

1 STATE OF ILLINOIS )  
2 ) SS:  
3 COUNTY OF WILL )

4 IN THE CIRCUIT COURT OF THE TWELFTH JUDICIAL CIRCUIT  
WILL COUNTY, ILLINOIS

5 THE PEOPLE OF THE )  
6 STATE OF ILLINOIS, )  
7 Plaintiff, )  
8 vs ) No. 18 CF 2109  
9 PETER ZABALA, )  
Defendant. )

10 REPORT OF PROCEEDINGS had at the hearing of the  
11 above-entitled cause, before the Honorable  
12 DAVID CARLSON, Judge of the Twelfth Judicial Circuit,  
13 Will County, Illinois on the 2nd day of April, 2024.

14 APPEARANCES:

15  
16 HON. JAMES W. GLASGOW,  
WILL COUNTY STATE'S ATTORNEY  
17 BY: MR. MARK SHLIFKA, MR. MICHAEL FITZGERALD,  
18 MR. CHRIS KOCH & MS. ALEXANDRA MOLESKY,  
Appearing on behalf of the People of  
the State of Illinois;

19  
20 MR. CHARLES BRETZ,  
Appearing on behalf of the  
21 Defendant.

22  
23 CYNTHIA A. JARZ  
Official Court Reporter  
24 084-002671

I N D E X

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DATE OF HEARING: 4-2-24

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LIST OF WITNESSES DX CX RDX RCX RDX

RICHARD MILETIC 6 35

1 THE COURT: Zabala.

2 MR. BRETZ: We used an Exhibit 2 back in  
3 December. This is largely the same thing. Just  
4 rearranged some of the slides.

5 So I gave the State a copy. It is a multipage  
6 exhibit for demonstrative purposes. It will be on your  
7 screen. It is a hard copy. Marked it Exhibit 2A for  
8 the record.

9 THE COURT: Does that work? Then I have two  
10 microphones on the -- well, Chuck, are you going to ask  
11 your questions from down there?

12 MR. BRETZ: I am.

13 THE COURT: I am going to put your microphone  
14 on. Can you hit it? So my understanding is we are --  
15 State is resting at least as far as evidence goes in the  
16 motion in limine?

17 MR. FITZGERALD: Yes.

18 THE COURT: And the defense wants to present  
19 some evidence. This is 18 CF 2109, People of the State  
20 of Illinois versus Peter Zabala.

21 Mr. Zabala is here in the custody of the Will  
22 County Sheriff. He is unhandcuffed and unshackled. And  
23 Mr. Bretz is here on his behalf.

24 Mr. Shlifka, Mr. Fitzgerald, Mr. Koch and

1 Miss Molesky are here on behalf of the People of the  
2 State of Illinois.

3 With that being said, I believe -- do we want  
4 to try it out just to make sure we can hear everything?

5 MR. BRETZ: Yes, Judge.

6 THE COURT: Mr. Miletic, can you hear us?

7 MR. SHLIFKA: I reached out to  
8 Detective German. He can hear us. We are just  
9 waiting --

10 MR. KOCH: He might be in now.

11 THE COURT: All right. There we go. Good  
12 afternoon, Mr. Miletic.

13 MR. MILETIC: Sorry about that. Good  
14 afternoon.

15 THE COURT: All right. All right. Good  
16 afternoon, sir. Can you see and hear us okay?

17 MR. MILETIC: I don't see you. But I can hear  
18 you.

19 THE COURT: We might have to turn that. As  
20 long as you can hear us, Mr. Miletic, there is really  
21 not a lot to see. There you are. All right. There we  
22 go. Mr. Bretz is in full focus and properly framed.

23 So what we are going to do now, Mr. Miletic, I  
24 am going to swear you in.

1 (Witness sworn)

2 THE WITNESS: I do.

3 THE COURT: All right. With that being  
4 said --

5 MR. BRETZ: Judge, just to cover things, I know  
6 the State last time spread of record I think it's  
7 Rule 45.

8 THE COURT: The Supreme Court Rule allowing  
9 for evidentiary testimony?

10 MR. BRETZ: And just so there is no  
11 misunderstandings, I think last time you made inquiry  
12 whether or not Mr. Zabala was agreeing to conduct the  
13 hearing in this manner.

14 We are. But if the Court or State wants  
15 further inquiry to satisfy the record --

16 THE COURT: I think we have got a previous --  
17 I mean, it is a continued hearing.

18 Mr. Zabala, do you have any issues with us  
19 proceeding by way of what we would consider a remote or  
20 electronic communications in this way?

21 THE DEFENDANT: No.

22 MR. BRETZ: Very good.

23 (Witness sworn.)

24 RICHARD MILETIC,

1 after having been first duly sworn, was examined and  
2 testified as follows:

3 DIRECT EXAMINATION BY:

4 MR. CHARLES BRETZ

5 BY MR. BRETZ:

6 Q. Mr. Miletic, just for the record, state your  
7 full name and spell your last name, please.

8 A. Richard Miletic, M-I-L-E-T-I-C.

9 Q. And you are the same Richard Miletic who  
10 testified briefly in this matter back on December 28th  
11 of 2023; is that correct?

12 A. Correct.

13 Q. At that time, we went through some of your  
14 background and credentials. And I would like to ask  
15 some follow-up questions that would come after that.  
16 Okay?

17 A. Yes.

18 Q. So you have had occasion to listen to the  
19 testimony of Detective German as well as Sy Ray in  
20 reference to this matter; is that correct?

21 A. Correct.

22 Q. And you have had occasion to hear the various  
23 conclusions and opinions that have been advanced by  
24 Detective German?

1           A.    Correct.

2           Q.    And I guess the first thing that I would ask  
3 you is, based on your expertise and experience in the  
4 field, is there a difference between an expert who is  
5 trained in utilizing a software program and an expert  
6 who is knowledgeable in reference to the underlying  
7 technologies that are involved with a cellular system  
8 network?

9           A.    I think I can answer your question. There are  
10 really two levels of expertise we are talking about  
11 here.

