# Body Armor Update: 2015 - 22nd Annual Report P.22

# Police and Security News

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# **Police Security**

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# **FOCUS**

#### Surveillance and Investigative Technology

**New DNA Analysis Technology** Could Help Solve Cold Cases .....

William Siuru, Ph.D., PE What is DNA phenotyping and how can it be used to generate leads in cold cases?



Seeing in the Dark: Part 1 - Night Vision Devices ..... 41 William Siuru, Ph.D., PE

How night vision devices work and an explanation of the generations of technology used today

Learning to Fly Drones ......46 William Siuru, Ph.D., PE

A worthwhile investment of time and money?

# PECIAL REPORT

Body Armor Update: 2015 ......22

**Rebecca Waters** 

The 22nd Annual Report on the Latest Advances in Ballistic Armor Technology and Design



Correction: On page 70 of the May/June issue, it should have stated that the resolution of WatchGuard Video's VISTA™ body-worn camera system is 1280 x 720, not 640 x 480.

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# **COLUMNS**

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Busted!

#### ON THE COVER



As seen through a night vision device, Sgt. Tony Bonnagio makes a call on a radio during a joint operational access exercise at Fort Bragg, NC.

Photo courtesy of US Department of Defense

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# ...AND NOTHING BUT THE TRUTH

he "militarization" of police departments is something people have been making a big issue out of lately, among other things. Those "other things" I am not even going to address because they have gotten so out of hand that I don't have enough space here to tackle them. But, make no mistake, it's those other things which will keep the fires burning in the camps of those who insist on convincing the rest of the populace that today's police departments are too militaristic.

That has got to be the joke of the century.

Oh, sure, I can leaf through the pages of P&SN and see advertisements showing assault clad police personnel armed with military weapons looming ominously in doorways and against building walls. Yes, there is no question that our police departments today are equipped with military-grade material, vehicles, body armor and protective gear - much more than the police departments of 15 to 20 years ago. How often, though, is that stuff actually used? Exactly what have people seen in their communities that has them fearing us, the jackbooted storm troopers with Kevlar® helmets and evil intentions? Not much is my guess.

I'm very aware of police every time I go out. I think all cops are like that – even retired ones like me. Anytime I see a marked unit pulling someone over, or I see an officer talking to someone, I take interest – not the way the average citizen takes interest, but, instead, in the spirit of



#### Tanks, but No Tanks...

camaraderie, I still feel for every cop I see. This November will mark nine years that I have been riding around in public as a civilian and I have seen exactly one group of SWAT officers in a shopping center parking lot early one morning just before dawn. Ah, search warrant, I smiled to myself. They're getting everything ready at the staging area. Other than that, I have not seen any tanks or officers hustling around with rocket launchers or M-16s in my community, one with a long-standing reputation for crime.

Here's what I have seen: police officers in shorts; police officers in baseball caps; police officers on bicycles; and police officers talking on cell phones. That's a militarized police force?



# NEWS

# Subscribe to "Five in 5" for News Related to Criminal Intelligence

The Criminal Intelligence Coordinating Council's (CICC) Five in 5 is a snapshot of law enforcement and criminal intelligencerelated articles, resources and research which may be of interest to CICC members and partners working to improve the nation's ability to develop and share criminal intelligence. The most recent issue includes information on a new Web site on body-worn cameras from the Bureau of Justice Assistance, and on National Institute of Justice funded research on recovering erased or damaged firearms serial numbers. To subscribe, E-mail CICC staff at mmiller@iir.com.

# **NRA NATIONAL POLICE SHOOTING CHAMPIONSHIPS**

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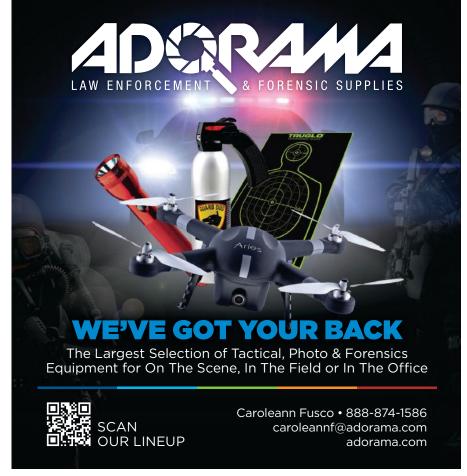
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#### and nothing but the truth

Even the police cars look friendlier. The emergency lights are low profile and the vehicles are smaller. I have seen law enforcement embrace the entire realm of "less-lethal" weapons - nets, sound waves, leg restraints, you know the drill. We've all seen more training (not less) in crowd control, public relations, cross-cultural understanding and arrest techniques. (Techniques? There was a day when there was no such phrase! Knock 'em in the head and cuff him! How's that for an arrest technique?) Most, if not all, of these elements we take for granted in modern policing were nonexistent prior to the early 1970s. They are all the result of a movement which wanted to make police departments less occupational, more understanding, more sensitive and less racist. For a while, it worked. I can't help point out, however. that, when all this touchy-feely, kumbayah, give the world a Coke policing was in full swing, violent crime was at an all-time high. Officer deaths were astronomical compared to what they are today and our cities were reeling from a tsunami of drugs and violence. Yes, it was worse 40 years ago than it was today. If you don't believe me, look up the stats yourself. I will even go as far to say that, as far as treatment by police was concerned, it was much worse for "people of color" and minorities back then than it is today.

So, where does all this squawking about militarism come from? The same place all that "other stuff" comes from. It's a campaign to accentuate as much negative as they can about police officers and police departments. And, it's working. It's working because we don't do a good job of combating it and the negative stuff which is happening is being magnified and isolated - "cropped," if you will - by the modernization of our people. Of course, we do our part to help it along from time to time, don't we (bad shootings, dumb press conferences and officers who get in administrative trouble for some of the most immature crap I've seen in decades)? Still, I don't think the percentage of bad shootings, unjustified arrests, or whatever, is any more than it was in the '70s and '80s and I'll be bold enough to say it's lower today.

How many hotels have you stayed in during your lifetime? Were they clean and nice? Sure, they were. They had names like Hilton, Hyatt, Westin and what have you. Now, I'm handing you this new tool. You can aim it at a corner in a hotel and it will immediately give you a highly magnified image of all the little vermin and other insects which are crawling around in the carpet or behind the baseboards. Filthy!

Unhealthy! This place is a disaster! Now, someone else has one of these tools and they are finding the same things in various hotels (not all) and they send all their images to CNN. What is the result? Hotel cleanliness is at an all-time low! Beware!

Once this tool is used everywhere, no one will be aware – no, no one will even care how clean and sterile other hotels are. It is way more interesting and exciting to characterize the hotel industry as an insect-ridden, disease rampant

network of uncaring fraudsters – fraudsters, I say!

Do you get my drift? Start a plausible conspiracy idea and get the news media on your side and the sky's the limit. You've got YouTube and Twitter and, before you know it, you can convince a nation that its police forces are militaristic estuaries of racism and social control. You can foster such hatred and fear in them that innocent police officers are targeted for retribution and killed – something we haven't

seen in this country since, well, the 1960s and the days of Black Panther activism.

Sing "Kumbayah" everyone. Anything is worth a try at this point.

#### P&SN

Ramesh Nyberg retired from law enforcement in November 2006 after 27 years in police work. He now owns his own private investigation agency, Nyberg Security and Investigations, and can be reached at Ramesh@NybergPi.com. He enjoys getting feedback from readers.

### **IACP Launches Cybercrime Resource**

The International Association of Chiefs of Police has launched its Law Enforcement Cyber Center (**www.iacpcybercenter.org**), a collaborative effort with the RAND Corporation and the Police Executive Research Forum which is backed by funding from the Bureau of Justice Assistance. The Cyber Center will enhance awareness, expand education and build capacity,



with a goal of preventing, investigating, prosecuting and responding to cybercrime. Divided into three principal functional area (investigations, digital forensics and IT security), the site includes links to outside resources and a vast amount of resource material developed specifically for the Cyber Center.



# FOCUS ON TECHNOLOGY

#### New "Soft" Interface



Designed to provide a soft interface between a rifle and a hard surface, the patent pending BT53 SILO, from B&T Industries, LLC/Accu-Shot, attaches by means of a Picatinny rail. It features a textured front which can be pressed into barricades; rubber side bars for "soft" side bracing and grip; a beanbag bottom for "soft" interface on ledges, windows, etc.; and two flushcups. One flushcup is designed to accept the BT54 "Flushcup Stud" so the SILO can be installed and removed with the push of a button.

**Circle 4011 for More Information** 



#### New AR KeyMod Rail System

Mission First Tactical, LLC recently introduced the TEKKO Metal AR Carbine KeyMod Rail System. This attachment system replaces the plastic factory hand guard and provides secure mounting for KevMod accessories such as MIL-STD 1913 Picatinny rail attachments, vertical grips, bipods, lights, and lasers. The rail system features an easy drop in installation which requires no screws, special tools or alterations by a gunsmith. Made in the USA and featuring a lifetime warranty, the seven inch rail is made out of Type 3 hard coat anodized aluminum.

**Circle 4014 for More Information** 

## **SWAT and Tactical Equipment**



#### New Sight from Aimpoint®

The **Micro H-2** features front and rear protective flip covers; additional protection for the sight's adjustment turrets; and increased ruggedness for the internal electronic components. The most important development is enhanced optical performance. A newly designed front lens, which incorporates a breakthrough in reflective lens coatings, provides a noticeable increase in the clarity and performance properties of the **Micro H-2**.

Circle 4012 for More Information

#### **SOC Special Operations Combat Sling**

The **SOC Sling**, from Combined Systems, Inc., is a modular two-point to one-point convertible sling which can be installed on nearly every modern combat weapon. The conversion of the sling can be done in seconds – all while the operator is wearing the sling and weapon. Its design allows for rapid extension and reduction of the sling's overall length in order to accommodate various missions by simply pulling a tab.



Some of the **SOC Sling**'s features include a one-hand, fast adjust buckle; rapid conversion

between two and single point; its long length allows you to wear it over a vest or pack; it can be attached, removed or exchanged with the push of a button; and it can be configured to fit any standard battle or modern sporting weapon. Every **SOC Sling** is backed with a lifetime warranty – if it breaks, just send it back for repair or replacement.

Circle 4013 for More Information

#### Revolutionary Night Vision Product



The Night Vision Depot **BMNVD** (**Bino-Mono Night Vision Device**) is a new concept which combines the best features of a monocular and a binocular into one fully functional night vision product. The **BMNVD** is comprised of separate components which combine into a binocular or disassemble to use as a monocular.

**Circle 4015 for More Information** 



#### **New LED Riflescopes**

Trijicon® has introduced the **AccuPower**™ riflescope series. Generated by the success of their VCOG® and TARS™, the durable and dependable **AccuPower** series is versatile with variable power offerings of 1-4x24, 2.5-10x56, 3-9x40 and 4-16x50. It features an aircraft grade aluminum housing, superior glass lenses and advanced application specific illuminated reticles.

**Circle 4016 for More Information** 

# New Long Gun Carry System



Point Blank's newest Weapon Retention System (WRS) is a one of a kind, unique, totally handsfree, long gun carry system which is designed to carry shotguns, scoped rifles and most long guns, as well as AR platformed rifles with, or without, accessories. The WRS creates little to no pressure points and its stable, secure platform protects the weapon/optics while giving the ability to select the safest muzzle direction, allowing you to deploy your gun instantly.

**Circle 4017 for More Information** 



The TACOPS® ARBK (Active Response Breachers Kit), from TSSi, is a portable breaching tool system with full-size telescoping and folding handle tools which provide a full force solution to breaching requirements. It is designed to allow responders to active shooter situations to gain entrance into a structure while wearing the TACOPS Active Response Breachers tool quiver and have the ability to tactically employ a sidearm. This design allows the responding officer to retain the breaching tools throughout the entry to address any other barricades which may be encountered.

