

The Warren Township Police Department

*Transitional Training to the Sig Sauer
P220/P245
Semi Autoloading pistol with the HexSite
Sighting System*

Sgt. D.J. MacMinn
Warren Township Police Department

A New Duty Weapon

As the Supervising Firearms Instructor of the Warren Township Police Department I feel it is my responsibility to keep our firearms program current with the ever-changing equipment and technology available.

Over the past three years, I have done extensive research in an attempt to determine the best possible handgun to issue the officers of our department. The criteria handed down by my Chief of Police, was that any weapon proposed must be able to be carried safely, and successfully qualified with by all members of the department. In one weak moment the Chief also added that money was no object, but we all know that in municipal government, money is always an object.

Throughout our county and surrounding counties in the Central/Northern New Jersey area, the trend has been a transition to .45 caliber in both handguns and long guns such as the H&K UMP 45. We currently carry UMP 45's in at least one patrol vehicle per shift and have trained at least one officer/supervisor per shift in their use. As our local gun vendor is primarily a Smith & Wesson dealer, our department has, since its inception, carried Smiths as duty weapons. I have always considered Smiths the "Chevrolet" of weapons; nothing fancy, but usually reliable, so I have been carrying a .45 caliber S&W TSW on a trial basis.

As I began researching other weapons available, I set my criteria as follows:

First and foremost, it had to be a weapon with excellent reliability and stopping power to ensure that my officers were well equipped in an armed encounter. The issue of stopping power was an easy choice with the wide availability of quality weapons chambered in .45 caliber. After serving in the military during a conflict, I have seen first hand the stopping power and effects the .45 has on the human body. There was no other choice.

Second, it had to be a weapon that both my weakest, and strongest shooters could handle (weight & size) and shoot safely and proficiently. .

Third criteria was that the manufacturer must offer the weapon in both a large and small frame version so that patrol (large frame) and detectives and administration (small frame) will possess similar weapons.

And lastly, for obvious reasons, the weapon needed to have a track record for "out of the box" accuracy.

After extensive research, testing and input from the other department firearms instructors, Detective Lieutenant Russell Leffert and Officer Paul Dziedzic, a decision was made. The weapons chosen were the Sig Sauer P-220 for the patrol division, and the Sig Sauer P-245 for the detectives and administrative officers.

A New Sight System

As well as acquiring a new duty weapon, I felt that it was necessary to make an informed decision regarding sight systems available. Interestingly enough, at the time that the Sig pistols were beginning to look like the weapon of choice, their company had just announced a promotion to law enforcement where they would provide factory

installed Tritium sights (night sights) on their weapons at no additional charge. At a value of approximately \$100. per weapon, and the fact that statistics show that 2/3rds of all officer involved shootings occur during reduced light, the Tritium sights became the logical choice.

During the time that I was researching weapons, I often conferred and sought input from Lt. Leffert. Lt. Leffert, an excellent target and tactical shooter, never missed an opportunity to promote the quality of Sig Sauer pistols. There was even an occasional “I told you so” thrown in here and there when I told him that my research was bearing out his beliefs about Sig quality and performance.

A strange turn of events occurred in October of 2001, Lt. Leffert returned from vacation in Arizona. While in Sedona Arizona visiting Robert Smith, a retired Warren Township Police Chief, he had been introduced to a friend of Smith’s named Timothy Sheehan. Sheehan is the owner of Goshen Enterprises Inc., a small company that specializes in custom gunsmithing, leatherwork and defensive firearms training. Sheehan, more importantly though, is the designer and patent owner of a custom sighting system called the “HexSite”. Lt. Leffert accepted an invitation by Sheehan to go out to a local range in the desert and shoot some of Sheehan’s pistols, which had been fitted with the HexSites. As they say, the rest is history. When Lt. Leffert got back he explained to me his shooting experience with Smith and Sheehan. Lt. Leffert explained that tactically, he had shot better using the HexSite than he had ever done before. He explained that target acquisition was much faster using the HexSite, and that his number of hits to center mass had definitely increased while his group size to center mass had decreased. He went on to say that he had purchased a Sig P245 from Sheehan, also a licensed (FFL) gun dealer, and contracted him to install the Hex Sites on it.

