Non-Lethal Beam Weapons
Pete Bitar on Emerging Defense Technologies

By Tim Ventura & Pete Bitar, January 13th, 2006

Pete Bitar is the founder of Xtreme Alternative Defense Systems, and he’s got a vision. The Anderson, Indiana based defense-startup is out to rewrite the rules of engagement for both law-enforcement and military applications, by producing a new breed of Non-Lethal Beam Weapons to disable an attacker at a distance without causing permanent injury. He joins us to share that vision & help us understand what makes this one of the hottest new technologies of the 21st century...

**AAG**: I’d like to start out with a bit about your background. As I understand things, you're currently involved with both a non-lethal weapons company and an aerospace startup. Can you tell us a bit about these projects, and your approach to working with innovative new technologies?

**Bitar**: Basically, my approach is to analyze the need and innovatively build solutions to solve problems in a way in which no one else has successfully marketed before. There are many opportunities if one uses one’s imagination, and doesn’t ever believe anything is impossible. Once one has crossed the threshold of possibilities, there is no limit to what can be done.

**AAG**: I’ve heard the phrase "non-lethal weapons save lives" a number of times, but I’m not sure if most people are aware that law-enforcement & the military use strict "escalation of force" procedures to determine the appropriate response to a given threat level. Can you describe these procedures, and how adding the option of non-lethal weapons can greatly reduce the number of lethal firearm engagements?

**Bitar**: Non-Lethal Weapons (NLWs) do save lives. A bullet takes lives, although it often doesn’t take lives, and only maims bodies. Right now an officer of the law or the military has two options: yell or shoot. What NLWs do is underscore the yelling and gives them a different trigger to squeeze to enforce the law. Directed energy non-lethals allow for the officer to tune, direct specifically, and control the output of the weapon unlike any form of projectile or gas type weapon utilized before. This allows for much more precise and thus less collaterally damaging force to be applied.

**AAG**: We'd discussed a study a while back indicating that up to 40% of all soldiers won't shoot to kill, even faced with a situation that might cost their own lives by hesitating to fire. The best historical example comes from civil-war rifles, jammed with multiple cartridges that indicate that soldiers were loading their weapons without discharging them. A more recent example comes
from World War II, where soldiers would often fire over an enemy's head than directly at them during a charge. Does the psychology of non-lethal weapons change this dynamic at all?

**Bitar:** Indeed. If you know you can stop someone without having to kill them, why not shoot, particularly if they are shooting at you? These technologies will end, not prolong, conflicts, and will lead to more objective-achieving results in the sphere of combat.

**AAG:** Speaking of which, the incidents that I mentioned above touch on another subject, which is the emotional & ethical trauma that a soldier endures in being put in a position of taking another human life. In the case of non-lethal technologies, do you think that this might reduce the psychological trauma that both sides endure in combat?

**Bitar:** Indeed, the officer who does his job, saves the innocent, and only temporarily disables the perpetrator, is not likely to deal with regret, but oppositely, more likely to find confidence and increased performance in the line of duty. Also, it will cause less likelihood for law suits and PR problems for the agency.

**AAG:** On the flip side of the debate, the other concern about non-lethal weapons is that they do cause pain, and that because they don't actually kill a person they might become routinely used for torture, or at least used without the careful forethought that most soldiers would consider before shooting a conventional firearm. Do non-lethal weapons make it too easy to pull the trigger?

**Bitar:** Tunable Non-Lethal Directed-Energy Weapons (NLDEW) systems, if tuned properly, and if allowed to not be adjusted by the officer beyond a minimal range, will eventually eliminate the ability for these weapons to be used effectively in torture. Additionally, if you really want to torture someone, tying them to a chair and beating them, or using a car battery and a pair of jumper cables is a whole lot less expensive than a multi-thousand dollar NLDEW...

Although the trigger is easier to pull, the system is still a weapon, and needs to be treated as such. Training will be increased, not decreased, as these weapons are deployed, particularly since it is likely that they will not replace, but only augment, lethal weapons. The systems will make it easier to squeeze the trigger when the trigger needs to be squeezed, and in the end, no one is permanently harmed. Again, NLDEWs are not Taser, which interface with the body very differently. The assumption that all stun weapons will be like Taser is patently false.

**AAG:** In terms of XADS product line, your best-selling products at present are "Photonic Disruptors", which are basically very high-powered LED-lasers that temporarily blind an attacker. Can you tell us a bit about the types of applications these would be used for, and perhaps a bit about some of the interest you've seen from customers?
**Bitar:** We have seen them used in a variety of situations, primarily as distraction and disorientation weapons. These eye-safe lasers have not caused anyone eye damage in the entire time that they have been deployed, and we are seeking to increase the roles of this technology to defend vehicles, checkpoints, facilities, and individuals (police and military) as we move forward.

**AAG:** To the man on the street, the Photonic Disruptor may appear a lot like an LED laser-pointer that you can buy for $20 at Wal-Mart. What makes your implementation of this technology different, and how effective has it proven at temporarily blinding an attacker?

**Bitar:** These systems fire green lasers (which go for around $100 each in the laser-pointer versions), and are about 25 times more powerful than the average green laser pointer. In addition, they are weatherproof, shock-resistant, and have to deal with a lot more heat, such that the engineering for heat-sinks is much more advanced.

**AAG:** Another one of your products is the "StunStrike" technology, which utilizes a cone-shaped high-voltage discharge to cause a tetanizing response that disables an attacker. I guess that you might call this a "wireless stun-gun", right? How's the development going on this technology, and what kind of range does this weapon have?

