SA Fennern is able to express an opinion as to the *general location* of the defendant’s cell phone within the same cell sector as, for example, the scene of the carjacking, very near in time to the commission of the offense. During both direct and cross examination, SA Fennern was careful to clarify that he cannot place the exact location of the cell phone within the 120º pie-shaped geographical sector served by the cell tower to which it connected. And, though he cannot say that the defendant’s cell phone was located at the address of the carjacking, he can say that the historical cell tower records allow him to opine that the location of the phone was “consistent with” the location of the crime scene.

During vigorous cross examination, SA Fennern agreed that the best that he can determine from the historical cell site records he analyzed was the cell tower sector in which the

defendant’s phone was located at the time of the carjacking, and that it could have been anywhere within this geographical location. Further, he conceded that he could not express the opinion that it was located at the exact crime scene.

I am satisfied that the methodology used by SA Fennern is consistent with that found to be admissible by the Seventh Circuit in *Hill* and other courts that have admitted similar evidence, and that he had sufficient facts and data, used sufficiently reliable methodology, and reliably applied it to the facts of this case to permit him to testify to the general location of the defendant’s cell phone within the particular cell tower sector where the carjacking occurred, close in time to that crime. While I will allow the Government to elicit the opinion from SA Fennern that the location of the defendant’s cell phone was “consistent with” the location of the crime scene at the time of the carjacking, he may not do so until *after* he has fully explained during direct examination the inherent limitations of the accuracy of his location evidence— namely, the phone can only be placed in the general area of the cell tower sector that it connected to near the time of the carjacking, and that it cannot be placed any more specifically within that sector. During cross examination, the defendant will be allowed to cross examine SA Fennern regarding the limitations of the location evidence that he can offer, based on the historical cell call records. As part of this examination, the defendant will be allowed to use any learned treatises regarding the limitations of using historical cell tower billing records to identify the location of a cell phone that are admissible under Fed. R. Evid. 803(18), consistent with the requirements of that rule (the learned treatise content may be read to the jury, but not admitted as an exhibit).

Accordingly, Medley’s motion *in limine* to limit SA Fennern’s testimony, ECF No. 54, IS GRANTED IN PART AND DENIED IN PART.

Date: May 9, 2018

 /S/ Paul W. Grimm

United States District Judge