Circle 4018 for More Information

#### New Hydraulic Multipurpose Tool

Hurst Jaws of Life, Inc. has introduced the **StrongArm**™, a portable hydraulic power tool for use in a variety of tactical applications. With a builtin Picatinny accessory rail and a four position handle, the StrongArm cuts, lifts and spreads, replacing crowbars, halligan bars, wire cutters, and more. It can quickly cut through 3/ 8" rebar, grade 43 chain and two-by-four wood.

Its compact, portable design makes it easy to carry and allows it to fit into tight spaces. The **StrongArm** weighs 21.4 pounds and comes with two sets of tips, two lithium ion rechargeable batteries and one charger.

**Circle 4019 for More Information** 





# Loyalty

**Michael Carpenter** 



# THOSE TERMS WE ALL THINK WE KNOW THE MEANING OF AND WE KNOW IT'S IMPORTANT TO THE DEPARTMENT, BUT...

here are a number of different words which come to mind when I think about the word *loyalty* – allegiance, trustworthiness, reliability and dependability. Keep those words in mind for the next couple of minutes.

Let's look at loyalty from three different perspectives: loyalty to your subordinates, loyalty to your agency and loyalty to your customers.

#### Loyalty to Subordinates

Too many supervisors and administrators don't often think about loyalty until they start looking for it. It usually occurs during (or after) an operational or administrative crisis when the bosses need the physical, moral or emotional support of their subordinates. For good commanders, the loyalty is there when it is needed; for poor commanders, it is not. To ensure that

the loyalty of subordinates is there when needed, bosses need to plan ahead. Loyalty must be developed over time and it has many facets. There's one thing all supervisors and administrators need to remember: "Employee loyalty begins with employer loyalty. Your employees should know that, if they do the job they were hired to do with a reasonable amount of competence and efficiency, you will support them." (Harvey MacKay)

The legendary General George S. Patton recognized the responsibilities of a commander in developing loyalty among his subordinates. In his book, *War As I Knew It*, he stated, "There is a great deal of talk about loyalty from the bottom to the top. Loyalty from the top down is even more necessary and much less prevalent."

To develop a sense of loyalty among his subordinates, a good supervisor must develop a positive rapport with his employees. Every supervisor of every rank should get to know his people personally. I recently attended a gathering of some local professional people in my community. One of the people who attended this meeting was a manager of a large resort hotel which has about 150 employees. During the random conversation throughout the course of the evening, it was found out that the grandson of one of the people attending this meeting just started working at this



hotel and the grandfather mentioned it to the manager. The manager immediately knew the young man's name (even though he was a part-time seasonal employee); he knew what college he was attending; and he knew what kind of car he drove. The grandfather was impressed, but the hotel manager merely said this, "It's my job to know every one of the people who work for me. Every person who works for me is important and I'm smart enough to know that they can make me look really good or really bad."

#### Loyalty to the Agency

There was a time when employees liked going to work every day. They liked their coworkers and their boss and they believed that it was important to do a good job every day. At the end of the day, they felt satisfied because their work was appreciated and, maybe, made a difference. There was also a time when the employer took care of their employees. The workers knew this and they trusted their bosses. The employee became loyal to the business because they knew that the business was loyal to the employee.

Along the way, something happened. A recent survey in the *Wall Street Journal* 

found that 70% of employees don't like their jobs. Employees said that there was no trust or loyalty and that they had to "watch their back." Of course, a workplace environment like this often results in high turnover, low morale, high stress and reduced productivity or low performance by employees.

Supervisors and administrators need to make it well-known that they appreciate the work and efforts of their employees.

One thing I've noticed over the years – both as an employee and a supervisor – is that each employee is motivated differently. A good supervisor takes the time to find out what motivates each subordinate. A motivated employee is a happy employee and a happy employee does a better job and that makes life a lot easier for supervisors.

Very few of us are entirely bighearted and self-sacrificing. However (personally speaking), I'll work my tail off for a boss and an agency if I believe they are looking out for me and will do what they can to take care of me. Make the effort to train and develop your subordinates so that they can maximize their individual potential to reach their selected goals. With proper training and development, they can maintain a high level of motivation and become more loyal to you - the person who is looking out for them. Without the proper guidance and mentoring, their enthusiasm may be stunted and there will be no reason for them to maintain any loyalty to you or the agency.

Supervisors and administrators need to make it well-known that they appreciate the work and efforts of their employees. We all need an "attaboy" once in a while (of course, good supervisors know that employees need an "attaboy" more than once in a while). One of the management "tricks" I found to be very successful comes from the One Minute Manager. A key part of this management theory is to "catch your employees doing something right." Make a big deal out of



#### LAW ENFORCEMENT LEADERSHIP

the positives your employees are doing and make it known that you appreciate their efforts on a regular basis. It doesn't take much to make somebody feel appreciated. Don't wait for the annual awards ceremony. Don't wait for some heroic act or lifesaving act – let your employees know; let your bosses know; let the public know about all of the good things your people are doing. One of the founding principles of the *One Minute Manager* is that, when employees feel appreciated, they will be more loyal.

#### **Loyalty to Your Customers (Citizens)**

When I need my car fixed, I go to the same mechanic I've used for years. I trust him. He has treated me fair and I am loyal to him. When I want a pizza, I know that I won't be disappointed when I go to a certain restaurant. I always get both good food and good service.

Every one of you feels the same way about anyone who provides a service to you. Anyone who works in private business knows that customer loyalty is critical. When a business develops a good reputation, word spreads and more customers come along. When someone provides good service, people learn to trust the car mechanic or the manager. When someone we trust and are loyal to makes a mistake, we are more inclined to overlook it or give them another chance.

So, what does that have to do with your job? What does that have to do with you, your employees or your agency? Well, all of you have customers; all of you provide a service; and all of you develop a reputation with your customers (aka citizens) which is positive or negative. Businesses need satisfied customers. Businesses don't need discontented customers spreading bad news about their business around the community. Now, apply this same idea to your customers. When your customers trust you; when you provide them with good service; and when they can depend on you, they will develop a trust and respect for you and your agency. It is exactly the same thing in private business, but those of us who have spent a lifetime in the public sector often don't see the similarities.

Let's talk about police history for a minute. Do you know when the first recognized professional police force was created? The London Metropolitan Police Force was created in 1829. A brilliant individual named Sir Robert Peel is credited with creating this first professional police department and came up with "Nine Principles of Policing" which were given to every new police officer in 1829. Let me mention a few of them:

Principle 2: The ability of the police to perform their duties is dependent upon public approval of police actions.

Principle 3: Police must secure the willing cooperation of the public in voluntary observance of the law to be able to secure and maintain the respect of the public.

Principle 4: The degree of cooperation of the public that can be secured diminishes proportionately to the necessity



of the use of physical force.

Principle 7: Police, at all times, should maintain a relationship with the public that gives reality to the historic tradition that the police are the public and the public are the police; the police being only members of the public who are paid to give full-time attention to duties which are incumbent on every citizen in the interests of community welfare and existence.

I don't think a lot has changed over the past 190 years in policing. I strongly believe that we need loyal customers. We need satisfied customers. We need to take steps to make this happen. Without loyal customers, businesses fail. Without the support of our customers (aka citizens), will policing fail?

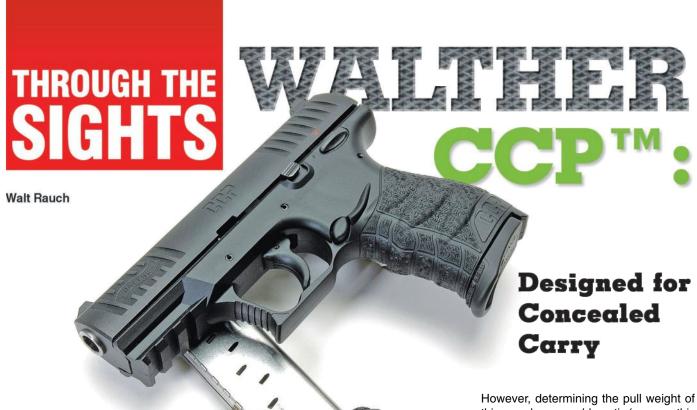
Loyalty can be defined as a state of mutual respect, admiration and commitment. You must maintain that type of relationship with those above you, below you and your customers. All of them require your loyalty if you are to expect them to be loyal to you when you need them. P&SN

Mike Carpenter has been working in the field of law enforcement for more than 30 years. He has written several books on the topic of police leadership and supervision, as well as more than 100 articles for publications. He runs a successful consulting business, www.policemanagement.com. You can contact Mike at MJCarpenterX2@yahoo.com.



Circle 4026 for More Information





he new Walther CCP (Concealed Carry Pistol), chambered in 9x19mm, is neither a pocket nor duty pistol. Paraphrasing the fairy tale, "Goldilocks and the Three Bears," the CCP is not too large; not too small; it is just (about) right for concealed carry.

The CCP features Walther's SOFT-COIL™ gas delayed blowback system. This system uses the gas pressure of a fired round by directing it into, and through, a small port forward of the barrel chamber where it goes into a cylinder beneath the barrel. The cylinder contains a piston whose movement (from the gas pressure of the fired round) slightly retards slide movement until the pressure declines after the bullet leaves the barrel.

Then, the slide functions normally. The cylinder is pinned beneath the muzzle opening and below the barrel.

#### **Specs**

The CCP specifications are as follows: single-action, delayed blowback system, chambered in 9x19mm. It weighs 22.24 ounces; has a barrel length of 3.54"; an overall length of 6.41"; a height of 5.12"; and a width of 1.18". Walther specifies a trigger pull weight of 5.5 pounds.

this sample was problematic (more on this below). As to using +P loads, quoting from the owner's manual, "...+P ammo generates more gas pressure which can affect wear characteristics or exceed margins of safety. Use of +P ammunition may require more frequent service. +P+ ammunition is not recommended for use in Walther firearms...and could be DAN-GEROUS [emphasis in original]."



The CCP's SOFTCOIL™ cylinder with gas piston is

pinned to the slide at its front.

Two single column metal magazines are supplied. The follower is also metal, while the removable base plate is polymer. The CCP has a capacity of eight rounds. Seven index holes are on the right side of the magazine and are a shape that, to me, resembles the outline of a pointed bullet. On the upper curved surface of the magazine, there is a cutout and flattened piece of metal bent outward to capture the reversible magazine catch.

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#### **Features**

The slide is stainless steel and two models of the CCP are offered: One has a brush finish and the other has a Cerakote® finish and is colored black, as

is the polymer frame in both versions. As noted, the magazine catch is reversible. Six diagonal grasping grooves are both front and rear and the left side of the slide is marked WALTHER and CCP. A passive firing pin safety is used. Front and rear sights are polymer and have a three white dot setup. The rear of the front sight is

slightly ramped and the rear sight is also ramped, but up front. The front sight is adjustable in that a total of three front sights of different heights are supplied. The three sights are numbered 1, 2 and 3, with number 1 installed. Removing the front sight requires removing its retaining TORX® screw from inside the slide using the supplied Allen key. Another, larger diameter Allen key is also supplied for adjusting the rear sight for windage. Furthermore, the owner's manual provides



The slide stop, reversible magazine catch and manual safety are easy to reach.

detailed written and pictorial instructions for this, along with disassembly and reassembly directions. Reading (and rereading) these a few times is highly recommended.

#### **Safeties**

In the center rear of the large ejection port is a notch which serves as a loaded

chamber indicator. A spring powered extractor is centered on the right side of the ejection port. The CCP has two safeties. One is a thin tab on the upper left rear of the frame. Up is "on" and down is "off." Moving to the off position exposes a red dot on the slide which indicates the gun can be fired. A passive firing pin drop safety is in the slide and is moved as the trigger is pulled.

The CCP frame is black colored polymer, as previously noted, and holds the permanently pinned barrel and the lower portion of its firing system. The dustcover has a provision for mounting accessories such as a light or laser. The horizontally grooved slide stop is slightly recessed in the slide and is easy to use, as is the manual safety at the top rear of the frame. The CCP's frame, like some of the other Walther handguns, has an ergonomic grip which has a unique nonslip surface, complete with bashful finger grooves on the front strap. The ample trigger guard is horizontally grooved on its face, while the curved and rounded trigger has horizontal grooves.



