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Specialists in Defense Dynamics

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Michael J. Steinle, Esq.  
Terschman, Steinle, Hodan & Ganzer, LTD.  
309 North Water Street, Suite 215  
Milwaukee, WI 53202

Daniel H. Sanders, Esq.  
Hart & Powell, SC  
735 North Water Street, Suite 1212  
Milwaukee, WI 53202

Re: State v. Mark Wagner, 22CF2481

Gentlemen:

I am writing to address the questions posed by Judge Genovese in her February 23, 2024 letter in the above-referenced case. The Judge raises questions regarding three subject areas of my proposed testimony, which I will address seriatim.

**Auditory Exclusion**, sometimes called “auditory occlusion” or “auditory blunting” in the research literature, is the temporary impairment of a subject’s hearing ability during high-stress events, including but not limited to officer-involved shootings. The effects of auditory exclusion range from the subject hearing sounds (including gunshots and verbal commands) at a greatly diminished volume, to not hearing the sounds at all.

A substantial body of research, and published professional and academic literature developed over the past 35-40 years or more, supports the existence and occurrence of auditory exclusion during officer-involved shootings. This research and published literature ranges from scientific studies, funded by the federal government, to studies based on interviews of what now amounts to some thousands of officers who have been involved in shootings. See, e.g., *Acute Stress Alters Auditory Selective Attention in Humans*, L. Elling, C. Steinberg, et al., National Institute of Health, National Library of Medicine, National Center for Biotechnical Information, PLoS One, 2011 April 5, 6(4); e18009; *Police Responses to Officer-Involved Shootings*, D. Klinger, Department of Justice, National Institute of Justice, Award number 97-IJ-ZCx-0029 (2001); *Investigating Officer-Involved Shootings, Arrest-Related Deaths, and Deaths in Custody*, D. Ross and G. Vilke (2018), p. 110; *In Defense of Self and Others...*, U. Patrick (FBI, ret.) and J. Hall (FBI, ret.) (2005), p. 111 et seq.; *Perceptual & Memory Distortions During Officer Involved Shootings*, A. Artwohl, Ph.D., FBI Law Enforcement Bulletin 18 (Oct. 2002 and 2008 Up date)

and U.S. Dept. of Justice, Office of Justice Programs, No. 197365; *No Recall of Weapon Discharge*, A. Artwohl, Ph.D., Law Enforcement Executive Forum, Vol. 3, No. 2, p.. 41-49 (2003).

The Klinger study, funded by the U.S. Department of Justice, makes the following statement in its Abstract:

The literature addresses two distinct issues related to the effects of shootings: 1) what officers experience *during* shootings and 2) what they experience *after* shooting incidents. Where the first issue is concerned, the research indicates that officers sometimes experience sensory distortions such as tunnel vision, auditory blunting, and altered perceptions of time.

Commenting on several academic studies, the work of Ross and Vilke, *supra*, states on p. 109-110:

These studies have yielded the consistent finding that the involved officers often experience a multitude of attention and memory influences that impair their ability to have complete and accurate memories of the event. Across multiple studies, the most common of these is inattentive deafness, including total auditory exclusion of gunshots, people screaming, etc. The research on the perils of divided attention explains why this would be the most common effect. For example, an officer-involved shooting is almost always a primarily visual event, with the officers intensely focusing on visual threat cues.

Reviewing the research on perceptual distortions experienced by officers involved in shootings, Artwohl, *supra* (2002, 2008), finds that auditory exclusion is one of the most commonly-experienced perceptual distortions of officers involved in shootings. Results of several specific studies, and the percentages of officers experiencing auditory exclusion in those studies, are as follows:

Solomon and Horn (1986), “diminished sound”	51% of officers
Honig and Roland (1998), “sounds were quieter”	51% of officers
Klinger (2001), “diminished sound”	82% of officers
Artwohl (2002; 2008 Update), “diminished sound”	84% of officers

One quote from an officer involved in a shooting, included by Artwohl, *supra* (2002, 2008) on page 1 of her study, provides a good example of an instance in which auditory exclusion completely blocked the officer’s perception or recollection of the gunshots, rather than just diminishing the sound of the shots:

If it hadn’t been for the recoil, I wouldn’t have known my gun was working. Not only didn’t I hear the shots, but afterwards my ears

weren't even ringing.