12                   One level would be the expertise of taking the  
13 T-Mobile records, for example, putting them through some  
14 piece of software in this case, the ZetX TraX software I  
15 believe it is called, display name, and using expertise  
16 in crime analysis to render some opinion on the crime  
17 itself and how cellphone data is related to that.

18                   The second level of expertise would be the  
19 functionality of the cellular network itself, how it  
20 goes about communicating with cellphones in the various  
21 digital technologies, how it goes about using and  
22 determining the different parameters that it uses in  
23 order to service and provide wireless service to  
24 customers.

1           That -- you could take training classes to  
2 understand the basics of how cellular networks work.  
3 But that is really not an expertise in the functionality  
4 of it. It really takes years.

5           It is kind of analogous to a professor in fluid  
6 mechanics, for example, taking a class and a student  
7 taking a class in that, the professor would be the  
8 expert. The student would be the student, not  
9 necessarily the expert.

10           So, you know, it takes years in this field to  
11 actually be an expert in how the cellular system works  
12 in underlying technologies.

13           Q. In that regard in getting to how the cellular  
14 networks work and how what, if any, information can be  
15 derived from the various data that is presented by the  
16 cellular carriers, have you prepared a revised slide  
17 show that would help you talk through those points?

18           A. Yes, I have.

19           Q. And we have presented that to the Court and  
20 marked it Exhibit 2A for the record. And what I was  
21 going to ask is if we could give Mr. Miletic control of  
22 the screen so that he can publish his computer and  
23 present the slideshow and talk through the various  
24 slides.



1 MR. SHLIFKA: Judge, it looks like he has the  
2 authority.

3 THE COURT: Okay.

4 THE WITNESS: Can you see my screen?

5 BY MR. BRETZ:

6 Q. Yes, we can see it. Thank you.

7 So after the first introductory slide, the next  
8 slide is entitled antenna patterns lab. Can you  
9 describe to the Court what is exhibited there and what  
10 the relevance is for the inquiry that we are making  
11 today?

12 A. So when antennas are manufactured, the  
13 manufacturer of the antenna will typically put that  
14 antenna into an isolated chamber, usually a large sized  
15 room that does not allow any external radio signals to  
16 enter the room.

17 So there is no effect from the outside world  
18 onto, into the room. They put the antenna in the middle  
19 of the room. And they send a signal through that  
20 antenna.

21 And then they measure the signal strength per  
22 se within the entire area of the room. And then they  
23 come up with or however the room is set up, but  
24 typically the entire room, they come up with a picture

1 like this where red indicates a stronger signal level.  
2 And then as you move out to the purple, the signal level  
3 is less.

4 Q. Is this what --

5 A. Now every antenna -- I am sorry. What was  
6 that?

7 Q. Is this what you would get if you were in a  
8 neutral environment without any external interference or  
9 things you would see in the real world?

10 A. That's correct. Yes, this is what you would  
11 see in this isolated, RF isolated chamber. And the  
12 other point here is every antenna manufacturer will have  
13 a different pattern.

14 So depending on their model or design or  
15 requirements, each one will display a different pattern.  
16 So there are thousands of different antenna models out  
17 there. Some are directional. Some are omnidirectional.  
18 Some are secularized. Some have more angled beam width.  
19 Some have a wider beam width.

20 Some are made of -- they are all made, some are  
21 made of differing materials.

22 So they will all have different patterns  
23 associated with them. It is not a single pattern for  
24 every antenna that is manufactured.

1 Q. All right. So turning then to the real world  
2 and to your second slide, can you explain to us what  
3 this is that you have set forth in slide two on how this  
4 equates to what the actual antenna coverage consists of  
5 in a typical real world environment?

6 A. Right. So just -- just to, a little background  
7 how this type of map is created, cellular engineers, RF  
8 engineers are -- planning engineers I work for --

9 THE COURT REPORTER: He is cutting out.

10 THE WITNESS: -- use software, one of the  
11 software packaging used. RF compliant software. Hold  
12 on one second.

13 THE COURT: Mr. Miletic, can we start that  
14 answer over again?

15 THE WITNESS: Sure. Yes. So the way this map  
16 is generated is by a software package that is referred  
17 to as RF planning software. And this is the standard in  
18 the industry, cellular network industry.

19 And this map is generated by inputting dozens  
20 of different parameters. So, for example, some of the  
21 parameters that they input into the software package  
22 would be the height of the tower, the actual model  
23 number of the antenna, the amount of power that is being  
24 transmitted through the antenna, the terrain -- there is

1 a terrain data base that they use that consists of  
2 hills, the level of the hills, how high they are, low  
3 they are, valleys, if there is any water there, rivers.

4 Then there is another data base that contains  
5 foliage like trees, bushes, grasses, mud lands and any  
6 type of other parts of the terrain.

7 For large cities, urban areas, they may also  
8 input what is called a building data base.

9 And the building data base actually has 3D  
10 representations of the buildings, the material these  
11 buildings are built from.

12 These databases are created either by GPS  
13 technology or by low flying airplanes that take images  
14 of these terrain and buildings and get data bases out of  
15 these.

16 Cellular companies purchase these data bases  
17 and use those in these tools. So what they do, they  
18 load all these parameters and all these data bases into  
19 this tool. And then they basically just hit a button  
20 that runs through various models that have been designed  
21 to calculate actual coverage.

22 The other thing they do is they will, to  
23 improve the analysis, they will go out and actually do  
24 drive tests of the area and get points of actual signal

1 levels. And they will take that data.

2 And they will input that data into the RF tool  
3 as well. And that has the effect of improving the  
4 accuracy.

5 And so the basic output of that would be a map  
6 that looks like this. This is not the area that we are  
7 talking about. It is a different area of the country.  
8 But this is an example what typical real world cellular,  
9 part of a cellular system looks like.

10 And so if I go to the map, the cell towers are  
11 represented by these small black, kind of tri -- three  
12 triangular shapes connected to a single point where each  
13 one of those triangles represents 120 degree sector of a  
14 cell tower.

15 And the colors represent the coverage of that  
16 particular sector. So basically if I am looking at this  
17 red area here in the middle, this is showing a coverage  
18 of this sector colored of 03.

