



## Leonesio Consulting, LLC

412 South White Street • Suite 210

Athens • Tennessee 37303

Phone: [423] 933-1911 • Web: [www.leonesio.com](http://www.leonesio.com)

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October 16, 2017

San Francisco Police Commission Office  
Attention: Sergeant Rachael Kilshaw  
1245 3<sup>rd</sup> Street  
San Francisco, California 94158

### **Re: Responses to Stakeholder's Questions on CEDs**

Sergeant Kilshaw,

Attached please find my responses to the Stakeholder's Questions on CEDs.

I appreciate the opportunity to participate in this important discussion, and recognize the gravity of the Commission's decision in this matter. To this end, I have attempted to address these questions in a thoughtful and respectful manner, using my training, experience, and expertise to inform and educate; as opposed to advocating for any position.

I have, through this process, attempted to be thorough in my answers. But please do not mistake my attention to detail as being exhaustive. There is much more that I could have, and perhaps should have, expressed, but time, and previous commitments, limited further comment.

As I have since 2008, I will continue to make my experience and expertise in these matters available to the SFPD and the San Francisco Police Commission.

Respectfully,

A handwritten signature in blue ink, appearing to read 'MJ' or similar initials, written in a cursive style.

Michael Leonesio

# San Francisco Police Commission

## Responses to Stakeholder's Questions on CEDs

10/16/2017

1<sup>st</sup> Submission:

1. Do people of color, particularly African Americans and Latinos, have disproportionate contact with police officers?

**Answer:** There are studies that address this issue, but this is not my area of expertise.

2. Are people of color who have contact with police officers disproportionately impacted by taser use?

**Answer:** The TASER weapon is a force option, nothing more. If San Francisco is experiencing issues/problems with disproportionate use of force on people of color by police, the TASER will not change that.

3. Are people who are described to have mental health or substance use issues disproportionately impacted by taser use?

**Answer:** See answer #1.

4. Are people with mental health or substance use issues at increased risk for serious injury or death from taser use?

**Answer:** Yes. The manufacturer, international best practices and standards organizations, and the DOJ acknowledge that the emotionally disturbed and substance abusers are at greater risk of injury or death with TASER use.

5. Is taser use recommended for people who have mental health or substance use issues?

**Answer:** The TASER is a force option. I know of no "recommended" weapon for dealing with a particular group of people. That said, the manufacturer, international best practices and standards organizations, and the DOJ acknowledge that the emotionally disturbed and substance abusers are at greater risk of injury or death with TASER use. Because of this increased risk, many of these organizations recommend the use of Crisis Intervention Teams (CIT), and de-escalation techniques as a model for dealing persons suffering from these illnesses and conditions.

6. What policy measures might mitigate a potential disproportionate impact on people of color?

**Answer:** You cannot simply “policy” your way out of a cultural problem. If you have identified disproportionate treatment by police officers, the only solution is a change in culture.

The department, from the top down, must condemn this practice and make clear that it will not be tolerated within the organization.

The top administration, within the Department and the City/County, must then develop acceptable behavior and performance guidelines. These guidelines must be trained, Department wide, and this training must contain objective, measurable, performance standards (in other words, it needs to go beyond the typical law enforcement training model).

Once the expectations are established, trained, and understood, personnel must be adequately supervised, and a realistic evaluation and disciplinary process (with a disciplinary matrix) must be established.

This entire project must have, and maintain going forward, independent oversight that includes data collection and tracking, review, evaluation, and updates at scheduled intervals.

Because this process is so data driven, this is certainly an area that could/would benefit from academic assistance, as suggested by DOJ recommendations. Outside academics can assist the Department to develop systems and processes to properly collect, and analyze data. In addition, a committed academic presence can assist the Department in developing meaningful programs to address identified issues moving forward.

7. What types of training might mitigate a potential disproportionate impact on people of color?

**Answer:** Just as there is no one policy that will fix disproportionate use of force, there is no specific “type” of training that will reform this problem. These are complex, multifaceted, issues that, given the authority conferred upon police officers, can effectively invalidate a Department’s legitimacy in the eyes of the communities it polices. This, as was discussed in answer 6 above, is an area that would benefit greatly from academic assistance.

8. What specific reporting requirements, before and after taser use, might help to better evaluate whether tasers have a disproportionate impact on people of color?

**Answer:** A force reporting, investigation, and critical analysis and evaluation process must be established for *all* use of force, no matter how minor. Data collected from this process should then be reviewed by a formal Force Review Board on a regular basis.

This formal review board should include Department subject matter experts from all force disciplines, and representatives from the City/County attorney's office, Internal Affairs, CIT, the police academy, and command staff.

Subjects addressed, and opinions expressed, by the Board should center on whether each use of force was within policy, followed Department training, and was Constitutional.

The data collected by the review board can be used to revise and develop policy; amend, improve, and develop training; for tactical and officer safety evaluation and modification; as an input for early warning, and career development.

Addressing your concerns related to a question of disproportionate impact on people of color, this data can be used for use of force trend analysis as well. In fact, this area of post-review data analysis is where having outside academics on the team can pay huge benefits.

The point being, reporting requirements for the use of a TASER (or any other single force option), alone, are not enough. All force must be critically reviewed.

## 2<sup>nd</sup> Submission:

1. What is the optimum range between an officer and a subject for taser deployment?

**Answer:** TASER's optimum deployment range is 7 to 15 feet<sup>1</sup>

2. Does the optimum range change with the 15', 21' and 25' cartridge?

**Answer:** No. Because the probe spread on the above listed cartridges is the same, the optimum range does not change.

3. What is problematic about the 35' cartridge?

**Answer:** The 35' cartridge is designed to use at greater distances because of its smaller probe spread.<sup>2</sup> The "problem" that must be considered when deploying this cartridge is

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<sup>1</sup> TASER International training materials V20 (1/16) slide 170.

<sup>2</sup> TASER International training materials V20 (1/16) slide 96.

the fact that this cartridge is not calibrated for the laser aiming system of the weapon.

As a result, the top probe can hit two inches, or more, above the officer's aim point. Additionally, the bottom probe typically strikes higher than the aim point.

These factors require more training, additional firings, and more deployment discipline to compensate for the inherent inaccuracy.

4. Please explain how the trigger on a taser works and the factors that can cause an officer to deploy the taser for prolonged or repeated applications.

**Answer:** The standard TASER trigger pull deploys a cartridge and discharges a 5 second cycle of electricity. If the trigger is held (as opposed to pulling and releasing) the cycle will continue indefinitely until the trigger is released, or the power magazine (battery) drains.

One issue that needs to be addressed in training is how the taser trigger differs from the officer's sidearm. Officers are trained, when deploying their sidearm, to pull the trigger and release slightly to reset the trigger (or sear) when readying for follow-up shots. This technique, if practiced with a TASER, will cause the weapon to continue its electrical discharge. Officers must be trained to release the TASER trigger completely after each pull so as not to produce an unwanted or unwarranted continued electrical discharge.