In my own work for the past 40 years as an expert witness in use of force cases, and for the past 45 years as a firearms instructor and instructor-trainer, I have trained some 17,000 individuals in a wide variety of settings, and have debriefed or interviewed officers involved in shootings, at time intervals after the shootings ranging from about one hour to, in some instances, several years afterwards. I have worked in many cases in which the involved officers or others have experienced auditory exclusion. In one such New Jersey case, the officer perceived the sound of his own 12-gauge shotgun, which to his or anyone else's unprotected ears would normally be a very loud "BOOM," as a soft "pop." It was so soft a sound, in fact, that he believed his shotgun had malfunctioned in some way. Similar cases appear in the published literature on auditory exclusion, including at least one case in which the officer, in the middle of a gunfight, stopped firing and looked at his handgun, because he was sure it must not be working, because the sound of the gunshots was so quiet. In a number of other cases I have worked on – including this one -- some officers or others have not heard the gunshots at all.

Auditory exclusion may not only affect the sound of gunshots. In a case I worked on in federal court in Oregon several years ago, the officer who fired did not recall, and did not hear himself, yelling at the suspect, "Drop the knife! Drop the knife!" The officer's multiple commands to the suspect, however, were heard, and testified to, not only by the other officer on the scene, but by the slain suspect's mother – the plaintiff in the lawsuit – despite the fact that her financial interests were directly contrary to the officer having given those commands. In addition, I note that I myself have experienced auditory exclusion, both in competition as a high school wrestler, and in deer hunting, when I did not hear (or did not recall hearing) the three shots I myself fired from a .30 caliber rifle.

The phenomenon of auditory exclusion has been taught in local, county, state and federal police academies throughout the United States for decades. It is part of the curriculum in which most law enforcement firearms instructors are trained, and in which they, in turn, train their recruits and in-service officers. I have taught this subject for the past 35-plus years at the police academy level, in-service officer level, police instructor level, in the Criminal Justice Department course I developed and taught at Indiana University, at regional, national, and international law enforcement training conferences, and in CLE programs I have taught to attorneys, prosecutors, and judges. I was one of the subject matter experts who wrote the Commonwealth of Pennsylvania's police academy curriculum on this subject. I have testified in court many times on this, and other stress-caused, perceptual distortions.

In conjunction with the auditory exclusion phenomenon, it is common in shooting incidents both for involved individuals and "earwitnesses" not to accurately know, hear, or recall how many shots have been fired, even if fired by themselves. I have worked in dozens of cases where the officers or others who fired have no idea how many shots they fired, or if they think they know, they turn out to be wrong. I had in my audiotape library for many years a tape made in the police surveillance van of a "wired" NYPD undercover detective who was involved in a drug "buy-bust" in an alley, that turned into a shootout between the detective and the drug dealer. After the shootout, the detective, who was convinced he had only fired three shots, then proceeded, with other officers to search the neighborhood at length for the drug dealer, only to

find out afterwards that he had fired his handgun until it was empty, and that he had then spent nearly an hour searching dark alleys for the armed suspect, all the time with an empty gun in his hand.

As another example, I worked a few years ago as an expert in a high-profile police shooting case in Milwaukee in which there were dozens of “earwitnesses,” some of whom were also eyewitnesses to the event. Their statements and testimony as to how many shots were fired ranged from “four” to “at least fourteen.” My own standard teaching for years in law enforcement training classes has been, “How ever many shots you think you’ve fired, you’re probably wrong.”

When I first began to work in the firearms training field in the late 1970s, it was standard training to “count your shots” so you would know how many rounds you had left in your revolver, and would know when it was time to reload. Experience in thousands of police shootings nationwide, however, proved that trying to count, and relying on, the number of shots one thought he or she had fired was an exercise in futility. It is for precisely this reason that, for the past 40 years or so, most law enforcement academies and agencies throughout the country have changed the way they train officers, teaching them not to rely on trying to count how many shots they have fired, but instead, if they know they have fired at all, to reload their handguns at the earliest opportunity to do so.

