One of the most commonly-asked questions we get at TNVC is, "What are the differences between the PVS-14's on your website?" This is a good question because it can be somewhat confusing. So, let's take a look at these devices and clear up the confusion. I'll start off with a bit of generic info. "PVS-14" is a military designation for a type of night vision monocular housing with a Generation 3 Image Intensifier Tube. PVS-14's use COTS (Commercial Off The Shelf) AA batteries, have manual Objective Focus and Diopter adjustment, and a built in IR Illuminator. All current-production PVS-14's have manual Gain Control and are powered by a single battery. This last part is important because some unscrupulous cottage industry night vision sellers will use older commercial ITT PVS-14 Night Quest housings and call them "brand new."

**Off on a Tangent 1**

ITT used to manufacture several lines of PVS-14's for different markets. The original PVS-14 used a dual battery configuration, but this was quickly changed to a single battery setup because of weight complaints from the field. ITT's commercially-available PVS-14 was called the "Night Quest." These used dual battery housings and had an "NQ" prefix to the PVS-14 designation on the label. The Night Quest PVS-14 had an "ABC" circuit (Automatic Brightness Control) that would sense the amount of light coming in and would automatically adjust the brightness (gain) of the image. ITT's Law Enforcement line was called the "Night Enforcer," and featured the same single battery setup as the military issue system. Night Enforcers have an "NE" prefix on the label. Night Enforcers have a manually adjustable gain control knob located on the front of the unit, next to the on/off knob. The Military system uses the same housing as the Night Enforcer. Outwardly, the only difference is the label, which will say AN/PVS-14 (AN stands for Army/Navy), has an NSN (National Stock Number).
ITT eventually developed PINNACLE®. In a nutshell, PINNACLE® is a proprietary thin film technology, only available from ITT Technologies that represents an enhancement to Generation 3 image intensifier technology. To understand PINNACLE® it is important to understand film technology in Gen3 tubes and why it is needed. Light energy, or “photons” strikes the photocathode (the first surface in a Gen3 tube) causing electrons to be emitted out the other side, towards the Microchannel Plate (MCP). When they strike, they knock even more electrons out of other atoms, causing them to be positively charged (positive ions). The electrons pass through the MCP, continually multiplying and get converted back into photons for your eye to see as they pass through the phosphor screen. But, the positive ions created at the MCP travel in the opposite direction of the electrons and head back to the photocathode, striking it with significant force which can lead to damage. Suffice to say, Gen3 tubes are more sensitive to this damage than Gen2 and require protective film barrier of Aluminum Oxide to get the life needed out of the tube. The Aluminum Oxide film is placed over the MCP to absorb the positive electrons before they can travel back to the photocathode to damage it. However, this film only allows about 50% of the electrons through, reducing the sensitivity, and represents the standard Gen3 tube. The government requested Gen4, the goal of which, was to remove the film to allow 100% transfer. However, this severely cut the tube life and was deemed unacceptable. So, ITT produced a tube with a thinner film that would allow more transfer of electrons than the standard Gen3 tube. Since it also allows more transfer of the damaging positive ions, ITT reduces the electrostatic fields around the MCP/Photocathode. So, in layman’s terms, much more light is let through. This, however, causes another problem.

On its own, a thin-filmed tube lets in too much light, so excessive light such as street lights and head lights are a big problem. So, as part of the Gen3 Omni VII package, PINNACLE® tubes contain an advanced autogated power supply, improved MCP hole size, a more sensitive photocathode, and other improvements which eliminate the temporary blindness caused by exposure to light too bright for the night vision device and drastically reduce the halo effect around distant light sources. The user can stay on mission and in the fight because his/her vision is not bloomed out. Initially, PINNACLE® tubes were only put into MILSPEC units. Night Quest and Night Enforcer units did not get PINNACLE® tubes. Eventually, ITT stopped making the dual battery configuration PVS-14 and consolidated their commercial and law enforcement lines into the Night Enforcer line. At this time, the Night Enforcer used a standard ITT Gen3 Autogated tube, while the MILSPEC AN/PVS-14 got PINNACLE® tubes. The Night Enforcers built during this period can be identified by their label which has the model number “ITTE-NPVS-14-11.” These Night Enforcers had the same body housing and features of the AN/PVS-14, minus the PINNACLE® tube. It wasn’t long before ITT consolidated production yet again and made the decision to only produce Gen3 PINNACLE® Autogated tubes and put them in all their PVS-14’s. This really only affected the Night Enforcer line and represents the Night Enforcer model available today. The latest and greatest Night Enforcer PVS-14 has a label that reads: “ITTE-NPVS-14-17.” This is how to identify a PINNACLE® Night Enforcer. Of course, all current production AN/PVS-14’s have had PINNACLE® tubes since they were released. The difference in item numbers is critical because there were a lot of tactical gear retailers that offered PVS-14’s along with other gear. Not quite knowing the difference, they purchased ITTE-NPVS-14-11’s with non-PINNACLE® tubes. These became less desirable when PINNACLE® was made available to the masses in the form of the ITTE-NPVS-14-17. Now, we see a lot of tactical gear sellers trying to off-load their older Night Enforcers at lower prices with customers who don’t understand the differences buying them.