This concern for extended electrical cycles can also be addressed with the addition of an Auto Shutdown Power Magazine. This option limits the discharge to 5 seconds per trigger pull.

5. Why are tasers not a substitute for a firearm/lethal force?

**Answer:** "The TASER CEW is NOT a substitute for deadly force."<sup>3</sup> The main reason for this sound tactical recommendation is the fact that, in order to most effectively deploy a TASER, according to manufacturer's training and recommendations, the officer must be within 7 to 15 feet of the suspect.

Deadly force situations, by definition, are circumstances that create a substantial risk of causing death or great bodily harm. Because of TASERs inherent limitations, they are not a tactically sound alternative to lethal force.

- The optimum range of a TASER weapon is 7 to 15 feet.

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<sup>3</sup> TASER International training materials V20 (1/16) slide 8.

- TASERs are far less than 100% effective.<sup>4</sup>
  - Deploying a TASER in a deadly force situation requires the deploying officer to advance to within 7 to 15 feet of a dangerous, violent, aggressive, or possibly armed individual.
  - At 7 to 15 feet, the officer will have less than a second to react if the suspect attacks or the TASER deployment is unsuccessful. Even with lethal cover available, the reaction of the cover officer will generally be too slow to deploy lethal force before the suspect attacks, or renders lethal force unsafe due to the risk of hitting officer(s) or civilians.
6. Officer Oerleman described a domestic violence call he responded to involving a suspect with a large butcher [knife]. He stated that without tasers, they would not have had any other choice but lethal force. What is your expert assessment of that scenario?

**Answer:** I disagree with Officer Oerleman's assessment of the scenario as described.

As a nationally recognized use of force and police practices expert, and an expert in the use of the TASER, I have reviewed and rendered opinions in thousands of law enforcement use of force cases. Keeping in mind that I have not formally reviewed the circumstances of this case, I believe Officer Oerleman, and the other officers on scene, were handling the situation successfully with de-escalation and communication prior to the deployment of the TASER. These successful techniques constituted, at the very least, an informal plan of action, and should have been continued.

One other point stood out to me as I listened to Officer Oerleman's accounting of this incident; there appeared to be no attempt(s) to separate the suspect from the weapon during the de-escalation process. If true, this would be a serious tactical error, and re-enforces the importance of planning and effective supervision in these types of incidents

The fact that the first officer's TASER deployment was unsuccessful is concerning to me as it could very easily have escalated the situation to lethal force. If Officer - then Sergeant - Oerleman had not been in a position to successfully deploy his TASER, or if his deployment too was unsuccessful, I have no doubt that this incident would have escalated to deadly force.<sup>5</sup>

It appears to me that the TASER, in this case, was deployed for the convenience of the officers, rather than out of necessity, based on objective circumstances, and an articulated

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<sup>4</sup> Mather, K. (2016, April 1). One of the LAPD's preferred weapons to help officers avoid shootings often doesn't work. *Los Angeles Times*. Retrieved from <http://www.latimes.com/local/crime/la-me-lapd-tasers-20160401-story.html>

<sup>5</sup> Though reported as a successful use of the TASER, the first deployment failed. Additionally, I question why, with multiple officers on-scene, the on-scene supervisor became part of the force incident instead of directing it.

immediate threat. “A desire to resolve quickly a potentially dangerous situation is not the type of governmental interest that, standing alone, justifies the use of force that may cause serious injury.”<sup>6</sup>

7. What's the difference in voltage/effectiveness between the older Taser models and the current model?

**Answer:** The new model tasers – X2 and X26P – discharge approximately half the electrical charge of the older X26e models. And while the manufacturer argues that this makes the weapon “safer” (there is no independent research to confirm this argument) my concern, and that of other bodies including the UK Scientific Advisory Committee, is that the electrical output is too low to reliably incapacitate a motivated, violent suspect.

In their report, the UK Scientific Advisory Committee stated "The electrical charge carried by the pulse waveform of the TASER X2 CED is rated at about half that of the waveform of the TASER X26[e] CED. Although presently speculation, one possible implication of the lower charge is that the degree of NMI -- and possible pain -- induced by single cartridge discharge from the TASER X2 CED may be less than that from the TASER X26 CED." .... and could result in "decreased effectiveness"<sup>7</sup>

8. Please explain the safety concerns that limit taser deployment.

**Answer:** Manufacturer’s safety warnings limit the deployment of TASERs upon a subject. Because of these limitations TASERs should not be deployed on the front torso (front center mass), they should not be deployed to the head, neck, throat, chest, area of the heart, or genital area. They should not be deployed on persons who are running, they should not be deployed on persons in elevated positions, or on hills where they could roll uncontrolled. They should not be used on someone in or near water sufficient to allow drowning. They should not be used in the presence of flammable chemicals or fumes. They should not be used on juveniles, the elderly, the frail or infirmed, persons with low body-mass, or pregnant persons, they should not be used on persons in control of machinery or vehicles (including bicycles, skateboards, skates, etc.).

In addition, great caution must be exercised, because of the increased risk of sudden death, when deploying multiple cycles, or continuous cycles of electrical stimulation, or deploying multiple weapons against one person.<sup>8</sup>

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<sup>6</sup> *Deorle v. Rutherford*, 272 F.3d 1272 (9<sup>th</sup> Cir., 2001)

<sup>7</sup> U.K. Scientific Advisory Committee on the Medical Implications of Less-Lethal Weapons – Statement on the Medical Implications of Use of the TASER X2 Conducted Energy Device System, 8/30/16.

<sup>8</sup> Current manufacturer and industry best practice standards warn against electrical exposures in excess of 15 seconds total, per incident.

The following is a partial list of additional safety concerns/warnings:

- TASER use against the mentally ill, or persons under the influence of alcohol or drugs increases the risk of sudden death.
- Great caution must be exercised when using a TASER against medically compromised persons, or persons with pre-existing medical conditions or susceptibilities as this increases the risk of sudden death.
- TASERs have a limited deployment range of 7 to 15 feet (because of cartridge design these distances provides probe spread of 12 to 26 inches). Under the minimum and the electrical charge will not capture enough muscle to incapacitate; over the maximum and the probe spread will cause the probes to miss the suspect. Even within the optimum, however, there are no guarantees that the weapon will achieve incapacitation. Many factors affect the physical efficacy of the weapon including the size and position of the target, clothing, body position, movement, and target presentation to name a few.
- TASER should not be used on persons in control of a firearm as they may inadvertently pull the trigger, firing the weapon, if hit by a TASER.

To demonstrate the voluminous and complex nature of TASER's warnings, one need only turn to the words of Corporal Tiffany Bratton, a South Boston, Virginia, police officer involved in a 2013 fatal TASER encounter, "If I read and abided by every single warning, I would not Tase anyone."<sup>9</sup>

Further adding to the safety discussion are the results of a 2012 Michigan State University (MSU) study. The MSU-led research, funded by the National Institute of Justice, studied TASER incidents in a sampling of mid-sized to large U.S. cities over a four-year period.