Given the foregoing, it is not at all surprising that SA Wagner, who was falling backward at the time, thought he had fired one shot, when in fact he fired two.

Special Agent Wagner believed he heard a gunshot, fired at him by the suspect QLW from inside the closed car QLW was driving. I pointed out in my initial expert report dated October 30, 2023 that a shot fired from inside a closed car will, simply by virtue of that fact, be muffled or diminished as compared to a shot fired in the open. Thus, I stated on page 8 of my report:

Regarding SA Wagner’s belief that he heard a gunshot, I note that the sound of a pistol shot will be significantly muffled when fired inside a car with the windows closed, as was the case here.

In my report, I also pointed out to the reader that the muffled sound of a gunshot would also be competing with the noise of QLW revving his engine, his spinning tires screeching on the dry pavement, police sirens blaring, officers yelling commands – as I stated, “this was a noisy environment.”

I then went on to state:

In addition, one of the well known and widely researched effects of [this] stress is so-called “auditory exclusion” (or “auditory occlusion”), in which an individual’s normal perception of sounds is greatly reduced or otherwise altered. See, e.g., *Guidelines for Investigating Officer-Involved Shootings*, D.L. Ross and G.M. Vilke (2018).

My purpose in discussing auditory exclusion is simply to educate the jury about the existence of this well-established phenomenon, to help the jury understand how, in the stress of this incident, and in the noisy environment of the arrest scene, auditory exclusion could contribute to SA Wagner, or other officers on the scene, mistaking a sound such as the Halligan tool hitting Wagner's ballistic shield, with what, under these circumstances, would have been the muffled sound of a handgun shot fired by QLW inside the closed car, before the car's windows were broken out by gunfire.

In addition to SA Wagner's perceptions, SA Peskie has stated that he didn't hear any gunshots at all, including the two shots we know SA Wagner fired from his handgun, and including SA Peskie's six shots fired from his own rifle. Six shots fired from an AR115 such as the one carried by SA Peskie would have been deafeningly loud, yet he has no recollection of hearing any shots. Other officers at the scene heard a variety of things; Mansavage, for instance, heard what he described as a "pop" simultaneously with seeing SA Wagner fall backwards.

Most of the jurors in this case will probably have no knowledge of shootings other than what they may have seen on television or in the movies. Instead of having the jurors conclude that SA Peskie must either be lying or insane when he testifies that he heard no gunshots, even those he himself fired, testimony from me about auditory exclusion will help the jurors understand that not hearing the shots, or hearing them as much quieter than they would be in an un-stressed situation, is a very common occurrence, and one which has been widely studied, researched, documented, and taught for years.

Applying to the circumstances of this case the knowledge that (1) the sound of a handgun shot, when fired inside a closed car, would have a muffled sound as heard by those outside the car, and (2) the phenomenon of auditory exclusion exists, would of course depend not only on my testimony, but, for foundation, the trial testimony of SA Wagner and that of other officers present at the scene. I would expect the testimony of SA Wagner and the other officers to precede my testimony.

**Action vs. Reaction.** In my October 30, 2023 expert report, I present an entire section entitled "Action vs. Reaction" on pages 13-14. In that section, I cite to the section entitled "Action vs. Reaction" in the work of retired FBI special agents Urey Patrick and John Hall, JD, in their authoritative work, *In Defense of Self and Others* (2005, 2010, and Third Edition). A more fulsome explanation of the principle of action vs. reaction is as follows:

For every human movement that begins on some stimulus (starting signal), there exists between the stimulus and the beginning of the movement a certain delay or lag time, commonly (if not technically accurately) referred to as "reaction time." For example, if we video-record sprinters or swimmers on the starting blocks, waiting for the signal to start the race, and we then play back the start of the race frame by frame, we will see that, following the starting signal, a period of time elapses – perhaps 0.10 or 0.15 or 0.20 second (that is, between one-tenth and two-tenths of a second) or somewhat longer, depending on the circumstances – between the signal and when we first perceive any movement of the runners or swimmers, launching themselves forward off the starting blocks. That "reaction time," as some would call it, is the time required

for the athletes to perceive the start signal, mentally “process” it, send the necessary nerve impulses to the relevant muscles, and for their muscles to flex or extend to launch them forward.