**End Tangent 1**

Night vision is a confusing industry because there are a lot of “home-built systems” on the market. Anyone can buy the parts and tubes separately, slap them together in their garage, and sell it as a PVS-14. Assembling a night vision device is not rocket science if you have the parts. While these "home brew" PVS-14s are less expensive than "professionally-built" units, we recommend caution when considering them. The fact is, home-brew devices cannot be guaranteed like factory-built devices. You have to ask yourself if spending thousands of dollars for a high tech piece of gear is worth risking on something that was built by a lawn care specialist whose hobby is building night vision in his basement. The savings might be several hundred dollars up front, but you are still paying several thousand for the device.
**Off on a Tangent 2**

I can’t tell you how many times I have gotten calls from guys who have bought home brew PVS-14’s and are having problems with them. They ask me if they can send it to us to have a look at it and try to fix it. The problems range from spots appearing on the image (improperly sealed units letting atmospheric particles in), to broken parts (often the result of improper assembly). We tell these poor souls to send in their devices, but repair/replacement costs often out-weigh the money they thought they were saving by purchasing it from some guy instead of a professional company. Lessons learned the hard way. Now, this is not to say that factory-built units are perfect. Anything man-made can, and eventually will, fail. But, the likely-hood of this happening with a professionally-built system, assembled with the proper tools and in proper environments/facilities, is much less.

**End Tangent 2**

PVS-14’s must use a Gen3 tube to be considered a PVS-14. But, not all Gen3 tubes are created equal. We’ve already discussed PINNACLE®, so let’s understand some of the other differences. Another term you will see is “Autogated.” When the power supply is “Auto-Gated,” it means the system is turning itself on and off at a very rapid rate. This reduces blooming. In layman’s terms, an autogated power supply helps protect the tube from damage when exposed to light. The gated power supply will regulate the amount of power supplied to the tube so that it does not become over-exerted when exposed to light. Non-gated tubes will continue to let in all the light they can gather while still getting full power from the battery. This will permanently damage or destroy the tube. Autogating doesn’t give you the ability to walk around during the day with your PVS-14 on, but it will protect the unit from damage if you are exposed to headlights, explosions, someone flipping on the lights, etc. It will not shut the unit off. The only thing you will notice when the autogating “kicks in” is a slight dimming of the image. Autogated power supplies emit a faint whine. This should only be audible from a few feet away (if that).

Not all Gen3 tubes are autogated. There are two image intensifier tube manufacturers in the US: ITT Technologies and L3 Communications (Litton). Current production Gen3 tubes are Autogated, but there are still surplus Gen3 non-gated tubes available. These are often purchased by shady manufactures and builders at reduced prices, inserted into body housings and sold at reduced prices to make an easy buck. So, do your research and exercise caution before spending your hard-earned money.

At TNVC, we take great pride in the products we sell. We are military and law enforcement veterans who understand the need to rely on your gear in the field. Our main customer base is made up of guys and gals who go into harm’s way and we would not be able to live with ourselves if we sold cheap junk just to make a buck. So, rest assured, the PVS-14’s we offer are ones we would bet our lives on. So, what are the differences between the four PVS-14’s we sell?
This is the latest and greatest commercially-available PVS-14. It is factory built at ITT Technologies and features the ITT Gen3 PINNACLE® Autogated tube. The Night Enforcer is our best seller by far. The performance is unsurpassed. The NEPVS-14 is built using the same exact parts as its MILSPEC brother (AN/PVS-14) and performs the same in a side-by-side comparison. In fact, the only outward difference you would see is the nomenclature on the label. The only real difference between it and the AN/PVS-14 is the tube qualification.