The researchers found citizens were injured 41 percent of the time when officers used a TASER only during apprehension. By contrast, citizens were injured only 29 percent of the time when no TASER was used. Interestingly, when TASERs were used in conjunction with another force option, such as pepper spray, or a take down, citizens were injured 47 percent of the time. The study looked at 13,913 use of force cases in seven cities. The researchers took into account a host of factors, including the amount

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<sup>9</sup> Reid, T., Eisler, P., Szep, J., & Pell, M. (2017, August 23). Shock Tactics, Part 2: As Taser warns of more and more risks, cities... Retrieved from <https://in.reuters.com/video/2017/08/23/shock-tactics-part-2-as-taser-warns-of-m?videoid=372378168>

of citizen resistance, influence of alcohol or drugs, and officer experience. Injuries ranged from cuts to broken bones.<sup>10</sup>

9. Why did Oakland Police Department create its own laboratory for testing tasers?

**Answer:** While managing the TASER program in Oakland, I observed numerous unexplained weapon failures. After sending in-question weapons to the manufacturer for testing and evaluation - only to have them returned with unacceptable explanations for the failures - I determined we needed to do in-house testing to assure that the weapons carried by officers were operating as designed.

This strategy, though expensive, paid off in that we identified large numbers of weapons that were operating outside manufacturer's specifications even though they were able to "pass" TASER's required spark test procedure.

In addition to assuring officers were fielding properly operating weapons, the laboratory testing resulted in substantial cost savings, as failing and/or underperforming weapons were identified and returned to the manufacturer for warranty replacement.

10. Please explain the type of review you conducted at OPD when a taser was deployed and any other type of review process Oakland Police Department conducted when a taser was deployed.

**Answer:** As explained in answer 8 of the first submission questions, all use of force by officers was reviewed at OPD. But, I did conduct additional review of all TASER use in addition to the Department mandated use of force investigation and the review by the Use of Force Review Board.

But before I address my review process, we should define some terms. At OPD a deployment consisted of an officer unholstering and pointing his/her TASER at a subject with the intent of limiting that subject's free movement. The next step in the process (as applicable) was weapon discharge or application. This occurred if an officer, after deploying the weapon and giving appropriate commands, discharged a cartridge at the subject, or applied a drive stun.

After the deployment/application, a Department use of force investigation would be conducted by supervisory personnel and/or investigators. Once the officer's

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<sup>10</sup> Terrill, W., & Iii, E. A. (2012). Conducted Energy Devices (CEDs) and Citizen Injuries: The Shocking Empirical Reality. *Justice Quarterly*, 29(2), 153-182. doi:10.1080/07418825.2010.549834

participation in the investigation was complete, he/she would contact me to arrange a post-deployment debriefing.

During this face-to-face interview the officer would summarize the incident and discuss specifics related to deployment circumstances, and weapon operation and effectiveness.

Tactical issues, training, policy, and reporting issues/concerns/requirements would also be discussed as necessary.

After the overview and discussion of the incident was completed, expended cartridge(s) would be replaced, the weapon's firing data would be downloaded and reviewed, and, if warranted, weapon electrical output would be measured. A complete weapon inspection would then be performed, and the weapon (or a replacement) would be returned to the officer.

This process model; force investigation, post-deployment interview, and Force Review Board analysis, was performed on *every* use of the TASER at OPD and became the cornerstone of program's success by allowing us to improve our reporting, policy, training, and deployment strategies, in near real time, based on our data findings.

11. Please explain the difference between final frame analysis and totality of circumstances review of Use of Force incidents and what type of review did you conduct when you managed OPD's taser program?

**Answer:** Final frame analysis looks at the specific act or actions that preceded the use of force. Totality of circumstances considers all of the relevant facts and circumstances.

We used the *totality of circumstances* analysis model at OPD.

Regarding the type of use of force review I conducted while at OPD, see answer 10.

12. Please explain the difference between drive-stun mode and probe-deployment mode and why drive-stun mode should be prohibited as a pain-compliance tactic?

**Answer:** As you imply in your question, the drive stun is a pain compliance technique where the officer places the front of the weapon in direct contact with the subject and activates the weapon. This technique causes extreme, isolated pain, but will not incapacitate.

I hesitate to say that the drive stun should be prohibited; it has some utility in very specific situations. But typically, a drive stun application will escalate resistance in a subject and officer need to plan for this possibility.

A probe deployment is performed by firing two tethered probes into a subject's body from a distance of 7 to 15 feet. The electrical charge from the weapon travels down the conductive tether wires, through the probes and is delivered into the subject. This technique is designed to incapacitate a subject.

Incapacitation, though, is not as simple as standing 7 to 15 feet away from a subject and firing. Probe spread, muscle mass, clothing, metabolic and physiologic conditions, all play a role in the weapon's ability to reliably incapacitate a subject.

I would be remiss, though, if I did not clarify that these brief explanations of the drive stun, and probe deployment methods are gross oversimplifications of complex subjects that ultimately determine the efficacy of the weapon. In fact, several classroom training blocks, and two hours of scenario based training were dedicated to these subjects.

13. Can you describe all of the costs that need to be considered and budgeted for when considering the adoption of tasers?

**Answer:** This is an area that is routinely underestimated because of the "hidden" costs associated with developing, implementing, and maintaining this type of a program. In addition, most agencies do not have the infrastructure necessary to support a program adequately. These deficiencies typically result in shortcuts being taken because of a lack of resources. These are real problems that can cripple a program and increase risk and liability for the officer and the department.

See previously prepared SFPD TASER Deployment Cost Analysis document, attached as exhibit A, for a more in-depth analysis of this issue.

14. It has been argued that tasers are needed because SFPD's new Use of Force policy prohibits officers from using the carotid. (According to SFPD's Use of Force statistics, officers applied the carotid restraint 14 times in 2016; 18 times in 2002.) Are there other force options besides the taser that would be effective in the circumstances in which the carotid was previously used?

**Answer:** The carotid restraint and the TASER are not equivalent, are not classified in the same category of force options, and are not used in similar circumstances.

The carotid, is generally employed, in close combat, or grappling situations. It is used to quickly end a violent encounter by causing the subject to temporarily lose consciousness. The carotid restraint is very effective when applied properly, but is a perishable skill whose technique is easily lost if not regularly practiced. Because the

carotid causes a loss of consciousness, it is generally classified as a high-level force option.

The TASER is classified as an intermediate force option that is designed to temporarily incapacitate a subject from a distance of 7 to 15 feet. A TASER will not be effective at the distances used in a carotid restraint application. Further, an officer would not typically have the time or space to draw and deploy a TASER if engaged in hand-to-hand combat or while grappling with a subject.

To be perfectly clear, the TASER *would not* be effective in the circumstances in which the carotid was previously used, and should not be looked at as a replacement for the carotid restraint.

15. What data and other relevant information is necessary to determine whether SFPD needs another tactical option such as tasers or instead needs to improve its current tactics and training?