19 And so, in general, if a mobile was within this  
20 area, most likely they are going to connect to that  
21 sector. There are other factors in play like capacity  
22 and time of day and other factors that, you know, this  
23 is a long-time snapshot of the network.

24 The network does change throughout the day and

1 throughout the seasons. So we can't take this, we can't  
2 apply this all the time every day. But it gives the  
3 cellular engineer a fairly good representation of  
4 coverage of those sectors.

5 So, again, in the area where it changes colors,  
6 that is where you may get a hand-off from one cell tower  
7 sector to another. And this kind of map makes a lot of  
8 sense because you are dealing with various different  
9 kinds of terrains.

10 It is logical to think of, you know, a radio  
11 signal is not going to travel very well through a dense  
12 forest. It is not going to travel well through a hill,  
13 a high hill, for example.

14 If you are sitting on a valley on the opposite  
15 side of a hill, your coverage is not going to be as good  
16 as if you were up on top of that hill. RF signals  
17 travel really well over water.

18 And so if you are at the end of a river and  
19 there is a cell tower down at the other end of the  
20 river, you are probably going to be able to connect to  
21 that tower.

22 So it makes common sense that you are going to  
23 get this type of coverage map in all these various  
24 different, different antennas, different tower

1 transmittal levels, different types of antenna,  
2 different terrain factors.

3 So this is more of a real world type  
4 representation of what a cellular system is.

5 BY MR. BRETZ:

6 Q. Now, you mentioned the concept of a drive test  
7 of the area. With the materials you reviewed, was there  
8 any sort of drive test done here?

9 A. I believe there were some drive tests done by  
10 prosecution's witnesses or partners or -- and I read  
11 some of that. I think they used, if I remember  
12 correctly, they used some (zoom audio cuts out) --  
13 equipment.

14 THE COURT: Mr. Miletic, I am going to stop  
15 you there. I am sorry. You broke up a little bit. Can  
16 you just repeat the first part of that sentence what  
17 they used?

18 THE WITNESS: Sure. I understand they used  
19 equipment from a company called Rohde and Schwartz,  
20 which I am familiar with it. I have actually been to  
21 the Rohde and Schwarz plant. They are an excellent  
22 company.

23 And they make very good test equipment. But  
24 the problem with the drive tests that were done was that

1 (A) they were done I believe a year after the crime.

2 So as we -- well, and I know cellular systems  
3 change, and especially within that amount of time.  
4 Modifications are made to the towers to optimize the  
5 networks.

6 In many cases, cellular companies are adding  
7 additional towers to the network. So they may add a  
8 tower in between other towers.

9 That changes the whole region because they have  
10 to modify all the towers around it.

11 With 5G, they are implementing small cells now.  
12 So they are putting those in. They are constantly  
13 adding new. The networks are constantly changing.

14 Two, the equipment that they use does not, is  
15 not really the same as an actual cellphone network. The  
16 antennas are different. Antennas are mounted to the  
17 outside of the vehicle typically. So portable phones  
18 are inside the vehicle.

19 So there is a lot of differences there. So you  
20 kind of have to take the drive test with kind of a grain  
21 of salt and use the data as appropriate but don't use  
22 the data if you are comparing, you are not necessarily  
23 comparing oranges -- it is really oranges and apples and  
24 comparing it to how a mobile performs.



1 BY MR. BRETZ:

2 Q. Now, turning then to the next slide, time of  
3 arrival, multi-path, what is exhibited there?

4 A. I think -- if there is a question, I think I  
5 missed it.

6 Q. No, no question. I just said what was  
7 exhibited there?

8 A. Okay. So this moves into kind of the  
9 conversation about timing advance and using the timing  
10 advance and the records and parameters to determine  
11 phone location.

12 And so the next series of slides address that  
13 issue. So this is just a background of how cellular  
14 signals are sent and received between the mobile phone  
15 and the tower.

16 So the cellphone has an omnidirectional antenna  
17 transmitting signals in a circular pattern, sometimes a  
18 spherical pattern. So it is not just one signal, not  
19 like -- a microwave dish pointing one direction.

20 So it is transmitting in all different  
21 directions. And this is a pictorial view of how  
22 multiple signals are sent out from the phone. And they  
23 travel along different pathways.

24 So some may -- and they will hit different

1 obstacles as they travel. Will get reflected off of  
2 different obstacles, buildings, and they will get  
3 absorbed by trees. And that will delay the signal.

4 So the result of that is the signals will get  
5 received at the tower at different times because one  
6 path may take a little longer to get to the tower than  
7 another path because it is bouncing off various  
8 obstacles as it goes.

9 When it gets to the tower, it is received at  
10 different times. So the tower has to be able to take  
11 those multiple signals. And you combine those into a  
12 signal combined signal to make some sense of it.

13 And so getting into a little technical detail,  
14 hopefully I can explain this in a layman's terms here,  
15 this is a depiction of two signals. The mobile is  
16 actually sending out thousands of signals.

17 But to simplify it, I just carved it down to  
18 two different signals being sent and received, being  
19 received at two different times.

20 So the blue is one signal, and the red is the  
21 same signal, but it is received at sometime a little bit  
22 later. So it is the same pattern. And it is just  
23 shifted to the right by some time. The access is here,  
24 Y access here.

1           And so the way the tower handles that has a  
2 certain little window. It has a little bit of a grace  
3 period. Call that a -- frequency. Call it a grace  
4 period for simplicity.

5           So there is a certain amount of time it waits  
6 to receive all the signals. So let's, in a typical LT  
7 environment, that is going to be, typically it's going  
8 to be 4.7 microseconds. That is just the time it waits  
9 to receive all these signals coming from this mobile.

10          And then it takes all the signals that come  
11 from within that 4.7 microseconds and then you combine  
12 all into a single signal. So this 4.7 microseconds, we  
13 know the -- we know that radio waves pick up over the  
14 speed of light.

15          We can convert that into distance. So that 4.7  
16 microseconds equals .9 miles. Almost one mile. So what  
17 that means is the shortest signal, that is the  
18 difference between the shortest signal and the longest  
19 signal.