**Off on a Tangent 3**

ITT builds all their Gen3 PINNACLE® Autogated tubes at the same place and towards the same specification. I say "towards," because the spec is actually a range since no two tubes will ever be exactly the same. This is part of the manufacturing process. While some tubes might have the same numbers in the S:N and lp/mm categories, they will have blemishes in different areas of the image. All image intensifier tubes have blemishes. There is no such thing as a perfectly clean tube. But, the amount of blemishes and their size play into whether or not the tube passes inspection.
When the DoD puts in a request for night vision, ITT will randomly select tube lots off the line to undergo the government-mandated MILSPEC Qualification Test Battery. 99.9% of the time, the tubes pass and are assembled into housings and shipped off to DoD. The units that have undergone this testing are the only ones that can legally be called “AN/PVS-14.” Tubes that are not randomly selected will undergo ITT’s Quality Control Test. Of course, these usually pass too. They are assembled into the same exact housings as the MILSPEC units and shipped to the distributor as “Night Enforcers.” So, one tube is not necessarily better than the other, because it was pretty much luck of the draw.

**End Tangent 3**

One thing to note is that the Night Enforcer is always available. We have been selling them for a long time and have a very good relationship with ITT and our distributor. We test every piece of night vision gear we sell before shipping to the customer. If we get a Night Enforcer that has blemishes towards the center of the image or an autogated power supply is whining too much, we will send it back to the distributor and get a different one. Bottom line: our customers have come to expect the best from TNVC and we will only sell the best. Of course, there will be some blemishes, but on our Night Enforcers, they will be pin-prick black spots around the edges of the image and will not be noticeable unless the gain is turned all the way up while looking at a white wall. Another thing that makes the Night Enforcer so appealing is the factory warranty. The tubes come with a 5 year warranty and a 3 year warranty for the system components. This is the best warranty in the industry. Now, I have to say, I have, personally, never seen a Night Enforcer have to go back to ITT for warranty. I’m sure it happens, but it is very rare. Still, when investing this kind of money into something, a good warranty is great piece of mind.

**ITT AN/PVS-14 MILSPEC Special Forces Kit Gen3 Pinnacle® Auto-Gated**

This is the standard-issue AN/PVS-14 for the U.S. Military. These units are generally not available for commercial or law enforcement sales. They are built for the DoD. But, every once in a while the government backs out of a contract or something comes up where ITT is left with a bunch of MILSPEC units. At these times, ITT will sell these over-runs to their distributors. At this time, we do have AN/PVS-14’s available for sale to the public. These are the exact “as-issued” kits. They have all the same features as the Night Enforcers. The main difference is that these these kits come with more accessories than the Night Enforcers and the warranty is for 2 years (because they were built for a 2 year contract). Now, something I should mention about the tubes: While these units have very nice aesthetics, we do not have the same control over the image quality that we do with the Night Enforcers. Because the Night Enforcers are always available, it is not a big thing for us to send one back if it has blemishes we don’t like. But, Uncle Sam is not as picky as we are and one or two blemishes towards the center of the image are acceptable to pass for MILSPEC. Basically, these AN/PVS-14’s are what they are and we cannot guarantee there will be no blemishes towards the center of the image. Like I said, these do look good, though.

As for the extra accessories: this is actually a very good deal if you were planning on purchasing these accessories anyway. The accessories included in the AN/PVS-14 kit represent a significant savings from buying them separately. But, you must also analyze what they are. These are the standard issue MILSPEC accessories. The helmet and weapon mount are not the best high-speed kit available and you may choose to use different accessories. If this is the case, are these accessories worth the extra money to you? They are serviceable, but there are better quality, more adjustable, better designed options available. Food for thought.
In comparing the AN/PVS-14 to the Night Enforcer PVS-14, you will find that both units are practically identical. But, for some users, the fact that the AN/PVS-14 model is not always available to the consumer market and it is the official U.S. Government Issue item (complete with label), is a big selling point.

**PVS-14 Gen3 PINNACLE® Auto-Gated**

Here, you will find yet another very similar PVS-14 to the ones discussed above. In all actuality, you will not find any functional difference at all. But, this PVS-14 is one we assemble in our facility, using the same parts and tubes as the factory-built ITT units (because we purchase the parts and tubes from the ITT distributor).