**Answer:** That is a difficult question to address because I don't know what kind of data SFPD currently collects, how they collect it, how current it is, how accurate it is, how uniformly it is collected, or whether the current data collection model would support this additional tactical option. I also don't know how the data is analyzed (supposing it is), or how it is organized and/or classified (by force type, by outcome, by district, by unit, etc.).

As previously stated, the first questions SFPD needs to ask and answer are:

1. What problem is SFPD trying to solve?
2. How will deploying the TASER accomplish that mission?
3. What research and/or data do we have to support our position?

Until answers to these basic questions are obtained, there can be no productive or substantive discussion or analysis.

3<sup>rd</sup> Submission:

1. You referred to 90% of officers were leaving their CED in the trunk (or 95 Tasers were found). The implication was that devices were unreliable.
  - a. Was this anecdotal?
  - b. Do you have a study for this number?
  - c. What years were these statistics gathered?
  - d. Were you in Oakland or San Carlos? Other?

**Answer:** When I was assigned to the Oakland taser program in 2007, I observed that upwards of 90% of TASERS were not being carried by the officers to whom they were issued. I talked with officers and learned that the bulk of these weapons were “nonoperational” and most were in the trunks of patrol cars (instead of on their belts). As head of Oakland Police Department’s TASER program, I did not need to conduct a study or gather statistics about this problem. I personally observed the problem.

2. You stated that officers only carry CEDs because they are required to. And they do not trust the CEDs.
  - a. Is this statement based on a scientific study?
  - b. Who conducted the study?
  - c. What law enforcement agencies were involved in the study?
  - d. How many officers were polled to determine this finding?

**Answer:** This was not my statement, this was a quote from an Los Angeles County sheriff’s commander in an LA Times article. “It’s going to create a predisposition that you’re expecting a Taser failure,” Heal said. “I’m not going to risk my life for a 50 percent success rate.”<sup>11</sup>

In my experience, though, this is a common concern. Revisiting the subject of question 1; when I spoke with officers who had been assigned TASERS, the response to the question of why the weapons were in their trunks - instead of on their belts - was universal: The officers did not trust the weapon would reliably stop a suspect.

3. You mentioned that 15% of Tasers were not acceptable or failed out of the box?
  - a. What year is this figure from?
  - b. What Taser models were used?
  - c. How many devices were tested?
  - d. Where did the devices come from?
  - e. Do you have the studies with the parameters, standards, and scientific process you use?

If yes, please submit for review.

**Answer:** The number you quote is incorrect. When we received our initial shipments of X26e TASERS (2007/2008), the failure rate was 20% out of the box. The main issues

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<sup>11</sup> Charles Heal, Los Angeles County sheriff’s commander and expert on less-lethal weapons.  
<http://www.latimes.com/local/crime/la-me-lapd-tasers-20160401-story.html>

were trigger alignment defects, failure to power up, and spark issues. These weapons were either repaired or replaced under warranty.

The 15% failure number you are probably referring to is of deployed units brought in for annual, and/or incidental testing.

Every weapon received at OPD was tested prior to issue, and periodically, (we had over 1000 weapons in our inventory) using a mechanical, and operational test procedure that I developed. I have attached a sample copy of my test report as exhibit B.

#### 4. Policies/Equipment

- a. Other than San Carlos and Oakland, have you helped other agencies acquire Tasers?

**Answer:** I do not help agencies *acquire* TASERs. I am an internationally recognized electroshock weapon (TASER) expert, and a nationally recognized use of force, and police practices expert. I have assisted agencies throughout the U.S. and Canada in developing best practices based solutions to various electroshock weapon related challenges, and force investigation, evaluation, and reporting concerns.

- b. What current policy at a law enforcement agency do you find to be as close to your view of a model policy?

**Answer:** As a nationally recognized electroshock weapon, use of force, and police practices expert, I cannot point to one policy as a model policy because there are several important factors that a police department and community must consider.

There is no one-size-fits-all policy.

- c. You stated that Tasers are dangerous weapons that cause deaths and injuries. What Taser model(s) were you referring to?

**Answer:** Numerous medical authorities, courts, and law enforcement experts recognize that TASERs can cause serious injuries and death. The Police Executive Research Forum's 2011 Guidelines on Electronic Control Weapons acknowledge that medical authorities have found tasers to cause or be a contributing factor in some deaths. PERF specifically emphasizes that officers must be trained about the circumstances that increase the risk of death and serious injury: PERF states:

It is important to recognize that ECWs have been cited by medical authorities as a cause of, or contributing factor in, some deaths. A number of factors appear to be associated with fatal and other serious outcomes. These factors include how the

ECW was used and the physical or medical condition of the subject who received an ECW application. Indeed, in July 2010 the American Academy of Emergency Medicine issued a Clinical Practice Statement advising physicians that they should consider additional evaluation and treatment for individuals who experienced an ECW application longer than 15 seconds (Vilke et al. 2010).

Although causation factors are not clear, the most common factors that appear to be associated with fatal and other serious outcomes include 1) repeated and multiple applications, 2) cycling time that exceeds 15 seconds in duration, whether the time is consecutive or cumulative, and 3) simultaneous applications by more than one ECW. Officers must be trained to understand that repeated applications and continuous cycling of ECWs may increase the risk of death or serious injury and should be avoided.

The Maryland Attorney General Task Force on Electronic Weapons stated that there was sufficient consensus among medical authorities that secondary factors from the restraint and incapacitation caused by an ECW (e.g., a fall or stress caused by being shocked) may cause serious injury or death. (See Maryland Attorney General Task Force Report, page 11.) The Task Force pointed out that “because ECWs have been widely-described as ‘a safer alternative to other uses of force,’ not all law enforcement officers and agencies fully understand the potential risks associated with using an ECW, nor the circumstances that exacerbate those risks.” (Task Force Report, page 11.)

The Braidwood Commission concluded after hearing testimony from fourteen medical experts that the officer’s use of multiple TASER deployments played a prominent role in the death of Robert Dziekanski, a Polish immigrant who died within minutes of police tasing him after he waited 10 hours for his mother at the Vancouver International Airport.

Additionally, the 4<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup> Circuits have discussed the deaths and serious injuries attributed to officers’ use of TASERs. See for example, *Bryan v. McPherson*, in which the Ninth Circuit noted that Officer McPherson’s use of the Taser X26 physically injured Bryan: “Bryan lost muscular control and fell, uncontrolled, face first into the pavement. This fall shattered four of his front teeth and caused facial abrasions and swelling. Additionally, a barbed probe lodged in his flesh, requiring hospitalization so that a doctor could remove the probe with a scalpel.” The Court in Bryan explicitly stated that TASERs can be lethal: “We recognize, however, that like any generally non-lethal force, the taser is capable of being employed in a manner to cause the victim’s death. See e.g. *Oliver v. Fiorino* \_\_\_F.3d\_\_\_, 2009 WL 3417869, at 6 (11<sup>th</sup> Cir. October 26, 2009).” (See also *Armstrong v. Pinehurst*, *Perea v. Baca*)

Even the manufacturer in their *TASER Handheld CEW Warnings, Instructions, and Information: Law Enforcement* document, dated May 19, 2017 warns: “CEW exposure

causes certain effects, including physiologic and metabolic changes, stress, and pain. In some individuals, the risk of death or serious injury may increase with cumulative CEW exposure. Repeated, prolonged, or continuous CEW applications may contribute to cumulative exhaustion, stress, cardiac, physiologic, metabolic, respiratory, and associated medical risks which could increase the risk of death or serious injury. Minimize repeated, continuous, or simultaneous exposures.”