Translated into an example in my own field of firearms training, if I have a trainee place his or her finger on the trigger of a cocked handgun, take the “slack” out of the trigger, and tell them that the instant they hear the buzzer of my electronic timer, they are to fire the shot as quickly as they can, the time from the start of the buzzer until the timer’s sensor electronically hears the gunshot they fire will average about 0.25 seconds (a quarter of a second) for a sizeable class of adults. Individual times will typically range from about 0.19 to 0.31 second, but the average time for a class of adults responding to an audible signal will be, as stated, about 0.25 seconds. On occasion, an individual with unusually fast reflexes – perhaps a teenager – will be as fast as 0.16 second, but that is unusual. Reaction time to a visual signal, such as a lightbulb turning on, is typically slightly longer than reaction time to an audible signal such as a buzzer. My findings in these respects are consistent with those of many other firearms instructors, and with the published results of research in the field. When denoted with technical accuracy, the time from the signal to the shot, which until now I have called simply “reaction time” as most people do, is actually comprised of two components, (1) response time, and (2) movement time. “Response time” is the time required for the subject to perceive and process the signal, and initiate the required muscular response, while “movement time” is the time required for the subject’s trigger finger to move the handgun’s trigger rearward far enough for the handgun to discharge.

In the example given above, I have had the subjects start with the triggers of their handguns cocked, and the “slack” taken out of the trigger, so that almost no additional movement (less than 1/10 inch for many service handguns) will be required to fire the handguns. Thus, the 0.25 second (one-quarter of a second) is almost totally the response time of an adult subject to an audible signal, when the subject is “primed” (prepared) for the signal to occur, as only the slightest movement – a mere twitch of the trigger finger – is then required to fire the pistol.

If we change the test to one in which the trainees are standing on the shooting range with their pistols holstered and their hands at their sides, on the sound of the buzzer about the same average 0.25 second will elapse before our video camera will record the first movement of the trainees’ hands toward their pistols. Again, this is what I have described as “response time.” With regard to “movement time,” about another 0.25 second will elapse before the trainees’ hands touch their pistols, followed by about 0.25 to 0.50 second (depending on the skill level of the subjects and the complexity of the holster’s security devices) to unsnap the holster and begin the withdrawal of the pistol from the holster, then another 0.25 second to lift the pistol from the holster to the trainee’s eye level, and another 0.25 to 1.50 seconds for the trainee to fire a shot at the target, with the amount of time within this wide range depending on many factors, including the distance to the target, size of the target, trigger pull characteristics of the particular pistol, and skill level of the trainee. In total, combining the “response” time to the signal, and the “movement time” to draw and fire the pistol, it will take most trainees between 1.25 and 2.50 seconds to respond to an audible signal, draw, and fire their service pistols. With a modern, Security Level II or Level III police duty holster, a time of 1.25 seconds (one and one-quarter seconds) would be a fast time, indicating a highly skilled shooter, a “fast” duty holster, and a close or large target, while a time in the range of 2.0 to 2.5 seconds is one which many less-

highly-skilled in-service officers might achieve, especially when using holsters or handguns that don't facilitate fast initial shots.

In the case now before the Court, SA Wagner has said that when he saw the suspect, QLW, make eye contact with him and turn his upper body toward him, then saw QLW's right hand, which had been "fidgeting" in the area of the console (and which we now know had been shifting the car's transmission back and forth from forward to reverse) reach down toward the floor of the car where QLW's left hand was, then saw QLW raise both arms together from the car's floor in what appeared to be a two-handed shooting stance, he heard what he (Wagner) perceived to be a gunshot, and felt an impact on his ballistic shield that he thought was the impact of a bullet, knocking him backward and causing him to fall on his back on the pavement.