**Off on a Tangent 4**

As discussed earlier, there are a lot of "home brew" systems on the market. Depending on who is assembling them, they can be just as good as factory-built units or they can suck balls. Just about every night vision dealer on the internet offers some sort of "home-brew" system. In fact, the PVS-14 is one of the only monoculars that has a factory-built unit because the manufacturer, ITT, makes the tubes and the housings. Remember when I said that ITT and L3 are the only two image intensifier tube manufacturers in the U.S.? Well, there are a lot of other night vision manufacturers who make their own housings and optics. These companies sell use tubes from ITT or L3 to make their own night vision devices while also selling their housings/optics to dealers who will further build night vision systems.

When perusing the various dealers online, you will come across various PVS-14’s with different prefixes (example: MVPVS-14, NVPVS-14, etc.). These systems are "home-brew" from the dealer whose site you are looking at. The prefixes stand for the dealer’s name such as MVPVS-14 = Morovision PVS-14 and NVPVS-14 = Night Vision Depot PVS-14. We choose not put a prefix on our home-brew systems. But, if you see a PVS-14 with a prefix other than "NO," "NE," or "AN," you are looking at a home-brew system.

**End Tangent 4**

The reason we sell home-brew units is because we are able to offer the customer a Data Card or Data Sheet with the device. A Data Card will tell the buyer the exact specifications for the tube they have in their night vision device. You will see the exact S:N, Ip/mm, date of manufacture, etc. Data cards are akin to certificates of authenticity and prove that the tube is within spec for a particular night vision system. As mentioned earlier, the two image intensifier tube manufacturers sell their tubes to other night vision equipment companies. Whenever a tube leaves the factory without being assembled into a complete night vision device, it must be accompanied with a data card so the end manufacturer knows what he is getting. Factory-built devices from ITT and L3 do not come with data cards because they are tested and certified to be within spec at the factory.
Data Cards are very important to some people. These buyers represent a relatively small fraction of the market, but they are usually highly educated in optics and night vision, with a bit of OCD mixed in for good measure. These customers want to know exactly what they are getting and will sometimes contact us and let us know what specs they are looking for in a particular tube. They are prepared to wait for months before we happen to get in a tube that meets their specs. Otherwise, our PVS-14 Gen3 PINNACLE© is no different than the factory-built units in terms of function and quality.

PVS-14 Litton Gen3 Autogated

These PVS-14’s are another “home-brew” offering. They are built with L3 PVS-14 housings and L3 Gen3 Autogated tubes. The L3 housing differs slightly from the ITT housing. It is manufactured by Insight Technology for L3 and features a little bit less material than the ITT model. The battery cap is not as deeply checkered and the Objective/Diopter Focus Locking Rings are different. But, overall, the housing is pretty similar to the ITT model. The L3 Gen3 Autogated Tube is very good. It is made by Litton, who was acquired by L3 several years back. The tube provides Gen3 performance and longevity, but lacks the PINNACLE technology of the ITT tubes. This translates into a little less bright of an image. It is Autogated, though, so you will have protection from bright light sources damaging the unit as well as diminishing your natural night vision.

An advantage you will find with non-PINNACLE tubes is that they can stand up to somewhat harsher recoil than their PINNACLE counterparts. PINNACLE was developed for the SOPMOD program which revolves around the M4 Carbine, a 5.56x45mm NATO Chambered weapon platform. The military wanted PINNACLE PVS-14’s to be able to stand up to the repeated recoil of this cartridge because it is standard issue. Remember that PINNACLE uses an extremely thin film. This means they are more fragile than the relatively thicker film found in a standard Gen3 tube with high HALO values. (Weapon Grade Tubes). The thicker film of the standard Gen3 Autogated tube may stand up to harsher recoil up to .308 (though, a PVS-14 isn’t quite the right tool for an M107 nor ANY .308 caliber and above). Keep in mind PVS-14’s body housings, their attach points and current mounts are not made to secure a PVS-14 in high recoil environments as well. Their ¼-20 body housing screw is held in place by a thin piece of plastic housing that can be damaged over prolonged high recoil use. This also goes for the lens locking ring portion some mounts use for an attach point. We do NOT recommend PVS-14’s on any .308 caliber and above. We see some uninformed non NV dealers claim this or that about putting a PVS-14 on high caliber weapons. PVS-14’s were never made for this application period, this is what clip-on’s and dedicated NV weapon scopes are for.

With that said, since the main application for PVS-14’s is helmet-mounted, the military was willing to accept PINNACLE thin filmed systems. Another benefit of the Litton Autogated PVS-14 is the price. You are getting excellent Gen3 performance in a PVS-14 for under $3,000. While the image quality is not quite as bright as the PINNACLE units, it is very good for most civilian applications.