In fact, within this 7-page warnings document there are 22 separate warnings specifying circumstances where weapon use may cause serious injury or death.

- d. To your knowledge since Axon, International deployed their newest model, the X2, with improved technology and safety measures in 2011, there have been no reported deaths due to the X2 Taser? If you state that the X2 has caused a fatality, can you please cite the specific case and agency involved?

**Answer:** Beyond unsubstantiated marketing claims from the manufacturer, I have seen no independent studies confirming your statement that the X2 has “improved safety measures”. Additionally, since the release of the X2 in 2011 and the X26P in 2013, it has been difficult to attribute TASER associated in-custody deaths to a particular weapon model. As of this writing there are potentially, 5 TASER weapon systems currently deployed by police agencies in the U.S.; the M26, X26e, X3, X2, and the X26P.

News organizations do not typically report the weapon model when reporting a TASER related death. And most police agencies do not include detailed weapon descriptions in their reporting, as it is understood what weapon the department issues. Further, the manufacturer, who is quick to insert themselves (or at least try) into the post-death investigatory process, and therefore has firsthand knowledge of these figures, does not release this information. This makes collecting this data especially difficult.

A 2017 Reuters piece reported “The weapon [X26], still in use, has figured in at least nine of 25 cases during the first half of this year [2017] in which people died after being stunned, sometimes in combination with the newer X2 and X26P models, or with other police force. Reuters wasn’t able to determine what role, if any, the X26 and other stun guns played in those deaths.”<sup>12</sup>

- e. Have you been paid to consult on a policy for any US Law Enforcement Agency? If so, which ones?

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<sup>12</sup> Girion, L. (2017, September 21). Behind the quiet exit of Taser's popular, powerful X26. Retrieved October 17, 2017, from <https://in.reuters.com/article/uk-axon-taser-x26/behind-the-quiet-exit-of-tasers-popular-powerful-x26-idINKCN1BW1J5>

**Answer:** I do not consult on policy. I have, however, been retained by, and provided pro-bono work for, numerous law firms, and public entities, around the U.S. and Canada, to review, analyze, and render professional opinions on law enforcement policy, training, weapon testing and measurement, and use of force incidents.

8. You mentioned that a law enforcement agency should clearly state what the agency is trying to accomplish when introducing CEDs as a force option.
- a. What was Oakland PD trying to accomplish when you assisted them in the implementation of the CED program?

**Answer:** Oakland's electronic weapons program predated my arrival at OPD by several years. Consequently, I had no role in the implementation.

My assignment at OPD consisted of rebuilding an existing (and floundering) program and included (but was not limited to), writing and/or revising policy, writing and certifying training curriculum, training and retraining department members and community shareholders, and managing the day to day operations of the program, and the electronic weapon laboratory.

- b. Have you assisted other agencies in implementing CEDs[?] If so, please list those agencies and what they were trying to accomplish by implementing CEDs as a force option.

**Answer:** See answer "4 a" above.

## 9. Expert Testimony

- a. Do you work for both plaintiff and defense as an expert in testimony?

**Answer:** I select my cases, and special projects, based on the related facts, whether I find the case or project interesting, and whether my training, experience and expertise will benefit the client. As a result, I have worked on civil, criminal, and administrative cases for plaintiffs, defendants, arbitrators, employers and employees, and prosecutors.

My company motto is: *The pursuit of truth*. And the truth doesn't take sides.

- b. How many times have you been deposed/consulted/ or testified for the plaintiff? Defense? (Whole numbers and percentage)

**Answer:** My case work is roughly 60% plaintiff, 25% defense, 15% administrative.

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# EXHIBIT A



## Leonesio Consulting, LLC

412 South White Street • Suite 210

Athens • Tennessee 37303

Phone: [423] 933-1911 • Web: www.leonesio.com

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### SFPD TASER Deployment Cost Analysis Responses<sup>1</sup>

- 1) Cost of hardware - weapon itself, plus cartridges and additional add-ons to shorten time weapon fires (in an effort reduce injury/death)

**Answer:**

X2 (per officer)

Handle (1):	1103.31
Holster – belt (1):	70.54
Auto shutdown power magazine (1):	70.54
25’ Cartridge (4 @ 33.69 ea.):	134.76
Training Cartridge (4 @ 32.73 ea.):	130.92
Camera (1):	548.96

Total: \$2059.03

X26P (per officer)

Handle (1):	964.05
Holster – belt (1):	57.04
Auto shutdown power magazine (1):	70.54
25’ Cartridge (4 @ 29.25 ea.):	117.00
Training Cartridge (4 @ 25.24 ea.):	100.96
Camera (1):	548.96

Total: \$1858.55

- 2) Cost to maintain weapons and/or opening testing center inside SFPD to ensure functioning. Oakland did this, and it is necessary according to national expert Mike Leonesio who started the program in Oakland for nearly 1 in 5 weapons are non-operational out of box, which puts officers at risk, and in turn members of the public as escalation in use of force typically follows the weapon’s failure (operationally – and this is to be distinguished from efficacy).

---

<sup>1</sup> These question and answers are identical to the SF Bar Associatio

**Answer:** Realistically, there are three options for dealing with this important issue:

1. Sending weapons to an outside laboratory for testing;
2. Creating an in-house testing laboratory;
3. Purchasing standalone, dedicated, test equipment.

Some might suggest (the manufacturer chief among them) a fourth option; that output measurement and operational testing is unnecessary. However, in my experience this is not a viable option given the proven unpredictability of weapon performance.

Additionally, a consistent testing program, when combined with regular data and trend analysis, will save millions of dollars in unnecessary equipment replacement costs going forward.

Given the three viable weapon maintenance options, the cost breakdown is as follows:

1. Sending weapons to an outside laboratory for testing. With this option the department will select weapons for testing based on specified criteria. The weapon will then be packaged and shipped to a contracted laboratory (or to the manufacturer) for output testing.

Typical output testing can range between \$500.00 to 1200.00 per weapon.

The biggest problem with this method are the logistics involved. Subject weapons will have to be identified and collected. They will need to be properly packaged and shipped, with appropriate tracking. The testing process will then need to be followed by department personnel throughout the testing and return process. This is especially important if the weapon is involved in an investigation, so that the chain of evidence is preserved.