**Bitar:** Right now, the StunStrike is being used in another application, which is classified, but deals with explosives and non-personnel targets. We are still developing StunStrike for non-lethal applications, such as corridor/doorway defense, where there is a significant market. Our biggest StunStrike, used for facility security, has a current range of 30 feet.

**AAG:** I'd like to focus briefly on the tetanizing aspect of this technology -- can you describe exactly what this does to the human body, and how it can disable an attacker without causing permanent harm?

**Bitar:** It uses what is called “spatial summation” to tetanize voluntary muscles. Unlike a Taser which “plugs in” to the human body, the StunStrike interfaces on multiple, surface-level points, thousands of times a second, not allowing for even the possibility of defibrillation. This interface makes a huge difference in the stun and safety effects, and we are finding more and more experts in the medical field agreeing that the future of StunStrike as a methodology for interface will allow it much greater effect, while also being much more safe.

**AAG:** One thing that makes the StunStrike unique is that unlike a stun-gun, the Stun-Strike's cone-shaped beam can disable any attacker in front of the device, which offers a new level of effectiveness in crowded riot-situations where you'd have to defend a perimeter. How might this technology work in a riot-situation, and would it cause any permanent damage to otherwise productive (and litigious) citizens?
**Bitar:** The effects of the StunStrike are more of a numbing/freezing effect, not an “electrocution” effect. Thus, even in a violent mob, where innocents are present, they will be frozen and will fall, but little else will happen to them. Also, time on target is important for the duration of the stun effect. If an individual is targeted for a second, he will be stunned for maybe 15 seconds. That’s different that someone being “grazed” in a glancing shot lasting less than a tenth of a second...

**AAG:** You’ve talked a bit about automating the StunStrike as a permanent perimeter defense for installations such as embassies. Can you describe this application for us a bit?

**Bitar:** Not really at this time. It’s still a sensitive issue, and will likely be classified in the near future.

**AAG:** As I understand things, you’ve been working a bit with Peter Schlesinger’s HSVT startup on an ionizing laser technology to extend the StunStrike for distances exceeding the StunStrike’s normal effective-range. Can you elaborate a bit on this approach, and how it may change the role of the StunStrike technology in the future?

**Bitar:** HSVT’s technology, if it is proven to work in the real world outside the lab, will help us extend the range of StunStrike by an order of magnitude. This all needs to be proven, however, and it will take time and money to make a reality.

**AAG:** The XADS website talks a bit about the logistics of beam-weapons: they don’t require ammunition like a conventional firearm, which eliminates the need for constant resupply. Can you tell us a bit about how they change the logistics of the future battlefield?

**Bitar:** It is said that "good generals study tactics, but great generals study logistics". The need to re-supply forces on the move is a great burden to the military and the financial infrastructure that runs it.

Directed energy weapons, by definition, require only “energy” to operate. Electricity generation to power these types of weapons requires some minor additional fuel supply, but with some XADS weapons, even this requirement is negated. Directed energy weapons eliminate the need to transport, supply, maintain, and stockpile ammunition, which lightens the logistics burden significantly, in cost, labor, and transportation – all while increasing safety and decreasing vulnerability.

Without the need for ammunition, ammunition storage, or other issues associated with projectile weapons, the logistics become purely electricity-oriented. Most of our weapons (lasers and acoustics), have solar-rechargeable batteries, with times between charges lasting up to a week of consistent use. That surely beats going through thousands of rounds of ammunition, and that doesn’t even account for effectiveness or number of hits on targets.
**AAG:** What do you see for the future of XADS? How do you think the company’s going to evolve over the next few years, especially given the pressing need for innovative non-lethal weapons systems by both police & military around the globe?

**Bitar:** We believe we are uniquely positioned to innovate for the future. We would like to be a solutions company, which not only “writes papers”, but actually builds weapons and ultimately, platforms, for use by our military and law enforcement personnel. XADS is unique in its approach of using multiple, layered non-lethal technologies to accomplish a mission, and we are being recognized for that. It is my hope that ultimately, we save lives, both of our friends and even our enemies, so that ultimately, we will find a more peaceful world in the end of it all. That is what motivates us, and we trust that our efforts will be accepted as they are intended.

**AAG:** In the context of a larger industry, I’d also like to ask about the future of both non-lethal weapons and beam-weapons in general. As I understand this, non-lethal weapons are a high-interest area for military & law-enforcement customers these days, but beam-weapons seem to be an area that’s remained stagnant for decades. Can you give us any thoughts or opinions on where these two areas of technology are going, and how your hybrid technology can modify these trends?

**Bitar:** The problem with “beam weapons” in general, is that it is assumed almost immediately that the technology refers only to “high-energy lasers”, used to burn through things, such as missiles, tanks, people, etc. It is unfortunate, but it is changing. The “brute force” mentality of the overall directed energy industry is beginning to shift to the “work smarter, not harder” theory of design, which makes more specific use of energy characteristics to accomplish certain missions.

**AAG:** Let’s close with the contact info -- the best place to learn more is your website at [www.XtremeADS.com](http://www.xtremeads.com), and as I understand things you also have some video online. Can you tell us a bit about the resources available for learning more about XADS, and how potential customers can get in touch with you to learn more?

**Bitar:** Just check out our Contacts page on our website. We make it a habit of getting back with legitimate, potential customers promptly. Thanks for the time and the questions.

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Pete Bitar is the founder of Xtreme Alternative Defense Systems, a defense-startup specializing in non-lethal weapons located in Anderson, Indiana. You can visit his site online at the following URL: [http://www.xtremeads.com](http://www.xtremeads.com).