20          So the first signal received and then the last  
21 signal received within that frame, within that 4.7  
22 microseconds is a one mile distance. Has to bounce off  
23 various things to get to that tower. Does that make  
24 sense?

1 Q. Yes. Keep going.

2 A. Okay. The other thing -- so that is, and there  
3 is signals that are outside of that time frame that  
4 could interfere with that. So there might be other  
5 signals at five microseconds, six microseconds, seven  
6 microseconds later that may cause interference with  
7 that.

8 So anything within that time frame is good.  
9 Anything outside that time frame is bad. So any signals  
10 that get delayed beyond the mile causes interference,  
11 basically interference, which is bad.

12 The other thing that can cause interference are  
13 external interference. Things like military  
14 installations, drones, people that put these boosters in  
15 their houses that boost the signal to their houses,  
16 those cause interference.

17 We have seen interference from cable companies  
18 at distribution sites. I have seen interference from  
19 LED lights like in a factory. I have seen the  
20 interference come on at 9:00 a.m. and turn off at  
21 5:00 p.m.

22 And we found that it is related to a certain  
23 model of LED lights. So there is a billboard sign, all  
24 sort of stuff, connections within the cell tower itself

1 can cause interference. All sorts of things that can  
2 cause internal interference.

3 All these things affect, affect the signal to  
4 noise, affect how the locations are estimated. So when  
5 you see interference, it affects the accuracy of the  
6 locations.

7 Then I want to get into the actual call records  
8 that T-Mobile provides. So the call records that  
9 T-Mobile provides, these are what is called their timing  
10 advance records. This is what the prosecution used to  
11 display the tower location. And then they have a --  
12 here is what they display in there, in their power  
13 points.

14 And so this, so here is the tower location  
15 here. This slide here is what they call ranging data.  
16 It is the distance that is logged in the T-Mobile record  
17 from the tower to this arch, this arcway, this arc.

18 So, according to the T-Mobile record, they will  
19 give you a distance in this, and then the prosecution is  
20 drawing this arc because the antenna is pointing in this  
21 direction. So they are saying, well, the mobile could  
22 be anywhere along this arc.

23 So -- and then if you look at this record here,  
24 this column V is the distance of this arc. So I don't

1 know which record this is. But let's say it is the  
2 first record 1.99 miles. Then this radius here would be  
3 1.99 miles.

4 And then they are drawing this arc to say the  
5 mobile could be anywhere on this line, on this arc line.  
6 But if -- T-Mobile also provides an explanation to these  
7 records.

8 And so the record they were just looking at,  
9 this timing advance miles, there is a start and an end,  
10 start of the record and end of the record, their  
11 description for that is the miles used to calculate the  
12 confidence.

13 And the confidence is another field in the  
14 record. The confidence is this field here.

15 And the confidence is associated with the  
16 actual latitude and longitude. (Zoom cuts out) and the  
17 way (Zoom cuts out).

18 THE COURT: Mr. Miletic, I am going to stop  
19 you. Sorry about that. You broke up again. If you go  
20 back to the first part of that explanation of the  
21 confidence.

22 THE WITNESS: Confidence. So the confidence.  
23 So this -- this parameter of the miles, the ranging data  
24 that they use, the description that T-Mobile provides is

1 that those miles are used to calculate the confidence.

2 And the confidence is another field in the record.

3 And the confidence is either low, medium or  
4 high, according to T-Mobile. They describe low as  
5 greater than 300 meters. Medium as 100 to 300 meters  
6 and high as less than a hundred meters.

7 And that has, that is associated with the  
8 latitude and longitude estimate. So all three of these  
9 fields are related, according to T-Mobile.

10 Now, the way the timing advance field, T-Mobile  
11 is looking at that in miles. But the parameter timing  
12 advance that is used by cellular networks is not  
13 associated with miles.

14 It is a time-based parameter. So in LTE, for  
15 example, the parameter on a call, the timing advance  
16 parameter is anywhere from 0 to 63.

17 Each of those values is associated with a time  
18 difference. And so, for example, if -- and when a  
19 network gets a signal from the mobile, if it wants the  
20 mobile to send that signal a little bit earlier in time  
21 the next time, it sends a timing -- (Zoom cuts out) down  
22 to the mobile. Saying, okay, advance your signal this  
23 much in time.

24 And it does that by sending a timing. The

1 network does not calculate the location or the distance.  
2 It doesn't care where the mobile is. All it cares about  
3 is when it receives that signal (zoom cuts out).

4 THE COURT: Mr. Miletic, you broke up a little  
5 bit. Can you go back to when it receives that signal?  
6 We lost you after that.

7 THE WITNESS: Sure. Sorry. I think the  
8 network, the internet. So the network doesn't care  
9 where the mobile is. It does not require the location  
10 of the mobile in order to provide a quality  
11 communications channel.

12 What it does with the timing advance parameter  
13 is when it wants the mobile to send a signal a little  
14 bit earlier in time, it sends a timing advance parameter  
15 to the mobile saying okay, mobile, send your signal this  
16 amount of time earlier than you would on the next  
17 transmission because we are not getting your signal. We  
18 are getting your signal too soon or too late.

19 So it doesn't, the network doesn't care where  
20 the mobile is. It has no idea where it is. Doesn't  
21 care where it is. Doesn't use the timing advance figure  
22 to calculate the location of the mobile in order to  
23 provide a communications channel with the mobile.

24 But the time advance figure is used after the



1 fact. So there is some calculation that T-Mobile does  
2 after the fact, looks at the log data and (zoom cuts  
3 out) and performs a calculation, and it logs this timing  
4 advance in miles.

5 So we don't know what the calculation is to get  
6 from timing advance value 0 to 63 to miles. So that is  
7 one algorithm we don't know.

8 BY MR. BRETZ:

9 Q. So, just to clarify, in reference to the  
10 algorithms that, for instance, T-Mobile is using to make  
11 this calculation that you just described, that is  
12 internal to the network carrier T-Mobile that is  
13 proprietary. And so those are not publically available.  
14 So we don't know, for instance, what the error spread is  
15 on that or any such thing; is that correct?

16 MR. SHLIFKA: Judge, I am going to object to  
17 the form of the question.

18 THE COURT: Mr. Miletic, before you answer  
19 that, Chuck, can you break that down into, even when it  
20 starts with publically available.