2. Creating an in-house testing laboratory. This option gives the department the most control and the greatest flexibility. It is also the most expensive and labor intensive.

A typical electronics laboratory, capable of testing the high output of these weapons, for a department the size of SFPD will run approximately \$100,000.00; with annual maintenance costs of approximately \$5000.00.

In addition to the hard equipment costs, the lab will need a dedicated, secure space due to the sensitive nature of the electronic test equipment, and the fact that the weapons in-test will, many times, be considered evidence in an ongoing investigation.

With a department the size of SFPD, I would envision a laboratory staff of approximately 4 fulltime positions.

3. Purchasing standalone, dedicated, test equipment. This option is the newest, and potentially, would give the best result for the dollars spent.

This option would involve the purchase of dedicated, individual test devices. These “testers” would be deployed around the City in station houses, administrative offices, crime laboratory, etc. These devices would be joined by a dedicated secure network allowing the program coordinator and staff to monitor weapon health and performance in real time.

I would anticipate that SFPD would need between 25 and 30 test devices for this option. Devices cost between \$15,000 and \$20,000 each.

- 3) Cost of replacement of weapons/parts/cartridges

**Answer:** Multiply the number of officer issued items (weapons, cartridges, power mags, etc.) by 10%.

- 4) Cost of purchasing defibrillators to equip all police vehicles (these are necessary to maintain life after Taser use, and were included in previous SFPD policies)

**Answer:** \$1500 to \$3500 per unit depending on the make and model. I would recommend contacting SFFD to determine what make and model they use for continuity of care, to streamline the suspect/patient handoff process, and for software compatibility.

- 5) Cost of maintaining and/or upkeep of defibrillators

**Answer:** AED units typically require monthly maintenance to include interrogation (downloading), battery and charge checks, and electrode pad inspection/replacement.

Electrode pads are single use items. Once they have been opened, even if not used, they must be replaced. Pad replacement typically costs between \$60 and \$120, depending on the make and model of the AED. Units should carry a minimum of 2 electrode pads (another consideration is adult vs. pediatric pads).

Battery replacement typically costs between \$350 and \$450 depending on the make and model of the AED.

Keep in mind that you will need additional inventory of AED units, electrode pads, batteries, and maintenance parts to maintain units in every police vehicle.

As above, I would recommend contacting SFFD to determine what make and model they use to assure component interoperability/compatibility.

- 6) Cost of training for the officers to use weapon (length of training/frequency of training) (SFPD advised that they do not intend to use the TASER provided training, therefore a POST certified training will be created (can be modeled on Oakland's and SFPD has contacted Oakland and has secured some assistance from OPD)

**Answer:** I would agree with SFPD's assessment that the manufacturer's user training program should not be used as it is, in my view, inadequate. I would recommend, however, that any department designated TASER subject matter experts (SME) be manufacturer certified as instructors and technicians at minimum. Also, there should be at least one certified master instructor in the department. These certifications will require regular travel to Arizona for training, updates, and re-certification.

In addition to developing user training curriculum, the coordinator should identify and address other training needs. At minimum, I would recommend additional training programs for: line supervisors, communications dispatchers and call takers, force investigators, IA personnel, homicide investigators, DA investigators, crime scene technicians, evidence technicians, K9 units, tactical teams/units, crowd control teams/units, CIT officers, public information officers, command staff, and any other specialty units that may be required to use, investigate, or come in contact with subjects exposed to a TASER deployment.

Training curriculum should also be developed, and training given, for fire/EMS personnel, and hospital emergency department (adult and pediatric) personnel – both medical and psychiatric.

All of this curriculum should be California POST certified.

Keep in mind that a program coordinator, master instructors, instructors and technicians will need to be selected by the department and certified; and should be part of the policy development, training development, and program development and administration process.

Ideally, the coordinator and program admin positions should be dedicated, fulltime positions. Staff instructors and technicians can be ancillary positions.

- 7) Cost of training to use defibrillators (length of training/frequency)

**Answer:** This will be a lengthy certification and annual re-certification process. I would contact SFFD to find out if they can assist in AED training.

- 8) Cost to the city/hospitals (only ER rooms can remove the prongs)

**Answer:** This is an often-overlooked expense. Every person exposed to a TASER discharge – probe or drive-stun – must be medically cleared prior to any other police action (i.e. interrogation/interview, holding, jail admission, etc.). This means that Fire transports the suspect to a hospital ER for probe removal and medical evaluation/clearance. This can take officers off the street for extended periods of time and may require additional personnel and/or overtime expenses.

In addition to the personnel costs, the hospital will typically charge for the examination/clearance/admission. I would recommend a protocol be put in place designating post TASER deployment receiving hospitals (adult, pediatric, psychiatric), and that these hospitals be contacted to address related expenses.

- 9) Cost of oversight of Taser use – data collection, review of each weapon deployment (including review boards) and adjustment to training as needed based on recommendations of review board

**Answer:** This question requires analysis beyond my scope at this time. As I am not familiar with SFPD's current force review processes, and/or any process changes as required by the newly introduced policies, I would not be equipped to address the expenses involved related to this issue.

Suffice to say, however, this issue will be costly based on the personnel hours required to review and render opinions and/or recommendations on each incident.

Another expense to keep in mind is the cost of policy review/revision, and training – both update and remedial – associated with the incident, policy, and training review and recommendation process.

I would be happy to work with SFPD in reviewing current and/or proposed policies and procedures related to this issue.

- 10) Anticipated cost of lawsuits including both payouts on settlements and litigation costs based on similar city experiences.

**Answer:** As above, this question requires analysis beyond my scope at this time. I would be happy to work with SFPD and the City's legal team to review and address this issue.

- 11) Cost of collection of data generated by the Taser use and storage of Taser generated data, cost of sharing this data with District Attorney and defense counsel when charges are filed

**Answer:** My understanding is that SFPD is currently fielding on-officer video cameras. Depending on the make and model, these collection and storage resources may be able to be shared and utilized with TASER weapon data. Because the weapon data files are comparatively small relative to the video data produced by cameras, the costs of storage would be negligible.

One issues I would keep in mind, however, is data management. In Oakland, I designed and wrote a data management program that tracked officer certification and training, equipment, supplies, maintenance, and weapon use/compliance. I would recommend SFPD investigate writing, or having a program created, that will track the tremendous volumes of data produced by a program such as this.

In 2006, I made inquiries to several law enforcement oriented software companies to have a program created. The estimates ranged from \$10,000 to \$50,000, not including necessary hardware.

- 12) If 1% of all calls for SFPD police service result in use of force, what is the anticipated number of times or percentage of calls that Taser use might be appropriate? Can we extrapolate this number by looking to other police agencies?

**Answer:** A search of the literature related to TASER use was inconclusive. I found no credible reports giving objective, science based, statistics isolating TASER use.

I would caution the stake holders to be critical of study methodology, and reporting methods and criteria when examining any study claiming to purport TASER use numbers. Every study I've examined has been, at best, fundamentally flawed, and at worst, a fabrication.