The front strap has shallow finger

The front strap has shallow finger grooves and the ample, squared trigger guard is horizontally grooved.

#### **Field Stripping**

Regarding disassembly, a flat metal locking catch hook is on the rear of the locking catch in the rear of the slide. It must be pushed up to free the striker spring from the locking catch hook on the frame using the supplied tool or a small bladed screwdriver, then push the locking catch into the slide. The slide then needs to be slightly retracted to have the external extractor clear its notch on the chamber. The slide can now be lifted up and off the rear of the frame and the recoil spring can be removed. Walther cautions that the striker should not be

removed. (I did have one problem when reassembling the pistol. I

brushed out some firing debris inside the slide which dislodged the striker spring and sent it flying into parts unknown. Fortunately, by then, I had finished all of the live fire.)

Prior to the last incident, I had asked my associate, Irv Gill, to read the instructions and do the disassembly. I wanted to see if it was me or a larger issue. On the first successful effort, it took Irv five minutes, but on the second successful effort, it took only a minute. It would appear it's somewhat "quirky," and you either "get it" or you don't. Apparently, that wasn't my day to get it!

The gas system is removed from the frame by driving out its retaining pin with the supplied drift punch. A brass bristle brush on a rod is supplied to clean its interior. The CCP is reassembled in reverse order. It is complicated, so I strongly recommend that you take the

time to read the owner's manual and thoroughly understand the entire disassembly and reassembly processes before attempting them.

#### The Trigger

This sample CCP has a very poor trigger pull. As we were testing the gun, my two associates agreed. The trigger varied as it was pulled and it felt as though it was moving over sand. My two associates also agreed with this. However, we did find that, to get decent, if not great, hits, we needed to quickly pull the trigger – no taking your time to line up the shot here!

As mentioned earlier, Walther specifications call for a 5.5 pound pull weight. I failed to get any confident reading due to the "sand," but it does feel like 5+ pounds. And, I think I isolated the cause. When the slide is off, the glitches disappeared. I then saw that, when the slide is on the gun, a vertical, rounded top pin in the frame which actuates the drop safety feature was bearing against the draw bar which is attached to the trigger. When I





Using the takedown tool

held the draw bar away from the pin, the gritty trigger disappeared. The owner's manual doesn't have a schematic of the gun nor a parts identification list; hence, this somewhat vague description. It looks as though either (or both) parts need polishing or replacing. I tried oil and then grease, but they didn't help. I could have attempted to polish either (or both) parts, but I didn't, since the gun is not mine.

I think the poor trigger pull we experienced is the exception, not the rule, as Walther has been making quality products, including handguns, since they opened their doors and are known for their quality arms. I also have had exposure to their current handguns, including the Walther PPK®, SSP, PPX™, and PPQM2® target pistols. I found all of them to have trigger pulls ranging from good to great. I have not noticed any complaints on the Internet or in print gun media against their trigger pull, either. We'll just have to wait and see. If the dealer allows you to pull triggers on new guns before sale, by all means, do so. I didn't do this when I picked up this sample, but, in self-defense, the store and counter personnel were quite busy. I also suspect Walther USA would be more than willing to correct any such problems for customers. I didn't attempt to try to fix the problem, as it's a T&E gun. More importantly, I'm not a gunsmith - just ask my gunsmith!

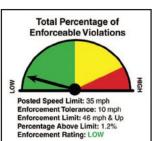
#### **Range Results**

Range work was done at the Lower Providence Rod and Gun Club Range in Oaks, PA, where I met with Irv Gill and Mike Cosintino. The evaluation began well, as we all liked the fit of the gun in our hands and took note of its effective gripping

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#### **Circle 4032 for More Information**



Circle 4031 for More Information

#### **CHRONOGRAPH AND ACCURACY RESULTS**

The following data was obtained using a Pro Chrony® chronograph at 300 feet above sea level with a temperature of 55 degrees. The pistol used was the Walther CCP™ with a 3.54" barrel.

Ammunition	Velocity	Standard Deviation
Cor®Bon Performance Match® 147-gr. FPMC	893	10.0
Remington® UMC® 115-gr. FMJ	1051	15.0
Winchester Personal Protection 147-gr. JHP	966	7.2



The best 15 yard, five shot group we got

surfaces. Shooting at 15 yards seated at the shooting bench, we all failed to get any consistent hits due to the gritty trigger. All we had were close "patterns." The best of these I made after more than a few rounds of trying. I put four rounds in 2 3/4" and one more which resulted in

five rounds in 3 3/4". What we did find was that the quicker the trigger was, the better the hits were. The CCP functioned well shooting Cor®Bon Performance Match® 147-gr. FPMC, Remington® UMC® 115-gr. FMJ and Winchester Personal Protection 147-gr. JHP. As to re-

coil reduction, felt recoil was brisk with what I thought to be a reasonable amount of barrel lift for this category of handgun.

In conclusion, I think that the CCP trigger on this sample was an exception and that the CCP then is an effective arm for concealed carry self-defense. P&SN



Circle 4034 for More Information

#### **SPECIFICATIONS**

#### WALTHER CCP™ IN 9MM

Operation: Gas delayed blowback

Caliber: 9mm

Finish: Cerakote® black or brushed stainless steel

Barrel length: 3.54"

Trigger pull: Single-action, 5.5 pounds

Trigger travel: 0.27" • Capacity: Eight rounds

Overall length: 6.41" • Height: 5.12" • Width: 1.18"

CCP accessories: CCP owner's manual and two, eight round magazines

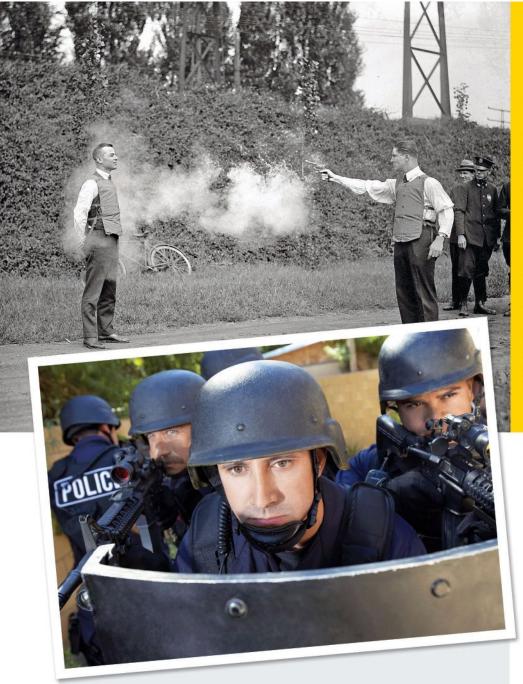
Upon receiving his BS degree from Carnegie Tech and completing service as a Special Agent in U.S. Army Intelligence, Walt Rauch was a Special Agent with the U.S. Secret Service and an Investigator with the Warrant Unit, First Judicial District, PA.

Rauch is also a writer and lecturer in the firearms field. He is published regularly in national and international publications.



Circle 4036 for More Information





Testing a "bulletproof vest" in Washington, DC, in 1923 contrasted with the equipment of a modern law enforcement tactical team

ody armor technology continues to improve, providing more protection in more wearable designs. This year's body armor update also brings good news concerning the availability of government funding. We'll finish up with a look at the immediate future of body armor.

#### The State of the Industry

"We continue to see advancements in soft body armor solutions, including new and more innovative carrier designs, state-of-the-art ballistic systems and more complementary accessories such as hard armor plates, helmets and shields which are defeating today's threats and increasing safety, first and foremost, while also enhancing officer wearability and performance tremendously," says Michael Foreman, EVP of International Business Development, Federal Sales and Marketing, Point Blank Enterprises.

"This new generation of protective solutions offer multifunctional; multicompliant; and, equally important, lightweight capabilities which help to increase comfort without ever compromising stopping power:

 The latest ballistic packages are integrating cutting-edge polymer science,

# Body Armor Update: 2015

The 22nd Annual Report on the Latest Advances in Ballistic Armor Technology and Design

#### Rebecca Waters

next generation fiber technology and unique unidirectional engineering which enable extraordinary protection, flexibility, mobility and coverage. These systems are highly effective against fragmentation, with minimal back face deformation, and they meet/exceed multihit and special threat performance protocols.

• Body armor can only safeguard lives if it's worn, so critical developments in technology have also focused on lighter and thinner packages which boost officer wear rates. Groundbreaking advancements in material and weaving applications are helping to meet the growing call for more comfortable vests."

#### **Funding**

The availability of funding is not much better than we've seen in the past couple of years; however, there is a bright spot on the horizon. The Bulletproof Vest Partnership Grant program which expired at the end of fiscal year 2012 was reauthorized in May and Congress' appropriations were estimated to be just over \$22 million in 2015 (down from its peak of \$30 million in 2010).

#### A Perfect Fit

Selection of body armor is, to some extent, a trade-off between ballistic protection and wearability, the newly published Selection and Application Guide to Ballistic-Resistant Body Armor for Law Enforcement, Corrections and Public Safety (NIJ Guide-0101.06) notes. The

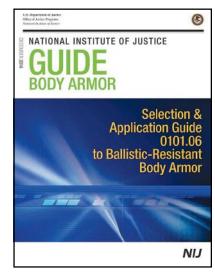


#### BODY ARMOR UPDATE

weight and bulk of body armor are generally proportional to the level of ballistic protection it provides; therefore, comfort generally decreases as protection level increases. Agencies should strive to select body armor their officers will wear and which is consistent with their ballistic protection requirements. The temptation to order armor which provides more protection than realistically needed should be

resisted because doing so may increase the likelihood that the armor will not be worn routinely.

With proper fit, armor should ensure maximum coverage without hindering an officer's mobility or ability to perform required job functions. Although comfort is a subjective term, increased comfort through proper fit is an important objective. NIJ funded research suggests that armor fitted



After 14 years, the
National Institute of Justice has
recently released their newest
body armor selection and
application guide.

by the manufacturer while working with agency representatives is the most comfortable for officers.

At the NIJ's request, an American Society for Testing and Materials (ASTM) International committee which included law enforcement and correctional officers - developed and published ASTM E2902-12, Standard Practice for Measurement of Body Armor Wearers. Its purpose is to make the process for measuring officers being fitted for new armor more consistent. The NIJ has a contract with ASTM to provide access to this and other law enforcement specific standards at no cost to any verified public safety agency. For further details about access to this service, E-mail asknlectc@justnet.org from a valid E-mail address, demonstrating that you are a current active member of a U.S. federal, state, or local law enforcement, corrections or forensics agency.

#### **Deciding What to Buy**

The heart of NIJ Guide-0101.06 deals with selecting and purchasing body armor. A number of different considerations come into play when deciding which model of body armor will best fit an agency's or an officer's needs. Besides protection from physical injury, preferences in body armor design features and the suitability for different body types are also taken into account. The considerations also include the services which a supplier



**Circle 4040 for More Information** 



offers, such as disposal of used armor, as well as the costs and the availability of grant funding to offset agency costs.

With regard to the purchase of body armor, the Guide notes that using a competitive process involving several bids from different suppliers tends to provide the best value. Obtaining objective information on body armor performance on which to base purchasing decisions can be challenging. Suppliers will naturally tend to present their models in the best

possible light which makes comparisons between competing models difficult. The NIJ Compliant Product List identifies armor which agencies can be confident will provide the appropriate level of protection, allowing for comparisons based on cost and other less critical considerations.

Procurement documents for equipment should always ensure that purchase specifications are clear and unambiguous. At the same time, overspecification should be avoided. For example,

identifying a specific product instead of a level of protection may tend to eliminate competition and drive up costs. Rather than going with the lowest price, agencies should consider best value purchasing. This will enable the agency to buy from the supplier offering the armor which best meets its needs.