21 BY MR. BRETZ:

22 Q. So the algorithms such as were used T-Mobile by  
23 here, are those proprietary or publically available?

24 A. There are a couple different algorithms. There

1 is one, the timing advance number is a unitless number  
2 that is based on time. The timing advance known as  
3 logged in the record is in units of miles.

4 So there was a calculation that must have been  
5 done by T-Mobile to convert timing advance value, a  
6 unitless number that can be calculated into time, that  
7 converts that into miles.

8 I don't know what that calculation was. That  
9 wasn't provided by T-Mobile. So if they are not  
10 providing it, it must be proprietary to them.

11 Q. All right. And typically these type of  
12 algorithms that are utilized by the network carriers are  
13 not public and cannot be independently tested or  
14 verified; is that correct?

15 A. Not this one. I mean, there are standards,  
16 Triple A standards. Anything in those standard is  
17 public. This is not in those standards.

18 The other proprietary algorithm used which I  
19 think the prosecution already stipulated to was the  
20 calculation performed to actually do the location  
21 estimate and to determine the latitude and longitude.  
22 That is the other proprietary algorithm.

23 And then if I may make one more comment, any  
24 estimate that is done should also have an error factor

1 associated with it. The timing advance value does not  
2 have any error factor associated with it is also  
3 misleading.

4 Q. You froze up. You said there was no error  
5 factor assigned to it. You froze up again. Can you  
6 pick up from there, please?

7 A. Sorry. Yes. There is no error factor along  
8 with the timing advance number, the values. Those are  
9 estimates. Those are calculations.

10 So any estimate should have, must have an error  
11 factor or a confidence interval. There is none provided  
12 here. So, again, is it exactly 1 point -- what is it,  
13 the exact value of what it was calculated, or is there  
14 some error factor there? There must be some error  
15 factor there. It is just some estimate.

16 They do not provide that. So that is  
17 misleading.

18 Q. Now, in the record that we have where it  
19 indicates low confidence, what does that indicate?

20 A. I just pulled out a couple of points. There  
21 might be more. But the prosecution presents a map. And  
22 they present a map that looks highly precise.

23 However, if you look at the log files, the  
24 confidence level of that is low, which means the,

1 according to T-Mobile, the error is 300 meters or  
2 greater.

3 They don't put a maximum value on that. So,  
4 again, the picture is misleading. If you look at, you  
5 have to look at the records. And if you look at the  
6 records, if you look just at the picture, you are going  
7 to be misled into thinking that the mobile has to be  
8 somewhere along that line.

9 Q. And, in fact --

10 A. Same with, same with the next slide.

11 Q. Okay. And so what can we tell from this, if  
12 anything?

13 A. Not a lot because (A) there is no error  
14 factors. How do we know what that error factor is. If  
15 we don't know what the error factor is, we can't plot  
16 the actual estimate.

17 So it is misleading to plot it at all. And it  
18 is also misleading to plot the actual latitude longitude  
19 point, which I know they don't do that. Probably why  
20 they don't plot the actual latitude longitude.

21 And then the -- going back to the ranging data,  
22 this is used to calculate the confidence. That means it  
23 is associated with the latitude longitude, which they  
24 already stipulated that that is, uses proprietary

1 methods.

2 So I think it is misleading to display any of  
3 this information.

4 Q. Now, on the next slide that is entitled  
5 T-Mobile timing records, you started to summarize some  
6 of your findings in reference to your review of the  
7 records in this case; is that correct?

8 A. Yes. It's basically a summary of what I just  
9 have spoken to. I can go over it if you would like.

10 Q. Yes. Just to clarify and any questions that  
11 exist as to your expert opinions regarding your review  
12 of this particular case and the materials therein.

13 A. Right. So Item 1 again is the timing advance  
14 perimeter is not used in real-time by the network to  
15 establish and maintain a quality communications channel.

16 All the network cares about is the time it  
17 receives the signal. It doesn't care where the mobile  
18 is.

19 In terms of the ranging miles parameter, they  
20 don't provide us the calculation from timing advance to  
21 miles. I don't know what that is.

22 They don't provide the error rates for that  
23 estimate. I showed you a couple of points where the  
24 prosecution had maps with a low confidence error factor

1 showing a very precise location for that mobile, which  
2 is misleading.

3 The proprietary methods used to estimate the  
4 location and estimate the range are proprietary to  
5 T-Mobile. They do not provide those calculations to us.

6 T-Mobile uses timing advance reference records  
7 in this data to do troubleshooting and optimization.  
8 They don't use it -- and they use it under a statistical  
9 basis. They use it in statistically valid numbers.  
10 They don't look at one off mobiles and say oh, this one  
11 mobile had a drop call here. We are going to go send  
12 out engineers to determine why that occurred.

13 What they do do is look at -- (zoom cuts out)  
14 data.

15 Q. You said -- we lost you there. You said what  
16 they do do. And then we lost you.

17 A. What they do use it for is they look at a  
18 multitude of records, a statistically valid number of  
19 records. Say maybe several hundred cellphones over a  
20 certain time period.

21 And they have some similar issues. And in  
22 those cases, they may start looking into the cause of  
23 those issues.

24 And, finally, T-Mobile specifically states, and

1 I think we have gone through this before, but, you know,  
2 they do state that they don't certify these records.  
3 They certify it as business records. And they don't  
4 testify. They don't send people to testify. There is a  
5 reason for that.

6 They don't want the liability of having to use  
7 these records on an individual basis.

8 Q. So would it be accurate that a carrier like  
9 T-Mobile will not confirm the accuracy of the data  
10 generated except for their own purposes, which is the  
11 maintenance of the network?

12 A. That is basically what the liability says to  
13 me, to tell you the truth of it.

14 Q. Then you have a final slide as well?

15 A. Probably just a summary of everything.

16 Q. If you can just quickly go through that.

17 A. This is just probably, maybe just -- we didn't  
18 discuss the H-plane. Maybe summarize that here in the  
19 last, again, the actual coverage looks nothing like the  
20 H-Plane depiction.