As applied to the facts of this case, the well-established defensive tactics and firearms training principle that "action beats reaction" means that, when SA Wagner saw QLW make these movements that Wagner identified, based on his training and on the totality of the circumstances, as accessing and beginning to point a handgun, Wagner was already "behind the reaction time curve," meaning that QLW could likely fire a shot at Wagner before Wagner could fire the service pistol he was holding in his hand. Certainly, when Wagner heard what he perceived as a gunshot, felt what he perceived to be the impact of the shot, and was knocked off balance backward, he could wait no longer before firing his own service pistol in his own defense.

In my October 30, 2023 expert report, I stated the situation in this way on page 13:

When a suspect reaches for a gun, or begins to raise his hands and arms with what the officer believes is a gun, waiting to see and positively identify the gun in the suspect's hands is tantamount to allowing oneself to be shot with it. This is why, in circumstances such as these, officers may be justified in firing when the suspect makes a "furtive movement" – that is, a threatening movement of the hand into an area the officer cannot see, that is consistent with reaching for a weapon...

Officers nationwide, including SA Wagner, are trained in the principles of "action vs. reaction," and in the concept of "furtive movements" that may not only justify, but may necessitate, firing in their own defense.

I have studied the principle of action vs. reaction for at least 45 years, both in firearms courses and in martial arts and defensive tactics training. I have taught the principle in perhaps a hundred training programs I have conducted, to trainees ranging from police academy recruits to in-service officers, law enforcement instructors, federal agents, criminal justice students, private individuals in concealed carry classes, and others. This has for decades been a well-accepted, widely-taught concept in the law enforcement field, and is the basis, among other things, for many weapon disarms and other defensive techniques taught worldwide. Without explaining this principle to the jury, the jury will have no way to understand how police officers are trained, and the degree of danger police officers are actually in when they see a suspect, in circumstances such as existed here, make movements consistent with accessing and pointing a handgun.

Obviously, I would not intend to testify concerning “action vs. reaction” in as much detail as I have provided above, or in telling the jury whether or not SA Wagner was justified in firing when he did, which is for the jury to decide. I am providing this detailed explanation, however, in response to the Court’s request to understand the principles of action vs. reaction, and how those principles apply to this case.

**Involuntary Muscular Contraction.** In my January 19, 2024 Supplementary Report in this case, I explained, in a section entitled “Postural Disturbance and Involuntary Muscular Contraction” that involuntary muscular contraction (“IMC”) could likely have been the cause of SA Wagner firing two rounds, instead of the one round he thought he fired, when he fell backward and landed on his back on the pavement, as shown on the video of the incident.

As I stated in my Supplementary Report on page 6-7:

Loss of balance (or “postural disturbance”) is one of the well-established causes for involuntary muscular contraction of the muscles of the hand, resulting in the involuntary (unintentional) discharge of a firearm held in the hand when the subject loses his or her balance. See, e.g., *The Risk of Involuntary Firearms Discharge*, C. Heim, D. Schmidtbleicher, and E. Niebergall, Sage Journals, Vol. 48, Issue 3; *Standards & Practices Guide for Law Enforcement Firearms Instructors*, P. Covey and E. Kapelsohn (1995), “Involuntary Contraction (p. 269-271) and “Involuntary Discharge” (p. 271-272); *Involuntary Muscular Contraction and the Unintentional Discharge of a Firearm*, R. M. Enoka, Ph.D., Law Enforcement Executive Forum, 3:27-31 (2003).

As other supporting works, in addition to those cited in the above publications, see, e.g., *Towards an Understanding of Involuntary Firearms Discharges, Possible Risks and Implications for Training*, Policing: An International Journal of Police Strategies and Management, C. Heim, D. Schmidtbleicher, and E. Niebergall, Vol. 29, Issue 3 (2006), 434-450, U.S. Department of Justice, Office of Justice Programs, NCJ No. 216380; and *UK Armed Forces Unintentional Firearms Injuries*, T. Stansfield and G. Rushforth, UK Med Group, OP TELC 11, BFP0641 (2009), also published by U.S. National Institutes of Health, National Library of Medicine (“Involuntary muscular activity is recognized experimentally, and by UK Police Forces, as a valid cause of unintentional firearm discharge.”)