#### **Care and Maintenance**

The NIJ's guide to body armor reports that frequent inspections and proper care of body armor help maintain the integrity



- Solid Carrier Available in 11 "stock" colors: Black, Navy, Gray, French Blue, Light Blue, E-Blue, White, Red, Spruce, Brown and SilverTan. Sizes: XS-5X
- 2-Tone Carrier Available in 6 "stock" colors: Royal/Black, Royal/Navy, Yellow/Black, Yellow/Navy, HVL/Black and HVL/Navy. Sizes: XS-5X

At Mocean we design and manufacture our performance apparel with the attitude that function dictates form. This attitude is supported by us, listening to you and our drive to build smart designs into performance apparel. Daily, we practice the art of perfecting our fit to human form; and the complexity of function and how we simplify it, benefits you. We use only the best materials to make our products and if they don't exist, we create them.

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# Point Blank Enterprises Now Offering a New Body-Worn Camera Solution – IRIS

Point Blank Enterprises, a leader in the production of soft body armor and related protective solutions, has announced the launch of its first ever body-worn camera solution, the Intelligence Retrievable Incident System (IRIS), designed to meet the growing demand for law enforcement agencies to provide a visual and audio record of officers' interactions with the public.

As more and more agencies across the country seek to comply with Body-Worn Camera (BWC) Policy and Implementation Programs (PIP), Point Blank's latest IRIS solution offers an effective approach to achieving agency goals. Preliminary evidence, including a 2013 report from the Department of Justice (DOJ), has shown that the presence of body-worn cameras helps to strengthen accountability and transparency, assists in deescalating conflicts, and can result in more constructive encounters between the police and members of the community. Point Blank has brought forth a viable BWC offering which incorporates innovative technology and "best practices" training for officers who are required to use this equipment in performing their duties.

Point Blank has developed a Gen II camera with multiple cutting-edge capabilities which provide much needed flexibility and can easily integrate with an officer's protective vest, helmet, uniform, etc. Among IRIS' primary components: a push to talk for two-way radio speaker; an HD camera for still photos; audio only recording; a power on and off switch; a photo sensor for infrared light; an infrared light; true viewing angle; a record button; a two-way radio speaker plug; HDMI and USB output; and file tagging.

Michael Foreman, EVP of International Business Development, Federal Sales and Marketing at Point Blank Enterprises, stated, "Now more than ever, in the wake of events that have commanded national attention, we are seeing the rising call for officers to wear cameras. This call for increasing police accountability and public awareness is being reinforced by the DOJ's ongoing investments in programs and equipment. With Point Blank's expanding reach into the LE market; our body armor designs, systems and accessories; as well as

strategic industry relationships, it seemed only natural for us and a timely opportunity to develop and deliver the unique IRIS solution. I've been on both sides of the fence in terms of being a sworn officer and a civilian, and I understand the importance of building positive communications and trust between LE professionals and the communities they serve in order to maintain the security and safety of all. I believe IRIS adds yet another dimension to Point Blank's commitment to safeguarding our society."

The IRIS (which is available to officers nationwide through DOJ grant programs and the Edward Byrne Memorial Justice Assistance Grant Program) offers unparalleled features, including a 20 vs. 16 megapixel HD image sensor and 1296p/1080p / 720p/480p; supports up to 64GB video storage; a built-in two inch TFT LCD display; ruggedized construction for operation in adverse conditions; impact-resistant up to six feet; submersible in water up to 15 feet; easy to use one button recording; up to 30 seconds of pre-/post recording; prerecord audio disable option; 140° viewing angle; two batteries, one battery for 6.2 to 6.6 hours (polymer battery); a high performance and specialized DSP video chip set; auto IR turn on/off up to 45 feet in total darkness; and an optional built-in GPS/WIFI.

In response to meeting agency specifications which require the natural view of the officer, Point Blank will also offer the following upon agencies' requests: an option to disable the night vision feature and an option to reduce field of view.

Mr. Foreman continued, "We see opportunities to redefine the bodyworn camera market and provide law enforcement officers with the advanced equipment and knowledge they need to better perform their duties. Safeguarding the lives of our men and women in uniform and ultimately our communities remains the company's number one priority and that requires us to continually go to market with transformative solutions such as what we're introducing today."

For more information, please visit Point Blank's Web site at www.pointblankenterprises.com.



#### **Kevlar® Turns 50**

This year, DuPont Co. celebrates the 50th anniversary of the invention of Kevlar. Body armor applications have seen about a 20 percent improvement in performance and about a 20 percent reduction in weight since the earliest applications of the material, Karl Chang, applications development engineer said. Stab-resistant Kevlar vests, which were introduced about ten years ago, have dropped from about 4.7 pounds to about 1.9 pounds.

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Nevertheless, Nathan James' report, Body Armor for Law Enforcement Officers: In Brief, for the Congressional Research Service revealed data from a survey of law enforcement officers conducted by PERF suggesting that law enforcement officers may not be properly caring for and maintaining their body armor. "Only nine percent of law enforcement officers reported that their agency conducts inspections for proper maintenance of body armor. Nearly 60% of law enforcement officers surveyed by PERF reported that they stored their body armor by hanging it on a clothes hanger, despite the fact that many manufacturers and department policies recommend that body armor should be stored flat to best sustain its performance in the long run. And, 65% of surveyed law enforcement officers did not know that moisture reduces the ballistic protection afforded by body armor." The NIJ recommends inspecting

of the ballistic panels and the carrier.

The NIJ recommends inspecting body armor regularly for possible damage and details proper cleaning and storage techniques; most notably, advising against storage in direct light, in a low airflow environment (such as the bottom of a locker) or in a potentially extreme hot/cold environment (such as the trunk of a vehicle). A copy of the Guide can be downloaded at https://www.ncjrs.gov/pdffiles1/nij/247281.pdf

Circle 4047 for More Information



#### **New Ballistic Protection Products**

#### Angel Armor™ (armor.angelintelligence.com)

Angel Armor's concealed Modular Ballistic Barriers seamlessly adapt to any setting through custom configuration and are engineered to provide handgun protection. These armored panels provide physical security for walkways, entrances and open spaces for maximum safety.

Truth Series ballistic trauma plates provide handgun and special threat protection. The Truth Series flaunts an ultralightweight, semirigid design available in a variety of cuts, sizes and stylized graphic options.

#### **Armor Express** (www.armorexpress.com)

Armor Express' thinnest ballistic offering, the Razor™ gives officers protection in a lightweight solution and is built to match NIJ 0101.06 certification.

An advanced combination of slim construction, lightweight fibers and strength, the Vortex™ offers a versatile ballistic package. The Vortex armor has been built to match the company's in-house special threat ballistic testing and is capable of stopping advanced rounds.



This new lightweight expandable monopod attachment transforms a Baker Ballistics MRAPS shield into a stationary armored fighting position.

#### **Baker Ballistics. LLC** (www.bakerballistics.com)

Baker Ballistics has introduced a lightweight carbon fiber "Monopod" capable of transforming its popular man carried MRAPS high-speed mobile models of rifle protective ballistic shields into stationary armored fighting positions - especially useful while covering fellow team members during tactical movements by assisting the application of well aimed suppressive or selective firepower.

A long gun equipped MRAPS or MRAPS-IV shield operator has the dominating advantage of delivering accurate shot placements from behind protection afforded by composite NIJ levels III and IV rifle protective armor shields.

#### Blauer Manufacturing Co., Inc. (www.blauer.com)

The ArmorSkin® TacVest™ tactical vest converts your existing concealed body armor carrier into an easy to wear tactical gear outer carrier. With TacVest, any ordinary undercover body armor becomes a "go vest" - throw it over your head, zip one side and go. Multiple rows of MOLLE (front and back) hold cuff cases, mag pouches and all your other tactical gear. The TacVest is designed with stretch side panels for added range of motion.

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### Condor Outdoor Products, Inc. (www.condoroutdoor.com)

The Condor Sentry Plate Carrier updates the classic Compact Plate Carrier. Employing the new Laser Cut System, the LCS Sentry is 30% lighter than its traditional MOLLE counterpart. With a more comfortable performance fit while holding standard plates, quick cinch adjustments

for the front, and hook and loop adjustments on the shoulders, the LCS Sentry is ideal for rapid response situations.

### GH Armor Systems (www.gharmorsystems.com)

The Atlas tactical vest series includes three lightweight, high-speed solutions built on a shooter's cut platform which focus on mobility and modularity. The se-



The new Condor Sentry Plate Carrier is 30% lighter than its traditional MOLLE counterpart.

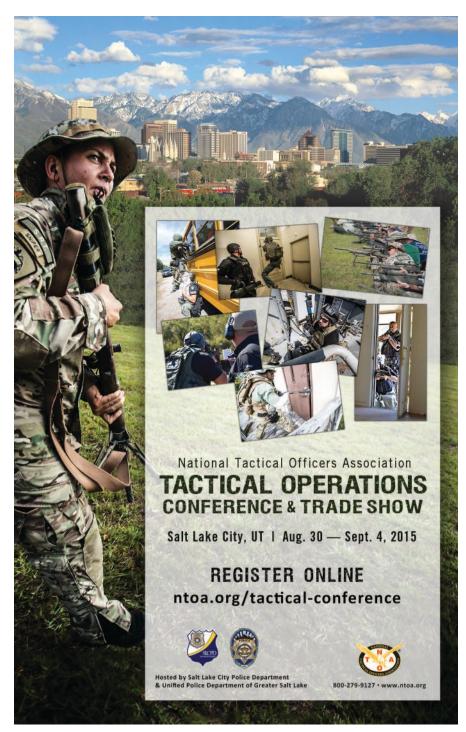
ries consists of the Atlas T3 Plate Carrier, Atlas T5 Extended Coverage and the Atlas T7 Full Coverage tactical vests. Designed specifically for operators who require a combination of lightweight, protective coverage and mission specific modularity, accessory components are interchangeable amongst all Atlas models with optional, removable, quick release functionality.

# Intersport Group, Inc. (www.intersport-group.com)

Intersport Group has produced a custom exterior carrier program. These carriers are made of 500 D nylon which is an optimum grade for durability and comfort, and include a host of features and solutions to wear issues. The core feature of the program is the flexibility of the design and fit. Purchasers may choose each feature and may also select from stock fabric colors or Intersport Group will custom dye the fabric to match your department's shirts. End users are able to easily select the proper body size; a full custom fit upper and lower body – is also available. A built-in suspension system helps to keep the carrier in place.

# Instant Armor, Inc. (www.instantarmor.com)

Instant Armor has introduced a new personal shield, weighing only 8 1/2 lbs. and measuring 19" x 34". The Spartan IIIA™ Shield folds in half for easy storage, yet deploys in 15 seconds. The rigid armor panels are covered with a protective rubberized coating and utilize Instant Armor's exclusive harness system and "Gladiator Grip™.



**Circle 4052 for More Information** 



The new custom exterior carrier program, from Intersport, offers a myriad of features and choices for customizing any agencies' carriers.

KDH Defense Systems, Inc. (www.kdhdefensesystems.com) KDH has introduced its new Fearless line of ballistics, NIJ 0101.06 certified, the Level II is a true .74 psf and .20 inches thick, while the Level IIIA is .92 psf and .23 inches thick (as certified by independent lab tests). It has been tested to the FBI 4.1, LAPD, and DEA protocols.

#### Mocean (www.mocean.net)

Mocean's Style #0568, 2-Tone External Vest Carrier is made of 500 denier CORDURA® nylon. The external vest car-

#### PoliceArmor.org

Law enforcement and corrections officers have a new resource for determining how to purchase high quality equipment which could ultimately save their lives. PoliceArmor.org features news and information on body armor which meets the standards set forth by the NIJ. The NIJ and the Bureau of Justice Assistance (BJA), both components of the U.S. Department of Justice's Office of Justice Programs, have teamed up to offer tips on how to select, purchase, wear and care for body armor. The NIJ's National Law Enforcement and Corrections Technology Center (NLECTC) hosts the site. PoliceArmor.org highlights the NIJ's Compliance Testing Program and features targeted messages for law enforcement leaders, female officers and those working in corrections. It also includes reallife accounts of officers who survived potentially deadly assaults.