21 The H-plane depiction is really just a  
22 depiction of an antenna, of one antenna within a --  
23 (zoom cuts out). It should not be applied to real world  
24 environment.

1 Q. You broke up there.

2 A. No cell engineers --

3 Q. You broke up there a little bit. So the  
4 H-plane depiction would only have true application in a  
5 neutral site whether it is all by itself and with no  
6 other things to obstruct signals and things of that  
7 nature as to that single tower, correct?

8 A. Yes. I would go further. It would have to be  
9 in an isolated chamber because it would have to not be  
10 affected by any radio waves or any external signals.

11 And that depiction would only apply to a  
12 particular antenna that has that exact pattern. And I  
13 never, I have worked with a lot of cellular engineers,  
14 RF engineers. And they would never do anything like  
15 that to determine the coverage of their network.

16 Q. And so, based on your experience, your review  
17 of the materials in this case and the various  
18 conclusions that you have come to, what would your  
19 comment be as to the reliability of the conclusions that  
20 were reached, not to make it personal or anything, but  
21 by Detective German in reference to his analysis using  
22 the ZetX program?

23 A. I mean there may be cases where the data is  
24 accurate. And there are also cases where the data is



1 not accurate. One cannot apply a -- one cannot apply  
2 one to the other.

3 You can't apply (zoom cuts out), where it is  
4 accurate to a case where it may or may not be accurate.  
5 And all I am saying is there are a lot of unknowns here.  
6 There are proprietary methods used. There are changes  
7 in the network throughout the day, throughout the  
8 seasons, throughout the years where you could be in the  
9 same spot and an estimate at one time can be accurate  
10 and an estimate at another time may not be accurate.

11 So to use it in this particular instance where  
12 you have to, you are really pinpointing the accuracy at  
13 a certain specific date and time for a single device is  
14 misleading in my opinion.

15 Q. And by misleading, do you mean that you would  
16 contest the results that have been presented as being  
17 accurate?

18 A. I would contest the results. I would contest  
19 the results being accurate because they are  
20 unverifiable, and we cannot test it because we don't  
21 have those calculations.

22 Q. And I guess maybe a better way of putting it  
23 you would contest these results are reliable; would that  
24 be true?

1           A.    I would contest that because you can't test it  
2 if is untestable because we can't go back in time and  
3 test the reliability of those data.

4           Q.    And so between not being able to go back in  
5 time and test the reliability as well as utilizing the  
6 fact that information that was utilized came from  
7 proprietary sources with unknown rates of error, all of  
8 that would add to the unreliability of the outcome; is  
9 that correct?

10          A.    Correct.  We don't have the raw data that  
11 T-Mobile used to calculate the data they provide in the  
12 records.  If we had the raw data and the algorithms, we  
13 might be able to reproduce what they provide in the  
14 records.  We don't have that.

15               MR. BRETZ:  Judge, I tender the witness.

16               THE WITNESS:  And we are also able to go back  
17 in time --

18 BY MR. BRETZ:

19           Q.    Why don't you repeat that last phrase.  You cut  
20 out part of it.

21           A.    We do not have the raw data that T-Mobile used  
22 to run through their proprietary algorithms.  And we  
23 don't have their proprietary algorithms.  So we can't  
24 verify the data in their records.  That is one.

1           Two, we can't go back in time and be there at  
2 the time of the incident to test the location. So, in  
3 my opinion, the data cannot be verified. And,  
4 therefore, is unreliable.

5           MR. BRETZ: I tender the witness.

6           THE COURT: Mr. Shlifka?

7           CROSS-EXAMINATION BY:

8           MR. MARK SHLIFKA

9 BY MR. SHLIFKA:

10          Q. Mr. Miletic, can you hear me?

11          A. Yes.

12          Q. Good afternoon. Mr. Miletic, it is fair to say  
13 you don't have a concern with the ZetX or TraX actually  
14 plotting numeric values? Is that fair to say?

15          A. It depends on what values they are applying.  
16 Well, to take -- I don't have an issue with taking and  
17 how they do it, I do have an issue in how it misleads  
18 someone that looks at it.

19          Q. Mr. Miletic, I guess I will clarify. You don't  
20 take issue without any context the simple plotting of  
21 the numbers performed by ZetX, right?

22          A. It is kind of a vague question. Can you put  
23 some specifics to it?

24          Q. Yes. Mr. Miletic, based on your review of the

1 materials and the numeric values contained in the call  
2 detail records and the other cellphone records, it is  
3 not your position that ZetX is, for example, improperly  
4 placing a longitude or latitude value, something like  
5 that?

6 A. So if they are taking a latitude longitude  
7 value from the T-Mobile records and putting that as a  
8 point on the map, I don't have an issue with that  
9 function.

10 I do have an issue with the actual calculation  
11 of the latitude longitude.

12 Q. All right. So you would agree with me your  
13 concern that you are attempting to voice is more so with  
14 the records themselves and not the TraX or the ZetX  
15 program, right?

16 A. Again, it is a vague question because TraX does  
17 add visual representations to their maps that aren't  
18 necessarily in the T-Mobile records.

19 Q. Are you referencing the H-Plane?

20 A. That is one. The other are the arcs, (zoom  
21 cuts out) the arc lines that are drawn.

22 Q. What is your --

23 A. (Zoom cuts out) I believe those are the two.

24 Q. Mr. Miletic, can you just rephrase the answer?

1 You kind of cut out on our end.

2 A. Sure. Sorry. The arc lines that they draw are  
3 not in the T-Mobile records. And the H-plane that they  
4 display are not in the T-Mobile records.

5 Q. Now, you testified on direct that obviously you  
6 are familiar that the arcs that they are drawing are  
7 based on the sectors from the records, right?

8 A. That is my understanding.

9 Q. So obviously you would agree with me that those  
10 arcs are, in fact, coming from the records, right?

11 A. Yes.

12 Q. Let's move on to the records themselves.

13 Your biggest concern with the call detail  
14 records and the timing advance records are the  
15 verifiable or the ability to retest them, right?

16 A. Well, there are two different types of records.  
17 So there is the call detail records. And then there is  
18 a timing advance records. Those are two separate data  
19 files that T-Mobile provides.