Other confounding factors, when it comes to reporting TASER use, is the disparity of weapon classification, officer training, policy allowances, supervision, investigation criteria and investigatory bias, etc. from department to department, state to state.

- 13) Efficacy. What do other departments report on Taser's efficacy? (Given efficacy is reported on earlier models and the model currently available for purchase is different, do we anticipate the Taser's efficacy to increase/decrease?)

**Answer:** I would anticipate, and anecdotally the evidence shows, that the new generation weapons are less effective at reliably and consistently incapacitating motivated, aggressive, and/or violent subjects.

This is an important point to consider as the new generation weapons still require officers to close the distance between the officer and the violent subject – optimal deployment distance is 7-15 feet.

As shown in a recent LAPD report, TASERs fail to incapacitate a subject nearly 50% of time. Add to this the fact that the new generation weapons produce only half the electrical output of previous models, yet still require the officer to close to within 7 to 15 feet of an aggressive, assaultive, and/or violent subject, and I see a real possibility for increases in officer and subject injury, as well as increased levels of force escalation.

- 14) Given the warnings issued by Taser International, does this diminish the weapon's efficacy and/or circumstances otherwise warranting Taser use (e.g. edged weapon in the hands of someone under the influence vs. someone not under the influence)

**Answer:** The latest manufacturer warnings and training, as well as the Courts and current case law decisions, have absolutely limited the circumstances when a TASER can, and/or, should be used.

Combine this with the fact that the new generation weapons are generating only half the electrical output of the previous generations, and I question the current weapons' ability for consistent, reliable, subject incapacitation; even when legally, administratively or by department training, the use is justified.

- 15) Number of specific scenarios that ECWs could have been used in past OIS scenarios in SF that had fatal outcomes. For example, in officer involved shootings over past two years, what would it cost to employ a use of force/Taser expert, such as Mike Leonesio to analyze the circumstances to advise whether any/all of these prior officer involved shootings might be appropriate for Taser use and whether the outcome would have been different had Tasers been available to SFPD.

**Answer:** As this question involves costs related to my professional services, I will defer to other respondents.

# EXHIBIT B



**Leonesio Consulting, LLC**

## Electro-Shock Weapon PERFORMANCE VALIDATION REPORT

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Prepared for:  
**[Client Name]**  
[Client Address]  
[Tel: () ]

**Report Prepared By:**  
**Michael Leonesio**  
**[Date]**

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## 1.0 INTRODUCTION

### 1.1 Purpose

This report presents the findings and results of testing performed on the TASER® brand model [model]™ electro-shock weapon that was voluntarily submitted by the [Client Name, City, State] (hereinafter referred to as Client) for testing (see section 2.0 Equipment Under Test). Testing was conducted in accordance with the applicable testing and performance guidelines published by government agencies, independent standards organizations, academic institutions, and/or the weapon manufacturer.

### 1.2 Scope

The scope of the testing documented in this report is limited to the weapon submitted by the [Client Name, City, State]. A total of one (1) weapon was submitted and subsequently tested and evaluated. Test results contained herein cannot be extrapolated or applied to weapons that were not individually tested and/or listed in this report.

Leonesio Consulting, LLC is an independent electro-shock weapon testing laboratory.

### 1.3 Measurement Descriptions and Definitions

Measurement	Description
Peak Voltage	<ul style="list-style-type: none"> <li>• Maximum absolute value of the voltage of a single pulse averaged over the last eight pulses.</li> <li>• Measurements reported in volts (V).</li> </ul>
Peak Current	<ul style="list-style-type: none"> <li>• Maximum absolute value of the current of a single pulse averaged over the last eight pulses.</li> <li>• Measurements reported in amperes (A)</li> </ul>
Net Charge	<ul style="list-style-type: none"> <li>• Area under the "Main Phase" current/time curve of a single pulse averaged over the last eight pulses.</li> <li>• Measurements reported in micro-coulombs (<math>\mu\text{C}</math>).</li> </ul>
Total Charge	<ul style="list-style-type: none"> <li>• Area under the current/time curve of a single pulse averaged over the last eight pulses.</li> <li>• Measurements reported in micro-coulombs (<math>\mu\text{C}</math>).</li> </ul>
Total Pulse Duration	<ul style="list-style-type: none"> <li>• Time between the initial absolute voltage of a single pulse rise to 50V and the final absolute voltage of a single pulse drop to 50V, averaged over the last eight pulses.</li> <li>• Measurements reported in micro-seconds (<math>\mu\text{s}</math>).</li> </ul>
Pulse Rate	<ul style="list-style-type: none"> <li>• Average frequency over the five second firing cycle.</li> <li>• Measurements reported in pulses-per-second (pps).</li> </ul>
Cycle Length	<ul style="list-style-type: none"> <li>• Duration of one complete firing cycle.</li> <li>• Measurements reported in seconds (s).</li> </ul>

## 2.0 EQUIPMENT UNDER TEST

Agency Marking	Mfr. Serial Number	Model	Power Source

The test weapon evaluated in this test session was submitted by the [Client Name, City, State].

The test weapon evaluated in this test session was manufactured by [Manufacturer Name, City, State].

### 3.0 REPORTING

The results of the test session(s) are presented in two formats: tabular and written summary.

Section 7.0 contains detailed results for the test weapon. The detailed results include the observations, measured and calculated parameters used to determine the weapon's status.

Appendix 1 contains the Administrative Summary Table that reports the status of the submitted and tested weapon in an easy-to-read, color-coded table.

### 4.0 TEST PROCEDURES

#### 4.1 Visual, Mechanical and Operational Inspection

The twenty-one-point visual, mechanical, and operational (VMO) inspection procedures are designed to accurately capture pertinent weapon performance data and/or characteristics. This inspection is intended to record the operational characteristics of the weapon as an officer would deploy it. Test technicians do not alter, adjust, or rehabilitate the weapon, beyond manufacturer-recommended spark testing, prior to inspection.

If the weapon under test failed the VMO inspection due to a condition that could render it unsafe for an officer to deploy in the field, the weapon was labeled FAIL - UNSAFE and was withheld from electrical output testing.

#### 4.2 Electrical Output Testing

Electrical output test and inspection procedures are intended to capture electroshock weapon performance data and characteristics that approximate those reported in a typical field deployment.

Leonesio Consulting certifies the test results of the listed weapon as having been verified using test equipment of known accuracy that is traceable to national metrology institutes. Conclusions regarding the condition of weapon(s) tested are considered "opinion" and are provided for the convenience of the Client.

The contents of this document and associated attachments report metrological quantities observed in a controlled laboratory environment. While the test procedures are reproducible, no representation is made about the reproducibility of reported data or the long-term stability of the weapon(s) tested. Any number of factors can influence the operation and/or calibration of this weapon, which may cause it to drift in and/or out of specification.

Weapon testing for this report was conducted in accordance with the *TASER Certified Test Procedure for Testing to TASER X26, X26P, and X2 Customer Specifications*. Version 10.0. Released 6/3/2015. Published by TASER® International, Inc.