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Mocean's new 2-Tone External Vest Carrier allows you to wear your OEM body armor with factory vest over your two-tone (or solid) polo shirt.

rier is designed to allow officers to wear their original equipment manufacturer's body armor with factory vest over their two tone (or solid) short sleeve or long sleeve uniform polo shirt. The external vest carrier comes with 3M™ reflective piping across the chest and back with a hidden left chest zippered pocket. It is machine washable and dryable and is available in solid colors, as well as various two tone color combinations.

### Point Blank Enterprises (www.pointblankenterprises.com)

PBE's latest concealable carrier, the Executive (also called the T-shirt Carrier), is designed to eliminate the edges of the vest from being visible, offering an ultracovert carrier. Lightweight with a low



The new Executive Carrier is ultralightweight with an extremely low profile fit.

profile fit, this specially contoured vest fits ergonomically and allows the wearer to have optimum protective coverage with maximum maneuverability. The carrier is constructed of a durable stretch material which moves like a second skin and is ideal for around-theclock covert protection. It features a left and right side front zipper for easy donning/doffing; is made of stretch fabric for comfortable wear; and comes with antimicrobial moisture management. The Executive is available with PBE's Alpha Elite™ and SP+2LE ballistic packages.

Point Blank also recently debuted its Guardian and Hi-Vis crossover carriers. The Guardian is a front opening, multipurpose, light tactical carrier created especially for detectives and undercover narcotics agents. The vest features adjustable shoulders and side area, a center zipper for trouble-free donning/doffing, internal plate pockets and MOLLE and slick configuration, among other attributes. In contrast, the Hi-Vis carrier is specially designed for first responders who require personal safety gear with high visibility/reflective materials. Within minutes, the carrier can provide up to Level IIIA protection with the insertion of concealable ballistic systems. The responder can quickly don the newly converted vest while the ballistic panels remain comfortably suspended from the shoulders. This versatile vest provides instant protection, multifunctional utility pockets to hold emergency equipment and comfort in the most challenging environments.



**Circle 4055 for More Information** 



The new Guardian, from Point Blank, is a front opening carrier specifically designed to provide maximum protective coverage.

In partnership with Morgan Composites and Defense Systems, Point Blank debuted the new lightweight "bomb suit." The 4025 Elite Bomb Suit is designed to be used in hot climates and provides high performance protection against blast, im-

# BJA Launches the Body-Worn Camera Toolkit



The Bureau of Justice Assistance (BJA) has released the Body-Worn Camera Toolkit, an online clearinghouse of resources designed to support law enforcement professionals to plan and implement body-worn camera programs. This free resource consolidates and translates the growing body of knowledge about body-worn camera programs and technology. In direct response to the President's Task Force on 21st Century Policing, the BJA developed the toolkit to assist law enforcement agencies on implementing body-worn camera programs in a way which builds on the best research currently available, with input from criminal justice and community stakeholders.

The Web site's features include information, templates and tools focused on model policies and procedures, privacy considerations, lessons learned for implementation, and training needs. For more information, visit the Body-Worn Camera Toolkit at <a href="https://www.bja.gov/bwc/">https://www.bja.gov/bwc/</a> or E-mail askbwc@usdoj.gov.



pact, fragmentation and thermal effects while carrying out search, detection and disposal of improvised explosive device missions.

## PROTECH® Tactical (www.safariland.com)

PROTECH Tactical's SHIFT 360™ is an innovative, scalable armor system. In its simplest form, the SHIFT 360 is a sleek plate rack armor carrier. By adding accessories, such as panel inserts, outer cummerbund, yoke and lower abdomen/spine protection for a variety of configurations, officers can fully customize their armor for mission specific requirements. In addition, accessories such as hard armor plates,

ballistic belts, tactical pouches and a vest support system further complement the SHIFT 360's platform.

# U.S. Armor Corp. (www.usarmor.com)

U.S. Armor now offers CuTEC® copper thread technology in its concealable vests as a body armor carrier option. This material reduces prickly heat rash on an officer's chest or back, an uncomfortable condition which can take an officer out of the line of duty while it heals. The combination of copper ion thread technology with a layer of unique spacer fabric produces a body armor which eliminates moisture and odor causing/skin irritating bacteria.



PROTECH's SHIFT 360™ is a scalable armor system.

#### The Future

What does the future of body armor hold? "We will see stronger demand for the most advanced body armor packages that make it easier for officers to do their jobs, without compromising their protection," Foreman said. "Over the next year and beyond, lighter, more comfortable and higher performing solutions will emerge like we've never seen before."

That's what Moratex Institute of Security Technologies is promising from an unlikely substance – liquid. The Polish company is the latest to test a Shear-Thickening Fluid, or STF, which it says is not only lighter and more flexible than standard antiballistic materials, but provides a hardier barrier.

"Thanks to the liquid's properties," says Marcin Struszczyk, Deputy Director of the research institute, "we eliminate the threat of injury through body armor. We've reduced the deflection from four centimeters to one centimeter."

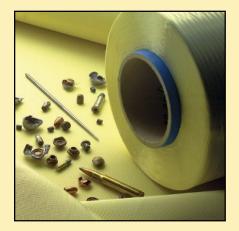
Curious about the "Iron Man Suit" we reported on last year? The program is progressing as planned, but "many significant challenges remain," says Army Gen. Joseph Votel, SOCOM commander. Powering the suit, allowing the operator freedom of movement, and view screens which don't have latency issues are three of the main challenges, said Anthony Davis, Director of Science and Technology at SOCOM. P&SN

Formerly the Editor-in-Chief for Forensic Magazine, Rebecca Waters is a freelance writer and editor.



Circle 4058 for More Information





#### **Creating Safety with Comfort**

Providing law enforcement with the best in personal protective equipment has always required a complicated balancing act between protection levels, weight, comfort and costs. To help in minimizing these trade-offs, Teijin Aramid recently made another leap forward with the launch of Twaron® Ultra Micro - the world's first ultramicrofilament fiber.

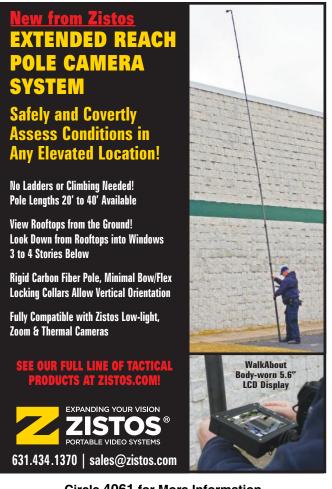
The challenge again was to reduce weight while maintaining the same level of protection and performance. Next generation Twaron Ultra Micro (a 550 dtex f1000 yarn) is a Twaron fiber which is thinner, yet provides more ballistic stopping power than any other para-aramid fiber currently available. Tests conducted on ballistic panels engineered with Twaron Ultra Micro proved that it is possible to achieve almost a 20% weight reduction - compared to the lightest solutions available today - and this weight reduction requires no trade-off in terms of ballistic performance. David Carlson, Sales Manager, Ballistics at Teijin Aramid, stated, "Twaron Ultra Microfilament will answer the ever growing demand for lighter weight

protection while also raising the bar with regard to increased fragment and bullet resistance."

The thinner, lighter ballistic panels made with Twaron Ultra Micro still meet the same requirements with regard to ballistic performance and Back Face Deformation (BFD). However, when ballistic performance of a vest is more important than weight reduction, a fabric at the same weight incorporating Twaron Ultra Micro performs significantly better in terms of ballistic performance and reduced trauma - fragment resistance is a full seven percent higher. "This innovative fiber provides peace of mind protection; no longer will law enforcement personnel need to feel uncomfortable to be safe", said David Carlson. To address even more demanding threats, fabrics made out of this ultrathin Twaron fiber can be combined with other products to create hybrid solutions to meet the ever changing needs for police and tactical professionals.

For more information, visit www.teijinaramid.com/ballistics.





# **ABOVE AND**

### "Above and Beyond..." salutes Sergeant Philip Gingerella of the Charlestown, RI, Police Department



#### Artwork by Don Lomax



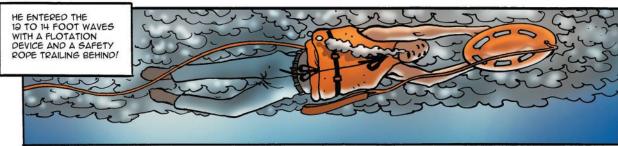
A FRANTIC 911 CALL RECEIVED BY THE CHARLESTOWN EMERGENCY DISPATCH CENTER, REPORTED A DISTRESSED BOOGIE BOARDER TRAPPED IN A STRONG RIP CURRENT 100 YARDS OFF SHORE! SERGEANT PHILIP GINGERELLA AND ADDITIONAL EMERGENCY RESPONDERS ARRIVED AT THE

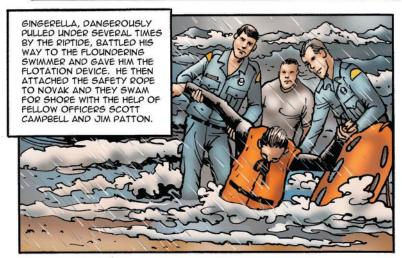
TWO RESCUE BOATS WERE DISPATCHED TO THE SCENE, BUT WERE DELAYED DUE TO THE ROUGH SEAS! WITH THE VICTIM, MICHAEL NOVAK, 55, OF SOUTH SALEM, NY, BECOMING WEAKER BY THE MOMENT, SOMETHING HAD TO BE DONE IMMEDIATELY!



APPLYING HIS 20 YEARS OF LIFEGUARD EXPERIENCE, SERGEANT GINGERELLA LEAPT INTO ACTION, STRIPPING OFF HIS UNIFORM AND PUTTING ON A LIFE JACKET.







THE NATIONAL LAW ENFORCEMENT OFFICERS MEMORIAL FUND HAS NAMED SERGEANT PHILIP B. GINGERELLA THEIR OFFICER OF THE MONTH FOR APRIL 2015 FOR HIS SERVICE ABOVE AND BEYOND!



THE END

#### 2014 NRA Law Enforcement Officer of the Year



Mark Vaughan Oklahoma County Sheriff's Department

On September 25, 2014, an employee with a commercial fresh foods distributor in Moore, Oklahoma, was suspended after an investigation into violation of work rules and harassment of employees. After leaving the company's human resources office, the employee drove to his apartment where he retrieved an 8-inch-long serrated knife, drove back to the business and crashed his car into a car parked in front of the business. He then entered the main office and attacked Colleen Hufford, the first employee he came upon, and murdered her by decapitation.

Hearing screams and the commotion of the attack, Mark Vaughan, CEO of the business and an off-duty reserve deputy with the Oklahoma County Sheriff's Department, decided he needed to take swift and immediate action. Quickly evaluating the tactical needs of the incident, he knew he could best respond if he had his patrol rifle. He retrieved it and sought out the suspect.

While Deputy Vaughan was moving into action, the perpetrator had moved on and sought another victim to attack. Finding Traci Johnson, he immediately attacked her and cut across her throat and the side of her face. Now within view of the suspect, Deputy Vaughan saw the ongoing attack and, with his rifle, shot the suspect and ended the attack.

There is no doubt that without the immediate valorous actions of Deputy Vaughan, the suspect would have claimed the lives of others. This was perhaps best summarized by Sheriff John Whetsel, who stated, "Mark put an end to the threat by shooting the suspect and saving the life of the second victim who was being actively attacked by the suspect. There is every reason to believe that the lives of untold others were saved who would have been targeted by the suspect if it had not been for Deputy Vaughan's actions."

Deputy Vaughan's heroic actions under the most stressful and confusing circumstances – and his decision to intervene and neutralize the suspect, even though it placed him in great personal danger – are a credit to himself, his department, and the community he serves, and are in keeping with the highest traditions of law enforcement.

As such, it is with great honor and pride that the National Rifle Association recognizes Deputy Vaughan of the Oklahoma County Sheriff's Office for his valorous actions by naming him the 2014 NRA Law Enforcement Officer of the Year.