20 Q. Okay.

21 A. The call detail records do not provide an  
22 estimate of the location of the phone. They provide the  
23 location of the tower antenna sector that is serving the  
24 phone on a call text message.

1 I don't have an issue with displaying the  
2 location of the tower and the direction of the antenna  
3 that is serving the call coming from the CBRs  
4 (inaudible).

5 THE COURT REPORTER: I didn't hear the last  
6 words.

7 BY MR. SHLIFKA:

8 Q. Mr. Miletic, can you restate the end of your  
9 answer?

10 A. Sure. So on the CBR records, I do not have an  
11 issue of the display of the location of the cell tower  
12 and the direction of the sector that is serving the  
13 call, serving the phone. I don't have a problem with  
14 displaying that. That is logical.

15 Q. And you would agree with me, you have a similar  
16 conclusion as to ZetX that a cellphone is approximately  
17 located in a cell coverage area, right?

18 A. Well, that depends on the cell coverage area.  
19 So, you know, I mean, you could -- you have to know what  
20 the cell coverage area is.

21 Q. And you would agree with me that one of the  
22 ways to confirm a cell coverage area is to perform a  
23 drive test, right?

24 A. Yes, that would be one way to do it.

1 Q. And you seem to take issue with  
2 Detective German's drive test, right?

3 A. Yes.

4 Q. Did you perform a drive test as a result of  
5 this case?

6 A. No.

7 Q. Did you do anything to verify the coverage area  
8 of this case?

9 A. No.

10 Q. And you are just simply here today just  
11 testifying that it is wrong, right?

12 A. No. I am here testifying that -- are you  
13 talking about the drive test is wrong or --

14 Q. The cell coverage area, Mr. Miletic.

15 A. You mean the H-plane depiction of the cell  
16 coverage area?

17 Q. Just the cell coverage areas and the materials  
18 that you were provided as a result of this case.

19 A. The only thing that was provided to me for the  
20 coverage area of the cell was the H-plane depiction.  
21 Anything else, I don't believe I have seen it.

22 Q. Mr. Miletic, let's talk about the timing  
23 advance data. Your concern with the timing advance data  
24 is that these data points are not verifiable or

1 testable, right?

2 A. Which data points?

3 Q. The distance data points that you just  
4 testified about.

5 A. What was your question again? Unverifiable or  
6 untestable?

7 Q. Mr. Miletic, do you remember testifying on  
8 direct a couple minutes ago that you had concern with  
9 the timing advance records because the data is not  
10 testable or not verifiable?

11 Do you recall testifying to that?

12 A. I do.

13 Q. And your concern was that the distance  
14 determinations that the cellphone records were provided  
15 you indicate are based on unknown algorithms, right?

16 A. Correct.

17 Q. And you are indicating that because of that  
18 that, therefore, you as an individual, you have no  
19 recourse to verify this data set, right?

20 A. Correct.

21 Q. And you have had the opportunity to review  
22 materials in this case such as police reports and  
23 surveillance videos, right?

24 A. I looked at them. But I didn't focus on that



1 material.

2 Q. You were provided them, right?

3 A. Yes.

4 Q. And obviously you know and you obviously heard  
5 Detective German testifying today that when he performs  
6 historical cell site -- before today.

7 MR. BRETZ: I thought you said today.

8 BY MR. SHLIFKA:

9 Q. You heard Detective German testify before  
10 today, right?

11 A. Yes.

12 Q. And you heard and you reviewed the materials of  
13 Detective German that when he performs historical cell  
14 site analysis, he doesn't just rely on the ZetX program,  
15 right?

16 A. I don't remember. I will take your word for  
17 it.

18 Q. And you heard him testify that he will also  
19 interview individuals, right?

20 MR. BRETZ: Judge, I am going to object at this  
21 point because this is outside his area of -- what they  
22 are trying to get to is the fact that if something  
23 anecdotally supports it, that that somehow validates the  
24 analysis done.

1           That is a totally separate issue. If they have  
2 some separate piece of evidence such as an interview  
3 with someone or a video that they could properly present  
4 at trial in order to try to establish a case that  
5 somebody or somebody with a cellphone was in a  
6 particular location, that is a separate issue.

7           You can't anecdotally make an analysis accurate  
8 because something else happens to come up with the same  
9 conclusion.

10           MR. SHLIFKA: Judge, that would be essentially  
11 just verifying something or testing something what  
12 Mr. Miletic is saying is impossible. I believe that  
13 when Detective German testified that historical cell  
14 site analysis isn't just utilizing ZetX but is also  
15 interviewing individuals to determine where cellphones  
16 are located and plug surveillance footage, that is part  
17 of the analysis of historical cell site analysis. Also  
18 I believe it goes to this witness' credibility that he  
19 is saying Detective German did everything wrong and it  
20 appears that he hasn't reviewed the corroboration done  
21 by Detective German.

22           MR. BRETZ: Judge, he is mixing apples and  
23 oranges. The bottom line is nobody, nobody, except for  
24 perhaps the prosecution thinks that historical cell site

1 analysis includes interviewing people and looking at  
2 video. That is not cell site analysis.

3 That is independent investigation that may  
4 anecdotally corroborate something. But that is a  
5 separate, you know, question, evidentiary question as to  
6 the admissibility of those issues. It has nothing to do  
7 with the validity of the cell site analysis.

8 And the fact they are even suggesting that  
9 somehow that questions the integrity of Mr. Miletic  
10 because he is not relying on things that have nothing to  
11 do with cell site analysis really shows the shortcoming  
12 of their understanding of what this is even about.

13 THE COURT: Anything else?

14 MR. SHLIFKA: No, Judge.

15 THE COURT: I guess here is where I am at, and  
16 maybe now I have gone far afield on this. But I really  
17 see this as there are three issues, two motions, three  
18 issues.

19 One is the initial admission of the cellphone  
20 records, cellphone data or whatever that is, which I  
21 believe we have already dealt with, right? I mean,  
22 there is an agreement that those are foundationally  
23 acceptable.