For testing purposes, the weapon was fired a total of two times into a 600 ohm, non-inductive, load. Each firing consisted of one complete discharge cycle. Pulse rate and cycle duration data were recorded during the first firing. Peak voltage, peak current, charge, and pulse duration measurements were recorded during the second firing.

All electrical output tests were performed on non-conductive, electro-static discharge safe surfaces.

The test weapon was spark tested, without load, for one full discharge cycle prior to any output measurements being recorded. **[No unusual or abnormal characteristics or behaviors were noted during the spark test.]**

### 4.3 Retest Procedures

[The weapon tested in this session did not require inspection or testing beyond the VMO or initial electrical output testing.]

## 5.0 TEST PARAMETERS

TASER® International publishes two specifications for its X26e™ model weapons; a Factory Specification and a Customer Specification. All other weapons have a single Customer Specification. Where applicable we have included both specifications in our test results.

Electrical Output Parameter	Factory Specifications <sup>i</sup> (FS)	Customer Specifications <sup>ii</sup> (CS)
Peak Voltage	[1450-2150 V]	[1400-2520 V]
Peak Current	[2.4-3.6 A]	[2.3-4.2 A]
Net Charge	[85-115 µC]	[80-125 µC]
Pulse Duration	[110-140 µs]	[105-155 µs]
Pulse Repetition Rate	[19 +0/-2 PPS]	[16.5-20 PPS]
Cycle Length	[5 s]	[5 s]

## 6.0 TEST CONDITIONS

The following laboratory conditions were recorded with in lab instrumentation at the time of testing.

Parameter	Specifications <sup>iii</sup>	Measurement
Ambient Temperature	68-86°F	°F
Relative Humidity	≤80%	%
Barometric Pressure	none	in/Hg

## 7.0 TEST RESULTS

Data collected during testing sessions and/or described within this report may be used by Leonesio Consulting or its authorized agents for statistical and/or research purposes. If used for these purposes, data are aggregately reported without Client attribution.

### 7.1 Initial Test Results

Due to the format of the test results data sheets the detailed test results will start on the next page.

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### Weapon Detail

Agency Marking	[ ]
Weapon Manufacturer	[ ]
Mfr. Serial Number	[ ]
Model	[ ]
Production Date	[ ]
Internal Temperature (°C)	[ ]
VMO Technician	M. Leonesio
EO Technician	M. Leonesio
Test Type	[Initial]
Test Date	[Date]

[ŠX•€—Yng   œ]
[X00-XXXXXX]

### Visual/Mechanical/Operational Inspection

Inspection Item	Received Condition	Returned Condition	Comments
DPM Status	[ ]	[ ]	
XDPM Ground	[Secure]	[Secure]	
Illumination Settings	[LF]	[LF]	
Laser Alignment	[In Tolerance]	[In Tolerance]	
Trigger Alignment	[In Tolerance]	[In Tolerance]	
Mechanical Sights	[Intact]	[Intact]	
Shock Plates	[Intact]	[Intact]	
Electrical Warning Label	[Intact]	[Intact]	
Laser Warning Label	[Intact]	[Intact]	
Safety Switch	[Operational]	[Operational]	
Serial Number Plate	[Intact]	[Intact]	
Electrical Terminals	[Intact]	[Intact]	
Cartridge Bay	[Clean]	[Clean]	
DPM Release	[Operational]	[Operational]	
DPM Dust Seal	[Intact]	[Intact]	
DPC Terminals	[Intact/Undamaged]	[Intact/Undamaged]	
DPC Solder Connection	[Clean]	[Clean]	
Firmware Version	[ ]	[ ]	
Boot Sequence	[Complete]	[Complete]	
Data Download	[Operational]	[Operational]	
Weapon Clock	[ ]	[ ]	

### Electrical Output Inspection

Parameter	Value Bay 1	Value Bay 2	Customer Specification	Factory Specification	Result
Peak Voltage (V)			[1400-2520]		[Pass]
Peak Current (A)			[2.3-4.2]		[Pass]
Net Charge (µC)			[80-125]		[Pass]
Total Charge (µC)			[ ]		[Pass]
Pulse Duration (µs)			[105-155]		[Pass]
Pulse Rate (pps)			[19 +1/-2.5]		[Pass]
Cycle Length (s)			[5]		[Pass]

**Comments:** [Visual inspection reveals an intact and functional TASER® brand, X26e™ electro-shock weapon without obvious damage or modification.]

[During this test session the weapon went into a system reboot while being handled. The VMO inspection noted a loose fitting DPM. This condition can cause the Digital Power Magazine (DPM) contacts to temporarily lose connection with the Digital Pulse Controller (DPC) terminals in the weapon

creating a loss of power to the weapon. This condition will cause the weapon to reboot intermittently and could cause the weapon to fail during use.

Data download reveals 42 firing records. These records include: 3 manufacturer test firings, 7 time change records, 25 field/spark test firings, and 7 firing records associated with this test session.]

**Recommendations:**

1. [Replace DPM]
2. TASER<sup>®</sup> International recommends that weapons be spark tested prior to each shift.<sup>iv</sup>

**THE AREA WITHIN THIS BOX  
WAS INTENTIONALLY LEFT BLANK**

## APPENDIX 1: ADMINISTRATIVE TEST RESULT SUMMARY

See section 7.1 for detailed test results.

Agency Marking	Mfr. Serial Number	Model	Test Result

### Explanation of Color Code:

**Green:** Weapon inspection and test results met all specifications.

**Yellow:** Weapon test results failed to meet one of two categories of test specifications.

**Red:** Weapon test results failed to meet two of two categories of test specifications.

### ADA Color Code Legend:

R=Red

Y=Yellow

G=Green

## APPENDIX 2: REFERENCES

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- i *X26 Factory Specification and Test Procedure*. Version 4.0. TASER® International, Inc.
  - ii *TASER Certified Test Procedure for Testing to TASER X26, X26P, and X2 Customer Specifications*. Version 10.0. TASER® International, Inc, June 3, 2015.
  - iii *TASER Certified Test Procedure for Testing to TASER X26 Customer Specifications*. Version 7.0, TASER® International, Inc., April 12, 2011
  - iv *TASER® X2™, X3™, X26™, and M26™ Handheld ECD Warnings, Instructions, and Information: Law Enforcement*, TASER® International, Inc., November 30, 2011.
- TASER Electronic Control Devices Electrical Characteristics - X26™*, TASER® International, Inc., February 1, 2009.
- TASER International Test Procedure - Measurement of Open Circuit Voltage, Load Voltage and Load Current*, TASER® International, Inc., July 23, 2005.
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- Test Procedure for Conducted Energy Weapons, Version 1.1*, Andy Adler, PhD, Carlton University, Ottawa, Ontario Canada, July 31, 2010
- General requirements for the competence of testing and calibration Laboratories*, ISO/IEC 17025:2005