I have studied IMC since about 1990, have taught and testified in court cases with Dr. Roger Enoka (see above), and have discussed current research about it with “Eko” Niebergall (see above), who has been a member of IALEFI, the organization of which I have served on the Board of Directors for what is now approaching 40 years. I have authored published articles on the subject, have written Pennsylvania’s police academy lesson plan section on the subject, have taught the subject in perhaps a hundred training classes to students ranging from police academy recruits, to in-service police officers, to police and federal agency firearms instructors, to University-level criminal justice majors, to attorneys, prosecutors, and judges in CLE programs. I have testified in state and federal courts on the subject of IMC in both civil and criminal cases, in state and federal courts. It is a subject that is now taught in most police and security firearms



instructor training programs I know of, nationwide. It is an essential subject for any law enforcement firearms instructor, and for trainers of defensive firearms use by security officers, military personnel, or private individuals using firearms for self-defense.

In simple form, an involuntary muscular contraction (“IMC”) of the muscles of the hand, with the potential to unintentionally discharge a firearm held in that hand, is likely to occur when any of several stimuli occur. The stimuli shown both by scientific research (see Enoka, *supra*), and by a review of hundreds of field incidents, as most commonly resulting in an IMC are the following:

- Loss of one’s balance (also called “postural disturbance”);
- Being startled (the so-called “startle effect”); and
- Interlimb interaction (also called “sympathetic grip”).

Regarding loss of one’s balance, both the scientific research and hundreds of cases from field experience -- including in recent years a growing number of incidents supported by accompanying video evidence -- show that, if one is holding a gun with one’s finger on the trigger, or inside the trigger guard, when one falls down or loses one’s balance, the muscles of the arms and hands are likely to contract during the loss of balance, with the result that an unintentional discharge of the firearm is likely.

Similarly, being startled causes one’s muscles, including the hand and arm muscles, to contract, with the likelihood of firing a gun if one is holding the gun with one’s finger on the trigger, or inside the trigger guard.

Finally, as to interlimb interaction, if one is holding a gun with one’s finger on the trigger, or inside the trigger guard, at the same time that one exerts significant force with one’s opposite hand or arm (e.g., the left hand or arm if the gun is being held in the right hand), an “interlimb interaction” (also called “sympathetic grip”) of the muscles of the hand holding the gun is likely to result in an unintentional discharge. An example that has occurred more than once in the police field is that of an officer who, with his pistol in his right hand, runs up to a stopped car he had been pursuing at high speed, and yanks on the door handle with his left hand. As he yanks on the door with his left hand, he unintentionally fires the pistol he is holding in his right hand, due to an IMC of his right hand. I have worked in several similar cases, and have seen a dashcam video of such a discharge occurring at the end of a vehicular pursuit in New Jersey.

A simple example that many people may understand from their everyday lives is that, if one picks up a heavy suitcase with one’s left hand, one’s right arm and hand will tend to contract as well. Or, doing biceps curls with a heavy dumbbell in one’s right hand will tend to produce some simultaneous contraction of one’s left arm.

As a significant comparison, when trying to prevent atrophy of the muscles of one arm or leg that has been injured and is immobilized for a lengthy period of time, perhaps in traction or in a cast, doctors and physical therapists sometimes have the patient exercise the opposite arm or

leg. This results in some degree of contraction of the muscles of the immobilized, injured arm or leg, or other “sparing” effects, helping to prevent atrophy of the muscles in that limb. See, e.g., *Unilateral strength training leads to muscle-specific sparing effects during homologous limb immobilization*, Journal of Applied Physiology, National Institute of Health, National Library of Medicine, National Center for Biotechnology Information (1985), 2018 April 1; 124(4); 866-876.

In recent years, further research in Germany has shown that an unintentional discharge may not only occur due to contraction of the arm opposite the arm holding the gun, but of either or both legs. See, Heim, Schmidtbleicher & Niebergall, *supra*. For example, if one is holding a pistol in one’s hand with one’s finger on the trigger when one jumps off a loading dock, or when one tries to kick open a door, the discharge of the pistol as the muscles of the leg(s) flex is likely.