24 And so the question becomes whether or not the

1       respective experts, which is issue two, whether or not  
2       Detective German, Mr. Miletic, Sy Ray, whoever it may  
3       be, you want them to testify as experts in this, which I  
4       think clearly, they satisfy those -- the criteria for  
5       that. I do.

6                The third thing is their interpretation as  
7       experts in cell site data. That is really what we are  
8       talking about. And I think that is the whole issue of  
9       what Mr. Bretz is objecting to or you are talking about  
10      anecdotal evidence. The issue is whether or not these  
11      individuals, these gentleman can testify saying I am  
12      looking at the records. The records may be good. They  
13      may be garbage.

14               But based upon those records, this is what I am  
15      saying. And then it will be the question of fact as it  
16      relates to the garbage in or garbage out kind theory of  
17      evidence. So am I wrong on any of this?

18               MR. BRETZ: No, Judge. You are spot on. That  
19      is -- the objection we have been raising all along was  
20      not that Jeff German doesn't have credentials to do the  
21      software program and not that the records didn't come  
22      from the provider.

23               It is what it is those records, you know, are,  
24      can be used for and the fact that the methodology that

1 they are attempting to use in order to reach geo  
2 location analysis results is flawed, fatally flawed.  
3 And, therefore, should not be allowed.

4 MR. SHLIFKA: Judge, I guess kind of what I  
5 believe Mr. Bretz' argument was previous and kind of  
6 what the Court is alluding to, the State is not trying  
7 to discredit that Mr. Miletic is not an expert, but I  
8 think kind of more of a weight versus admissibility  
9 where it is two experts in the same field having  
10 different opinions or positions as to how to interpret  
11 records.

12 And that is kind of where this impasse is  
13 almost reached. But as the Court alluded to, it  
14 ultimately will come down to fact finders, whether that  
15 is the jury or the Court as to who is more credible and  
16 who is to be given more weight.

17 MR. BRETZ: But the problem is, Judge, again,  
18 as Mr. Miletic alluded to I guess specifically set forth  
19 at the beginning of his testimony today,  
20 Detective German is qualified to take data that he  
21 cannot attest for the reliability of or provide any  
22 error factors pertaining thereto, but he can take that  
23 and put it into a computer program. He knows how to do  
24 that. He can teach other people how to do that and say

1 it produced these results.

2 What he can't do is to tell us that this is  
3 reliable or verifiable, particularly as to this  
4 particular case. None of the questions that have been  
5 raised by a true expert in cell tower networks like  
6 Mr. Miletic, which there are very few of them around,  
7 believe me I looked, and none of them have been  
8 addressed by Detective German, all due respect to him,  
9 or even Sy Ray, who really didn't add anything to this  
10 question other than saying yes, I started this company  
11 and, you know, because he knew nothing about this case,  
12 what variation was used, what data was used, nothing.  
13 So I don't think he really added anything.

14 So the problem is is that the process that they  
15 are using is fatally flawed right from the beginning.  
16 And they have no one who can verify the reliability, the  
17 accuracy, the verifiability, the grade of error, any of  
18 those things as to the data that they are using here to  
19 reach these conclusions.

20 MR. SHLIFKA: Judge, I guess the --

21 THE COURT: Is there any other evidence you  
22 want to present? Mr. Miletic, do you want to ask him  
23 anything else?

24 MR. SHLIFKA: No further questions.

1 THE COURT: Okay. So here is what we are  
2 going to do -- do you have any other questions for  
3 Mr. Miletic?

4 MR. BRETZ: I don't, Judge.

5 THE COURT: So, Mr. Miletic, Jeff German, you  
6 guys want to hang out and listen to whatever we are  
7 going to do next, you are more than welcome, but we are  
8 going to close evidence at this point in time unless the  
9 State wants to call anybody else. Unless Mr. Bretz  
10 wants to call anybody else.

11 MR. SHLIFKA: No, Judge.

12 MR. BRETZ: No.

13 THE COURT: I suppose it is just a matter of  
14 argument.

15 MR. BRETZ: Judge, we could come back another  
16 day. I wouldn't mind just --

17 THE COURT: -- going through everything? How  
18 about this, can we do it though --

19 MR. BRETZ: Relatively soon, I understand.

20 MR. SHLIFKA: Yes.

21 THE COURT: Maybe even the 23rd. I have a  
22 couple other things up.

23 MR. SHLIFKA: We have Boshears that day if you  
24 want to do both.

1 MR. BRETZ: I am going to be here.

2 THE COURT: So will I.

3 MR. SHLIFKA: I will be here too, Judge.

4 THE COURT: Why don't we set this over to the  
5 23rd? Do you want to say like 11:00 o'clock or so?

6 MR. BRETZ: Fine.

7 MR. SHLIFKA: That works.

8 THE COURT: I have got a bunch of things I am  
9 kind of jamming in there. But we will make this a  
10 priority. I will listen to everybody. And we will go  
11 from there.

12 MR. BRETZ: I don't think either one of us will  
13 be that lengthy. I think you basically understand what  
14 our respective positions are.

15 THE COURT: Yes, like I said, I think we  
16 really narrowed it down finally, so at least for me, and  
17 I am a simple person.

18 So thank you, gentlemen, for attending by zoom.  
19 And we will reconvene around 11:00 o'clock on Tuesday,  
20 April 23rd. And we will go from there. Okay. Telling  
21 any sort of speedy trial demand?

22 MR. BRETZ: Yes.

23 THE COURT: Detention once again is going to  
24 be found. And we will go from there.



1           MR. BRETZ: Yes. All of that is true. We  
2 agree with all of that.

3           THE COURT: All right. Mr. Zabala, see you  
4 back on April 23rd.

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**IN THE CIRCUIT COURT OF THE TWELFTH JUDICIAL CIRCUIT  
WILL COUNTY, ILLINOIS**

**I, CYNTHIA A. JARZ, Official Court Reporter for  
the Circuit Court of Will County, Twelfth Judicial  
Circuit of Illinois, do hereby certify the foregoing to  
be a true and accurate transcript of the testimony and  
proceedings in the above-entitled cause.**

**Cynthia A. Jarz  
Official Court Reporter  
CSR No. 084-002671**