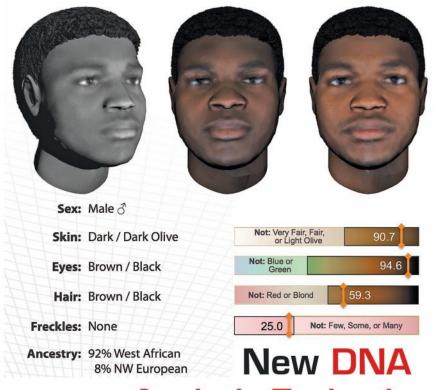
"The actions of Deputy Vaughan on September 25th were nothing short of heroic," said NRA President James W. Porter III. "Thinking quickly and clearly, he put an end to an unspeakable rampage. The National Rifle Association is honored to name Deputy Vaughan as NRA's Law Enforcement Officer of the Year."

NRA's Law Enforcement Officer of the Year Award was established in 1993 and recognizes an exceptional act or service by a law enforcement officer and is administered by the NRA Law Enforcement Division.



Scan this code with your smartphone or tablet to get more information about the NRA Law Enforcement Officer of the Year recognition. Forms for nominating candidates for the NRA Law Enforcement Officer of the Year Award may be downloaded at http://le.nra.org/documents/pdf/law/leoy.pdf.

For more information about NRA's Law Enforcement Officer of the Year Award and its Law Enforcement Division, call (703) 267-1632 or send an e-mail to LE@nrahq.org.



# Analysis Technology Could Help Solve Cold Cases

DNA Phenotyping is the prediction of physical appearance from DNA. It can be used to generate leads in cases where there are no suspects, or to help identify remains.

William Siuru, Ph.D., PE

n 2011, 25-year-old Candra Alston and her three-year-old daughter, Malaysia Boykin, were found dead in their apartment in Columbia, SC. The crime is still unsolved. The murders appeared to be of a personal nature and whoever did the killing may have been in conflict with Alston. There were no signs of a forced entry and investigators believe the victims knew their killer, or killers. That's about all that was established about the perpetrator(s) until now.

After four years, Columbia Police Chief Skip Holbrook hopes to finally solve the case since new details regarding the investigation are now available. Using a technology called DNA phenotyping, the Columbia Police Department has been able to release a computer-generated image of a "person of interest" who might have been involved in the crime, a possibly dark-skinned male with brown hair and brown eyes. This breakthrough used DNA collected from the scene of the crime.

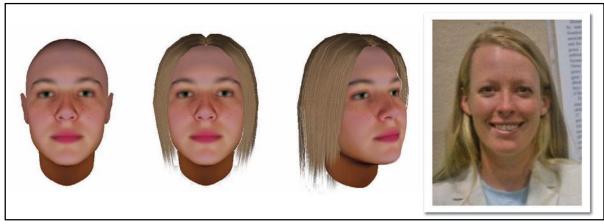
Over the past several years, Parabon NanoLabs (Parabon) in Reston, VA, with funding support from the Department of Defense, has developed the Snapshot™ DNA Phenotyping System. According to the company, Snapshot can accurately predict genetic ancestry, eye color, hair color, skin color, freckling, and face shape in individuals from any ethnic background – even individuals with mixed ancestry.

#### **Genetic Instructions**

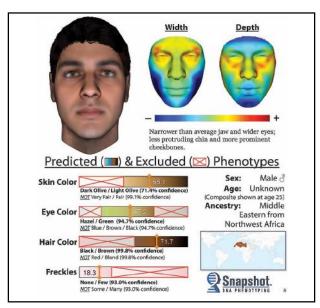
It turns out that DNA carries the genetic instruction set for an individual's physical characteristics which result in the wide range of appearances among people. By determining how genetic information translates into physical appearance, it is possible to "reverse engineer" DNA into a physical profile.

Snapshot reads hundreds of thousands of genetic variants, or "genotypes," from a DNA sample and uses this information to predict what an unknown person looks like.

Recent advances in DNA sequencing technology make it practical and affordable to read genetic content from DNA. This allows the creation of datasets which



A composite predicted profile created by Parabon's Snapshot™ illustrates the accuracy of this technology. The actual photo of the subject is shown on the far right.



Reports from Parabon NanoLabs include confidence estimates for Snapshot™'s trait predictions.

include both *genotypic* (genetic content) and *phenotypic* (trait) data for thousands of subjects. Beginning with large datasets comprised of phenotypes of interest and genotype data for thousands of subjects, Parabon's bioinformatics team performed large-scale statistical analysis on millions of individual SNPs (Single Nucleotide Polymorphisms) and billions of combinations thereof to identify sets of these genetic markers which associate with the given trait.

A SNP is a DNA sequence variation occurring commonly within a population in which a single nucleotide in the genomes differs between members of a biological species or paired chromosomes. This *mining* process can take weeks running on hundreds – sometimes thousands – of computers. In the end, the SNPs with the greatest likelihood of contributing to the variation observed in the target trait are culled for potential use in predictive models.

Using data mining and machine learning, Parabon produces statistical models which translate the presence of specific genetic biomarkers into forensically relevant trait predictions. The *modeling* phase further refines this set of SNPs to a final set which most accurately predicts the target trait. Models are validated against data held out for such testing and calibrated with all available data before being installed into the Snapshot architecture.

#### On the Money

Snapshot's trait predictions have been shown to be highly accurate in testing

thousands of out-of-sample genotypes. Because some traits are partially determined by environmental factors and not DNA alone, Snapshot trait predictions are presented with a corresponding measure of confidence. This reflects the degree to which such factors influence each particular trait. Traits such as eye color which are highly heritable, and not greatly affected by environmental factors, are predicted with higher accuracy and confidence than those which have lower heritability.

For example, Snapshot predicts pigmentation traits with an average accuracy of greater than 80% and its ability to discriminate between pigmentation extremes is considerably higher – often 99% or better. Even in cases where it is difficult to distinguish between two similar phenotypes (for example, hazel eyes versus green eyes), Snapshot can, with high confidence, exclude certain traits. For instance, Snapshot can, with confidence approaching 100%, predict that a particular subject does not have brown or black eyes.

#### Requirements

Snapshot requires less than one nanogram of extracted DNA, although 2.5 nanograms is ideal. From this, Parabon can produce a report with a detailed composite profile which can greatly narrow down the number of possible suspects and/or provide new investigative leads. Besides being ideal for cases for which there are no suspects, Snapshot can also be used to identify unidentified remains.

As to the case in Columbia, SC, the CPD has put out a composite drawing of the potential suspect and has asked citizens to contact Crime Stoppers if they have any information. While the case has yet to be solved, Snapshot has resulted in many new leads and they keep coming in. P&SN

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Bill Siuru is a retired USAF colonel. He has a Ph.D. in mechanical engineering from Arizona State University. His military assignments included teaching engineering at West Point, commander of the research laboratory at the U.S. Air Force Academy and Director of Engineering at Wright-Patterson AFB. For the past 45 years, he has been writing about automotive, aviation and technology subjects.



# Badge Cases, Gear Bags & Holsters

an RFID (Radio Frequency Identification)

chip embedded in them, thus making this

information vulnerable to identity theft.

Circle 4064 for More Information

# PRODUCT HIGHLIGHT

# STEARNS®

The Coast Guard approved Stearns Powerboat™ Jacket features a coated nylon shell jacket filled with PVC foam for a minimum of 15.5 pounds of buoyancy and an updated and adjustable, water-resistant design with reinforced wear points. It also features an integrated hood, multiple pockets with hook and loop closures; an expandable radio pocket; and is available in a variety of colors.

#### **Circle 4065 for More Information**





Sixteen holster fits for the GLOCK® 43 are now available. Included in these are the #105 Intruder® which is designed for both concealment and comfort. It is tuckable and adjustable for both height and cant. The holster back consists of top grain premium steer hide and the leather front component is finished with a supremely durable polyurethane film. Each Intruder is molded from genuine Kydex® sheet to exact specifications.

The **#031 Insider** contains design features to minimize bulk. It is made with a heavy-duty spring steel clip positioned high for deep cover. The leather is soft and unmolded.

The #019 Mini-Scabbard has been reduced to the barest of essentials, yet offers a secure grip on the handgun thanks to exact molding and an adjustable tension device. It will accommodate belts up to 1 1/2" wide.

#### **Circle 4068 for More Information**

#### **Police Apparel and Accessories**

#### 5.11 TACTICAL®

A lightweight option for hot and humid conditions, the **Pinnacle Polo** is built with 100% snag-resistant polyester which offers a breathable, lightweight, faderesistant shirt option. The polo's fabric is moisture wicking, quick drying and antimicrobial. The rotated seams on the shoulder and sides allow for wear under plate carriers and ballistic vests, providing a less bulky and more comfortable fit. It is available in charcoal, black, fatigue, range red, nautical and dark navy.



#### Circle 4066 for More Information

Tendo a

### TIFOSI OPTICS, INC.

Tifosi Optics tactical eyewear models feature decentered shatterproof polycarbonate lenses to virtually eliminate distortion; give sharp peripheral vision; and offer 100% protection from harmful

UVA/UVB rays.

New for 2015 are the **Ordnance**, **Talos**, and **Lore Tactical** models which feature frames made from Grilamid® TR 90 NZZ, a homopolyamide nylon characterized by an extremely high alternative bending strength, low density and high resistance to chemical and UV damage.

The **Talos Tactical Z87.1** eyewear has recently been tested and approved by the National Tactical Officer's Association.

#### **Circle 4067 for More Information**



#### **TRU-SPEC®**

The TRU-SPEC **24-7® Cool Camp Shirt** is constructed from a polyester spandex fabric which offers moisture wicking and wrinkle resistance. Quick dry properties, 50+ UV protection, a snap front placket for easy access to a holster, and angled underarm vents for increased ventilation are featured.

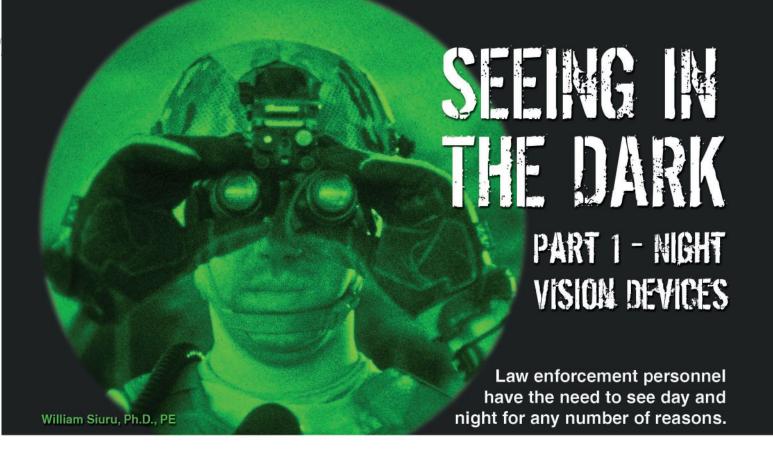
Circle 4069 for More Information



ELBECO, INC.

The **UFX Ultralight Color Block Polo Series** is 30% lighter in weight than its competition. It features antimicrobial and UV protection technology; underarm mesh vents; mic loop options on the placket and shoulders; a chest pocket with zipper closure; and 3M™ reflective striping.

Circle 4070 for More Information



he surveillance of criminal activity, accident investigations, searching for fugitives, search and rescue, locating evidence and tactical operations all require much more than a flashlight or scene lighting.

Basically, there are two types of technologies now being used for "seeing" in the dark - Night Vision Devices (NVDs) and Thermal Imagers (TIs). With NVDs, like digital cameras and the human eye, when visible light hits an object and bounces off of it, a detector receives it and turns it into an image. NVDs take in small amounts of visible light, magnify it greatly and project it onto a display. Thus, these devices are also referred to as image intensification, or I2. Thermal imagers, which will be discussed in detail in Part Two, detect long wave infrared, or heat, so a TI detects objects and people by the amount of heat they emit.

#### **How It Works**

Night vision devices depend on available ambient light – moonlight, starlight or artificial light – entering through the front lens. This light is then sent to a photocathode tube which changes the light's photons to electrons. The electrons are amplified via an electrical and chemical process and then sent to a phosphorus screen which changes the amplified electrons back into a visible, green color image which can be viewed in the eyepiece.