High stress, such as in a dangerous arrest or shooting incident, makes IMC-caused unintentional discharges more likely. Imagine, for example, that you are sitting, completely relaxed in your living room, when a jack-in-the-box across the room pops open. Even if you were holding a handgun with your finger on the trigger, it is relatively unlikely you would fire the gun, as the startle effect caused by the unexpected appearance of the tiny clown is minimal. In contrast, imagine you are a police officer, with your handgun drawn, searching a dark building for a serial killer, when suddenly you hear someone you didn’t know was right behind you in the dark yell, “HEY!” Your muscles would suddenly tense from the extreme startle effect, and if your finger were on the trigger you would likely fire your gun. The difference between the jack-in-the-box example and the serial killer example is the degree of stress you were under when startled. Similarly, in another example discussed above, one might be able to yank on the door handle of a car with one’s left hand, while holding a handgun in one’s right hand with one’s finger on the trigger, with relatively little chance of unintentionally firing the gun if this were done in a completely unstressed situation, but the adrenaline-filled officer who performs the same actions after running up to the car following a white-knuckles, high-speed vehicular pursuit is far more likely to fire his handgun unintentionally, due to the degree of stress involved.

I have, in addition to the above categories, worked in several cases in which the IMC was caused by something impacting the gun, gun hand, or gun arm, resulting in an unintentional discharge of the gun. This appears, from my work and my consultation with professors in the field, as if this may be a combination of the startle effect and a grasp response to maintain control of the gun against dropping it. In some training programs, “contact with gun, gun hand, or gun arm” is now listed as a fourth category of stimulus likely to result in IMC.

Of significance, an unintentional discharge caused by IMC does not necessarily indicate that the officer had his or her finger on the trigger, or even inside the trigger guard, either of which could be considered unsafe gun handling technique. I and other firearms instructors are aware, sometimes with video proof, of cases where an officer’s finger was outside the trigger guard, properly braced on the frame or slide of the gun, but the IMC resulted in the finger contracting into the trigger guard and activating the trigger. Because of this, some law enforcement agencies (the Orlando Police Department being one) train their officers that they can avoid this possibility by positioning their trigger finger underneath the trigger guard, rather than above it, so that even an extremely powerful IMC will not result in the finger contracting into the trigger guard and firing the gun.

As another example, in “active countermeasures” training – that is, the hand-to-hand defensive tactics measures for taking subjects forcefully to the ground and controlling them during dynamic building entries and similar operations – officers are trained by some instructors in this field to transfer their handgun to their non-dominant hand and to hold the gun in such a way that their fingers are not likely to enter the trigger guard, regardless of how strong the interlimb interaction (sympathetic grip) effect may be.


In the case now before the Court, SA Wagner can be seen on the video being knocked backward, and falling rearward onto the pavement. Because he believed he was being shot at by QLW, Wagner’s trigger finger was properly on the trigger to return fire intentionally in his own defense. With his finger on the trigger, or even inside the trigger guard, an IMC would render the unintentional discharge of the second shot likely as SA Wagner fell.

In addition, SA Wagner was holding a ballistic shield, weighing approximately 20 pounds, with his left hand and arm as he fell. Exertion of the force necessary to maintain control of the ballistic shield with his left hand and arm as he fell could very likely cause or contribute to a muscular contraction of Wagner’s right hand, unintentionally firing his second shot.

Finally, I note that in some instances where IMC is the cause of a gun being discharged, the individual holding the gun is unaware of the discharge, or at least unaware that they have caused it, because they did not fire the gun intentionally. As examples, I have worked in one case in which an officer who discharged her gun unintentionally immediately took cover, because she believed the discharge she heard was the suspect shooting at her. More recently, I worked in a similar case in Los Angeles where an officer whose gun accidentally discharged in the holster due to a foreign object in the holster, injuring her, looked around to see who was firing, and had to be told by another officer who was present that it was her own gun that had discharged.

As with the previous sections of this letter, I would not intend to testify in such detail on this subject at trial. I am simply providing this very detailed and well-supported explanation to give the Court a very complete understanding of the principles of involuntary muscular contraction, how it applies to the circumstances of this case, and my understanding of the field from my years of study, research, and work, as a firearms instructor, researcher, and expert witness.

Very truly yours,



Emanuel Kapelsohn, President