These PVS-14’s, like our other home-brew unit, will come with a data card.

NVPVS-14B

The NVPVS-14B is not sold on our website because it is an item we usually do not carry except around the holidays. These are budget PVS-14’s that are built with Grade B tubes. Grade B means the tube did not meet spec at the factory because it was blemished. These tubes are then sold at reduced price to dealers who want to make less expensive night vision devices. We pride ourselves in only offering the best gear available, but we also realize that some folks can’t necessarily afford it. So, we offer these around the holidays.
**Off on a Tangent 5**

Grad B tubes are something you must watch out for. Unfortunately, there are a lot of snakes out there who are more than willing to take advantage of unknowing buyers. Night Vision is a very small niche in the overall tactical market and a lot of buyers do not do their research before purchasing. It seems crazy to me to not know everything you can about a 3K optic before swiping the Visa, but some people do it anyway. Knowing that there are many folks like this, some night vision sellers will purchase Grade B tubes and falsely advertise them as standard tubes with no defects. After the customer gets the product, the seller cuts off all communication and support, leaving the buyer SOL. This is a very unfortunate situation, but one that can be easily avoided. On the same note, if you understand what Grade B means, and are OK with that, then by all means, purchase it.

**End Tangent 5**

Another often-asked question about PVS-14's concerns used equipment. I probably talk to at least 2-3 guys a week who call up asking about PVS-14's. After spending 15-20 minutes discussing the PVS-14 and the different versions, he then says "Well, the reason I'm asking all these questions is because I know a guy who is selling a PVS-14 at a very good price and wanted to know a little background on what I should be looking for." Talk about being taken advantage of. Here is some guy who wastes almost 1/2 an hour of my time only to let me know he never had any intention of buying from me. TNVC is known for having experienced shooters from the military and law enforcement community who understand night vision and its practical applications. We spend a lot of time on the various forums talking to people about NV and are more than happy to spend the time on the phone too. But, I gotta say, there are few things that piss me off more than being taken advantage of. So, I would be remiss if I didn't discuss used night vision.

Buying used night vision is a gamble, pure and simple. It is usually a bad gamble unless you are an expert, and even then, you are buying on faith. My advice is to not buy used night vision. I'm not saying this to scare people off so they give me their business (although I would not turn it down). I am saying this because there are way too many unknowns to plunk down so much money with "some guy" on an optic whose history is impossible for you to know. The people who ask me about buying a used PVS-14 will usually tell me they can buy it "for like $2,000" and its "barely used." OK. Let's stop and analyze this for a second. If you were an upstanding person who didn't lie to others and had a $3,600 optic that was in great condition and had been barely used, why would you sell it for 2K or less? Think about that. I have always gone on the assumption that if something seems too good to be true; it is. While $1,500-$2,000 seems like a great price for a "like new" PVS-14, we are still talking $1,500-$2,000. That's a lot of money. Too much money to risk buying something that may be damaged or nearing the end of its life.

While military-grade night vision devices are relatively robust, they are still going to get messed up taking a header off a table onto the concrete patio or slamming into a rock while mounted on some guy's head who just tripped in the woods. This damage could knock things loose, unseat the tube, break seals, crack the housing, damage the optics, etc. A lot of these damages might not be readily apparent. Also, Gen3 tubes have a finite lifespan. A Gen3 tube will last about 10,000 hours. Do you know how many hours the seller has on the tube? Does he? 10,000 hours is a long time, but if the device saw a lot hunting use or was accidentally left on when it was put away, there might be a lot of hours gone. Also, who built the system and what kind of warranty might be available? Unless it has factory ITT or L3 labels, you are looking at a home-built system that could have been assembled by Billy-Bob in his wood shed. Bottom line: don't buy used night vision. If you want a PVS-14, save your money and buy it from a legitimate and reputable dealer.

This brings us to Ebay night vision. I would say that the previous statements go double here. There is no way for you to even see the device before purchasing from an Ebay dealer. Ebay is not the place to purchase tactical gear, especially something as specialized as night vision. If someone is selling on Ebay, they are using a "free marketplace" and can usually disappear after a sale has been made. It's like buying a PVS-14 from a shady sidewalk vendor.

So, that about wraps things up. I'm pretty sure I've answered all the normal questions we get about PVS-14's and I hope I was able to educate you a bit on the wonderful world of night vision. Thanks for taking the time to read this, I am working on several more articles that will review, compare, and contrast other Night Vision devices and related gear.