Night vision devices must receive suf-

ficient light to work so they are useless in complete darkness. Also, they are not very useful during twilight hours when

#### Categories

Night vision devices are categorized by the generation of technology used –



This Korean War era M3 sniper scope is a good example of early active infrared night vision equipment. Shown assembled on an M1 carbine, the rubberized canvas backpack carried a large 12 volt battery to energize the 20,000 volt sniper scope.

there is too much light for them to work effectively, but not enough to see with the naked eye. NVDs should not be used during the day since they can be damaged by exposure to bright light. Gen I, Gen II and Gen III designations given by the U.S. Army. The quality of the image and price increase with each step up in generation because of a better image intensifier tube which is the heart of

every NVD, as well as other features. Gen 0 NVD sniper scopes used during World War II and in Korea were not true image intensifiers, but rather image converters which required a source of invisible InfraRed (IR) light mounted on or near the device to illuminate the target. The U.S. military may designate NVDs currently under development as Gen 4, but no definition for Gen 4 presently exists. A Gen 4 designation was redefined after the Army found technology at the time did not meet their strict requirements. You will also see designations like Gen II+ and Gen III+ which indicates an advancement over the original specifications.

#### Gen I

First generation devices, introduced during the Vietnam War, use an S-20 photocathode. These image intensifiers typically amplify light around 1,000 times. While requiring moonlight to function properly, their biggest benefit is affordability – typically under \$1000 with some as low as a couple of hundred dollars. Even the cheapest Gen I NVD (like those sold on Amazon) provides some nighttime capability and some night vision is always better than none. They pro-

vide moderately bright and sharp images at a low price.

In Gen I NVDs, three image intensifiers are connected in a series, making them longer and heavier than subsequent generations. Gen I NVDs produce an image which is clear in the center of the field of view, but can be a bit blurry around the edges. Gen I equipment is also subject to "blooming" - distortion caused by excessive light. Depending on lighting conditions, the useful range is about 75 yards. Gen I units also use built-in IR illuminators which are always on, making them very visible to anyone using another NVD. They have a shorter battery life and a life expectancy of about 1500 hours. The technology is somewhat fragile, so even the most durable weapon mountable devices can be damaged by rifle recoil if not properly attached.

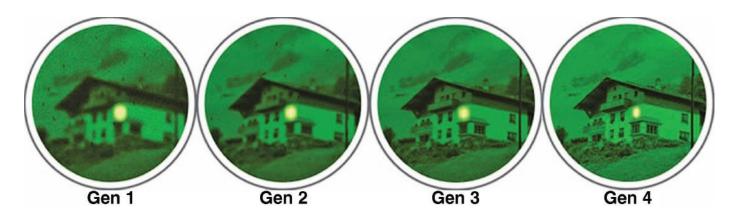
#### Gen II

This is a huge step up from Gen I equipment, but it can cost up to \$1,000 more. Gen II uses an improved image intensifier tube with Micro-Channel Plate (MCP) and S-25 photocathode, resulting in a much sharper, brighter image without image distortion on the

outer one third of the viewing area. Light amplification is around 20,000 times and is less susceptible to "blooming." Increased illumination in low ambient light, such as moonless nights, means that Gen II NVDs can be used more covertly since IR illumination is not needed. Range is about 200 yards, depending on the model. Gen II devices are more reliable, have a longer battery life and a life expectancy of about 2,000 to 4,000 hours. The MCP significantly reduces the size and weight of the image intensifier tubes resulting in smaller night vision goggles and handheld devices.

Later advancements in Gen II technology resulted in "Gen II+" devices. Improvements included better optics, SuperGen® tubes, improved resolution and better signal to noise ratio which is close to Gen III devices. There are different quality levels, but good Gen II devices are markedly closer to Gen III in performance than Gen I.





A comparison of image quality between the generations of image intensification technology (OnPoint Firearms)

#### Gen III

Third generation NVDs use the Gen II's MCP, but with a Gallium Arsenide (GaAs) photocathode to increase the sensitivity to light from the near infrared range of the spectrum. This enables it to function at greater detection ranges of up to 300 yards and improves system performance under low light conditions. The MCP is coated with an ion barrier film for

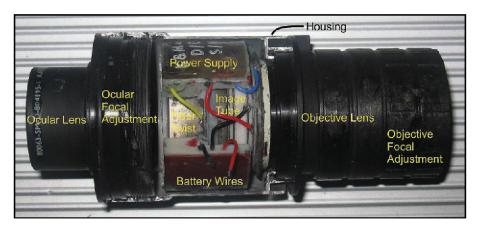
increased tube life up to 10,000 plus hours with the best reliability and durability. The ion barrier also results in fewer electrons passing through, diminishing the improvement expected from the GaAs photocathode. Because of the ion barrier, the "halo" effect around bright spots or light sources is larger, too. The light amplification is also improved to around 30,000-50,000 times. Although power consumption is higher

than Gen II, Gen III devices typically operate without IR illumination which is a plus for covert operations.

There are several grades of Gen III which are all outstanding. The best are autogated Gen IIIs which provide far superior performance in lighted areas – such as urban environments – or anywhere there are artificial lights present, such as vehicle lights, streetlights, houselights,



**Circle 4073 for More Information** 



This AN/PVS-5C night vision device has been cut in half to display its various functional components.

etc. Autogating constantly electronically reduces the "duty cycle" of the photocathode voltage by very rapidly switching the voltage on and off. This maintains the optimum performance of the tube while protecting the tube from additional dam-

age and protecting the user from temporary blindness. Autogated Gen III image tubes can operate in all light conditions and, with proper care, will last an extremely long time.

#### Gen IV

The definition of what constitutes Gen IV is still ill defined. There is currently no agreement among the military, law enforcement and manufacturers on what to call these devices. Thus, they also go by titles like Gen III+. Omnibus-VII and Filmless and Gated I2. These offer excellent viewing and also feature autogating. Removing the ion barrier film from the MCP allows significant increases in target identification at longer ranges – up to 1000 yards under the right conditions and functioning under very low light conditions. The signal to noise ratio is significantly increased as a result of the optimized filmless MCP for better image quality under extremely low light conditions. The contrast adjustments are better, too, making the device perform better under all light conditions and the "halo" effect is almost nonexistent. The downside to removing the ion barrier means a diminished device life expectancy, from 20,000 hours to 15,000 hours. As expected, Gen



#### NOPTIC Thermal Imaging Camera

The NOPTIC camera is designed to mount on top of a police spotlight. This patented design allows the police officer to pan and tilt the camera using the familiar spotlight handle inside the patrol vehicle. The robust NOPTIC thermal camera helps officers locate suspects and missing persons. The camera does not need the spotlight to be on in order to produce an image, unlike night vision systems which require ambient light to operate. The



NOPTIC thermal camera works in complete darkness. Officers can turn their lights off and search for heat signatures in complete stealth. Tactical teams benefit from stealth approaches and increased situational awareness. The camera connects to most in-car video monitors and MDTs. You can use the NOPTIC camera to record video using software and cables provided as part of the system. Unlike a handheld thermal imaging camera, the NOPTIC camera is mounted to your patrol car so you will never forget it at the station or leave it behind at a scene. It is always on and at your fingertips. The camera is tested to operate within the harsh conditions of police work and at temperatures between -40° F and +176° F. At temperatures below 40° F, an integrated heater keeps the lens free of condensation and ice.

For more information, contact MSM Public Safety at mike@msmpublicsafety.com or visit www.msmpublicsafety.com.

Circle 4076 for More Information

IV technology is the most expensive.

#### **Digital Night Vision Technology**

Digital night vision devices work like a digital camera by detecting both visible and infrared light and amplifying it digitally. A digital night vision device will use either a CCD (Charge-Coupled Device) or a CMOS (Complementary Metal-Oxide Semiconductor) as a light sensor which produces the electronic signal which is amplified. Newer digital devices in the \$600-\$1,000 range have the best image quality to cost ratio. They can be used both in daylight and at night so they are more versatile. Many have a recording capability, a feature often desirable for law enforcement. Images can be recorded with standard NVDs, but this requires attaching a camera to the night vision scope.

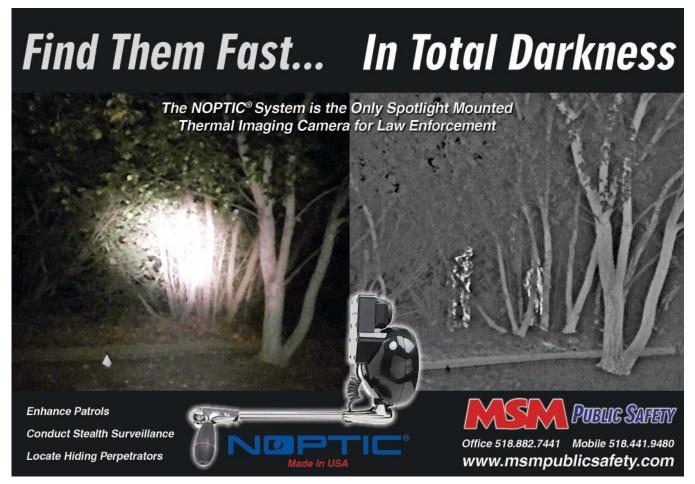
Digital devices require more power so they go through batteries much faster than standard devices. Typical battery life is 5-10 hours compared with 40-60 hours for standard NVDs. Since they, too, amplify light, they need some light to work. The best digital devices do not perform as well as top quality standard technology under

> ...a high power IR illuminator will significantly improve the versatility of a standard or digital device.

low light conditions, making IR illumination necessary for low light conditions.

Speaking of IR illumination, while it might not be advisable in many situations, a high power IR illuminator will significantly improve the versatility of a standard or digital device. To minimize the chance of detection, use a longer wavelength IR illuminator. Many IR illuminators put out a bit of visible red light, but longer wavelength illuminators are completely invisible to the unaided eye, (however, not to night vision devices). Also, use a full eyecup to create a seal with your face so that no light leakage can highlight your position to anyone with night vision capability and, possibly, even to those without it. P&SN

Bill Siuru is a retired USAF colonel. He has a Ph.D. in mechanical engineering from Arizona State University. His military assignments included teaching engineering at West Point, commander of the research laboratory at the U.S. Air Force Academy and Director of Engineering at Wright-Patterson AFB. For the past 45 years, he has been writing about automotive, aviation and technology subjects.





#### A worthwhile investment of time and money?

William Siuru, Ph.D., PE

ncertainty over Federal Aviation Administration (FAA) regulations plus privacy issues, including the use and storage of retrieved images, have prevented many agencies from acquiring UAVs. Even the few which have UAVs have not used them for serious police duty – if they used them at all. Compounding the problem – partly because of Ferguson, MO – is public pressure for police to scale back on "militarization" as drones are viewed because of widespread military usage.

#### What's Needed?

To fly an aircraft (manned or un-

manned) in U.S. airspace, you need some level of FAA approval. Congress has given the FAA until September 30, 2015, to come up with a plan for "safe integration" of UAVs into the national airspace. The FAA is still developing the regulations, policies and standards for a wide variety of UAV users. It says this a very complex task and wants to ensure it gets it right.

The FAA estimates that there will be as many as 7,500 small drones flying in the skies over the US by 2018. Some experts say it could be many more and the new UAS industry could produce as many as 100,000 jobs. To capitalize on an anticipated boom, universities, colleges, community colleges and commercial training concerns are offering UAV education programs.

Some drone instruction programs are small and grant technical certificates or associate degrees, like Cochise College in Douglas, AZ. Several universities, like the University of North Dakota, Embry-Riddle Aeronautical University and Kansas State University-Salina, offer four year programs leading to a bachelor's degree. Embry-Riddle even offers a master's degree in unmanned systems. There are also UAV oriented courses offered by commercial concerns. Some are quite well thought-out and taught by qualified



The Grand Forks (ND) Sheriff's Department, which has a fleet of four UAVs, was the first to be given federal approval to fly at night. They have been used to get an aerial perspective of crime scenes, looking for missing people, looking for jail escapees in a giant cornfield and gathering forensic evidence in a rape case.

instructors. Others are the fly-by-night type designed to make a quick buck in this now hot drone market; for example, online courses where students are sent a model helicopter for "flight training." Most of these courses advertise they qualify for the GI Bill. The bottom line is:

#### **Questions Remain**

caveat emptor.

The current uncertainty in FAA rules makes it difficult to develop curricula for a profession whose rules are not yet fully defined. For this reason, Ben Trapnell, founder of the University of North Dakota's unmanned aircraft program,

says, "Its curriculum was based on a best guess on what exists now and what would exist in five years." The goal is to get students to learn how to learn, so they can adapt when rules come.

Another current problem is that the FAA says its rules barring commercial use of drones apply to teaching programs as well, effectively prohibiting hands-on flight training, so the schools are teaching drone pilots using simulators, textbooks and novel work arounds. For example, Cochise avoids the no fly rule by stringing a drone from a boom truck to teach students how to use its camera and sensors in addition to drone simulators. Embry-Riddle augments simulator training by having students fly drones indoors or tethered to the ground with

heavy-duty fishing line. Often, much of the hands-on flight training comes from flying remote control hobby aircraft, usually rotary wing remote control models.

#### Worthwhile?

Even with the current confusion and limitations, UAVs are probably still a worthwhile investment for departments and individual officers. They can be operated for a fraction of the cost of a full-sized helicopter and they cost thousands, rather than millions, of dollars to purchase. Even departments without aviation departments will be able to afford UAVs. Larger departments may opt

for more sophisticated ones, especially if they already have an aviation department with qualified pilots. Smaller departments will probably use small UAVs which still may require operators to be trained, but not be licensed pilots.

While training may not now include flight training, UAV course work should include the ingredients needed to help a department set up and operate a UAV program. This should include how they work, as well as characteristics and performance of individual UAVs, so the best ones are chosen for particular applications. Also, a detailed knowledge of FAA rules and application procedures is vital.

Training means more than just being able to fly the drone; it also means training on how to choose, install and operate onboard sensors and evaluate the information they acquire. Also needed is training on control and navigation systems.

#### Legalities

Police agencies using UAVs also need to be trained in the legal use of drones for surveillance, including when and where they can be used, information they can collect and the retention of images as evidence. As with the flying of drones, the legal aspects of drone surveillance are still ill defined. Numerous states are considering legislation and a small number have passed legislation regulating the use of drones including by law enforcement. The ACLU says drones should be deployed by law enforcement only with a warrant or in an emergency or when there are strong grounds to believe that the drone will collect evidence on a specific criminal act. California has passed legislation to this effect. Images should be retained only when there is reasonable suspicion that they contain



The Seattle Police Department had purchased two Draganflyer X6 Helicopter Tech drones with money from a regional Homeland Security grant, but abandoned their use when residents and privacy advocates protested.

evidence of a crime or are relevant to an ongoing investigation or trial. P&SN

Bill Siuru is a retired USAF colonel. He has a Ph.D. in mechanical engineering from Arizona State University. His military assignments included teaching engineering at West Point, commander of the research laboratory at the U.S. Air Force Academy and Director of Engineering at Wright-Patterson AFB. For the past 45 years, he has been writing about automotive, aviation and technology subjects.



# TECHNOLOGY



New Weapon **Light for GLOCK® Pistols** 

Streamlight® Inc. recently introduced the TLR-6, an ultracompact, extremely lightweight weapons light with a red laser designed to attach to the trigger guard of the GLOCK 42 and the GLOCK 43 pistols.

The TLR-6 uses the latest in C4® LED technology to deliver 100 lumens, 2,000 candela and a beam distance of 89 meters. It features an integrated battery door which permits batteries to be replaced while the light remains mounted on the gun and eliminates the need to resight the laser after a battery change. The light is manufactured from durable, impact-resistant engineering polymer, measuring 2.30" long and weighing 1.27 ounces.

**Circle 4081 for More Information** 

#### SIG SAUER Introduces **FMJ Centerfire Pistol Cartridges**



SIG SAUER Inc. continues to expand its popular Elite Performance Ammunition line with the

Jacket (FMJ) centerfire pistol cartridges for practice and competition shooting. The new SIG FMJ ball ammunition is designed to approximate the performance of corresponding Jacketed Hollow Point (JHP) loads, making the transition from target ammo to carry ammo seamless.

The SIG FMJ pistol ammunition is now available in the following calibers and bullet weights:100-gr. .380Auto; 115-gr. 9mm Luger; 124-gr. .357SIG; 180-gr. .40S&W; 180-gr. 10mm; and 230-gr. .45Auto.

Manufactured to meet or exceed SAAMI specifications, the SIG FMJ centerfire pistol cartridges feature solid brass cases and durable copper jacketed bullets which stay with the lead at impact.

Circle 4083 for More Information

#### **Night Sights for** Kahr® C-Series Pistols

Kahr Firearms Group has announced that three of their most popular 9mm models, the CM9093N, CW9093N, and the CT9093N, will now be available with night sights. All three models feature a black polymer frame, matte finish stainless steel slide, a drift adjustable white bar dot combat rear sight and a pinned in polymer front night sight.

The CM9 features a 3.1" barrel length; an overall length of 5.42"; a slide width of .90"; a height of four inches"; and weighs in at just 14 ounces. It has a 6+1 capacity and comes with one six round flush floor plate magazine.

#### **Circle 4080 for More Information**



From Next Generation Tool Co. comes the Portable HD Automotive DVR for recording what actually happens during driving incidents. Multifunctional as a DVR, digital camera, and microphone, it features loop recording and motion activation; a wide viewing area; a color screen; auto on/off; is both 12 V and battery operated; and offers excellent night vision.

Circle 4082 for More Information



SureFire has released its first autoadjusting flashlight - an IntelliBeam™ version of the popular P2X Furv. This new Fury with proprietary IntelliBeam™ Technology (P2XIB) features an intelligent sensor which continuously and seamlessly adjusts light output by constantly evaluating your surroundings. This model always delivers the right amount of light for the task at hand.

This cutting-edge technology also helps preserve dark adapted vision by evaluating the environment before turning on, so it never activates on high in close quarters. If you're in an open field, you'll get all 600 lumens. If you're prepping gear or loading a vehicle, it will dial in the necessary output based on the environmental feedback it receives - down to as little as 15 lumens. Just press or click the tailcap switch to engage this auto-adjusting mode.

Circle 4084 for More Information



WatchGuard Video has introduced two advanced cameras: VISTA™, the company's first body-worn HD camera, and the Panoramic X2™ HD camera now featured in the 4RE® in-car video system. Both products feature Watch-Guard's patent-pending Record-Afterthe-Fact™ technology which ensures no incident is missed - even if a situation escalates quickly and an officer doesn't have time to press record.

The VISTA HD body-worn camera may be used on its own or linked with the 4RE in-car video system. The weatherproof, tamperproof body-worn camera features nine hours of HD video recording on a single charge and an adjustable lens with a 130° wide-angle field of view.

WatchGuard's 4RE Panoramic X2 in-car video system dramatically expands video coverage with the addition of its exclusive "pillar-to-pillar" Panoramic X2 HD camera, more than doubling the field of vision. The system integrates two cameras: a fixed panoramic camera capturing the widest single camera view available on the market and a primary camera, providing the maximum details of a normal coverage area with a turret lens which may be aimed as needed.

Circle 4085 for More Information

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ARTWORK & DESIGN: BCD Company

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Phone: (215) 538-1240 Fax: (215) 538-1208 E-mail:

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Police and Security News is published bimonthly by DAYS Communications, Inc. with corporate offices at 1690 Quarry Road, Kulpsville, PA 19443 and sales offices at 1208 Juniper Street, Quakertown, PA 18951-1520.

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Opinions expressed in cartoons and editorial in Police and Security News are those of the author and do not necessarily represent the management or ownership of DAYS Communications, Inc.

Standard Rate Postage Paid at Bellmawr, NJ (permit #1239).

POSTMASTER: Please send form #3579 to DAYS Communications, Inc., P.O. Box 330, Kulpsville, PA 19443.

All subscriptions and editorial should be directed to: DAYS Communications, Inc., 1208 Juniper Street, Quakertown, PA 18951-1520.

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# BUSTED!

James L. McClinton, Ph.D

"At least the officers didn't have to go looking for it"... Police officers attempted to pull over a vehicle in Kissimmee, Florida, after it was nearly involved in an accident with their cruiser. The police turned on their lights and shined a spotlight on the car which kept moving. It was then that the officers noticed the car's sunroof open up and spotted a baggie come flying out. Unfortunately, the driver's aim for the ditch was a wee bit off and the baggie landed squarely on the hood of the police car. Oops. It turns out the baggie contained cocaine and our two occupants of the vehicle were busted for possession of narcotics and tampering with evidence. (I bet they're going to claim that they were rushing to cooperate by turning over the evidence.)

Jihadist declares war with help from Celine Dion... A recent raid on an ISIS safe house in Syria turned up, among other items (according to Foreign Policy magazine), a Dell™ laptop owned by Tunisian jihadist "Muhammed S." containing (not unexpectedly) recipes for bubonic plague and ricin, and (less likely) a recipe for banana mousse and a variety of songs by Celine Dion. (In the name of humanity, there needs to be international laws which forbid the use of something as horrific as banana mousse!)

Run, Forrest, run!... Authorities say a wanted man attempted to flee pursuing officers by blending into the sea of Chicago Marathon runners. Police said the 29-year-old Chicago man ran from officers after they approached him. Police said the man jumped into a group of marathon runners in hopes he could make an escape. But, police were ultimately able to tackle and arrest him. He was charged with possession of a controlled substance and resisting arrest. He was also charged with reckless conduct for endangering the marathon runners. (In a related story, police arrest 327 marathon runners for helping a fugitive escape!)

ISIS would of proud of you!... A 41year-old woman was arrested in Jackson County, Mississippi, allegedly burglarizing students' cars at East Central High School. When questioned, the woman told police she was only searching

#### REAL STORIES OF GENUINE ABSURDITY



# I bet I can guess exactly where he was sitting when he came up with that plan...

Police say they matched a would-be pizza shop robber to a roll of toilet paper in his Pennsylvania home. Uniontown police say the 29-year-old man tried to rob Michael Maria's Pizza by handing an employee a note written on the toilet paper wrapper which read, "I have a gun. Give me \$300." Police arrived shortly after an employee hit a panic button. The accused told officers he was forced to commit the robbery by a large, bearded man with a gun who accosted him in a nearby alley. But, a search of his apartment wiped out that explanation. That's where they say they found a newly opened roll of toilet paper with the pen impression from his note on an outer sheet. (Uniontown police had "flushed" him out shortly after arriving on scene.)

out "members of ISIS." There was no indication that any members of the terrorist group were found in the school's parking lot. ("I'll take 'Lame Excuses' for \$100, Alex.")

"And, just so you know that I ain't kiddin', here's a picture of some bullets!"... A 34-year-old man who attempted to rob a store in Cambridge, England, apparently couldn't get his hands on a real gun, so he threatened store staff that he would kill them - while holding up a photograph of a gun. The clerks didn't feel terribly threatened and reacted by calling police who quickly apprehended the man. Officers didn't think he was much of a threat to society either. "He was released on bail," a police spokesman said, and ordered to return to face charges in two months. (The court promised him a suitable public defender – a photograph of a lawyer.)

The O.J. Simpson record for low speed chases no longer stands!... Police say a Florida man was arrested after he stole a front-end bucket loader and led authorities on a chase for 90 minutes. The 32-year-old man is being held at the Pinellas County jail for stealing a Volvo L110G - a 20 ton, \$250,000 front-end loader - from a construction site. After receiving a tip about a front-end loader being driven erratically, police attempted to pull him over while he ignored sirens and emergency lights. Police followed the movements of the front-end loader which traveled at a top speed of 25 mph. but officers had few ways to actually stop the vehicle. It eventually ran out of gas 90 minutes later and police arrested the man who has a history of driving with a suspended license, disorderly conduct and driving under the influence. (He only drinks on two occasions: when he's thirsty and when he's not.) P&SN

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