In mid December Lt. Leffert received his new Sig from Sheehan, as well as one of Sheehan’s test weapons, a P220 in .45 caliber with the HexSites installed. Now the fun begins, time to go to the range and do what people like me like to do best. Shoot, shoot, and shoot some more! Well to sum it up, the sight works and works well. At our next semi-annual firearms qualifications I had each officer shoot the test P220. Each officer shot the weapon well and provided positive feedback about the HexSites.

Evaluation of the HexSite system after having the officers shoot the system is as follows:

Visual Acuity – The HexSite system maintained a high level of visual acuity during all conditions. The difference in contrast between the front site post and rear aperture was constant at all levels of light. Having been a firm user of night sites for the past twenty years, I am convinced that the HexSite system is superior to night sites.

Visual Symmetry – The design of the HexSite increases visual symmetry.

Visual Focus – This is the most difficult area of training, especially with the more experienced shooters. They have been trained to focus on the front site post and make the target a blur. We now have to change that and train them to “look through” the HexSites and focus on the target. This took a little time but the results were positive.

The First New Guns Arrive

In April of 2003 we purchased six (6) P245's and sent them to Tim Sheehan for the installation of the HexSites. After receiving the guns back from Tim, I performed transitional training with the detectives and administrative officers. The training went smoothly, and all officers gave positive comments towards the new guns and HexSites. As part of the Sig purchase, Ofc. Dziedzic and I had previously attended the 2-day Sig Armorer course. After the P245 transitioning, I attended an additional 5-day Sig Range Master course. In the Range Master course I learned methods that were especially helpful for the transitional training from our S&W 4006's to the new Sigs. The Range Master training also recommended additional documentation that was later used in the transitional training of the patrol division.

The Remaining Guns Arrive

In January of 2005 the patrol division's Sig P220's arrived and were immediately shipped to Tim Sheehan for the HexSites. With some pleading on our part, and long nights on Tim's part, we had the Sigs back in time for the first round of transitional training and qualifications on January 31st. Two additional dates on February 1st and 3rd completed the training. During these three dates I documented several aspects of the training as recommended by Sig, and requested by Tim Sheehan.

Transitional Training and Qualification of the Patrol Division

All officers were provided with approximately 2.5 hours of classroom training covering nomenclature, assembly/disassembly, function checks, and immediate action drills of the Sig. Officers were instructed on the proper use of the HexSite by focusing on the target rather than the front sight. Officers were advised that although the HexSite is designed for optimal performance by shooting with both eyes open (a natural occurrence after using the sight for a period of time) it was not necessary to do so immediately if they were more comfortable shooting with their strong eye.

Immediately following the classroom training, the officers moved to the range where they shot a course of fire using their old duty weapons (S&W 4006). The course consisted of 36 rounds of fire beginning at the 3-yard line, working back to the 15-yard line. Both accuracy and group size were recorded.

The officers then turned in their weapons and fitted themselves with their new Sig P220's. Nomenclature and function of the new weapon was again reviewed as well as appropriate sight picture with the HexSite. The officers next fired 200 rounds for familiarization, and then fired the New Jersey Attorney Generals daytime and nighttime qualification courses (60 rounds and 40 rounds respectively). The officers then fired the identical 36 round course they had previously fired which was again scored for accuracy and group size .

The patrol training was done at an outdoor range under the following conditions:
January 31, 2005 – 28 degrees, partly sunny, wind 10-15mph
February 1, 2005 – 32 degrees, partly sunny, wind 10-15mph
February 3, 2005 – 26 degrees, overcast, wind 20-25mph
No weapon malfunctions occurred during the entire training evolution.

Synopsis

The Sig Sauer P220 - All officers expressed satisfaction with the new weapons and performed well with them. Their apprehension about the transition seemed to be easily overcome by their appreciation of the quality of the new weapon.

The HexSite – If ever there was one piece of equipment to raise the confidence of an officer's shooting ability, this is it. All officer comments about the sights were positive. Most said that they were better able to “see” the target, and were better able to make a quicker, more positive target acquisition. Significant improvement was seen in two areas of the officer's qualifications scores. The first was that officers increased their raw scores by **60%**. The second and more important was that **76%** of the officers reduced their center mass group size.

Officer	SIG HQC/NHQC w/HexSit S.S.	Group Size	Area Sq.. in.	S/W HQC/NHQC w/Post&Notch	Group Size	Area Sq. in.	% Group Change
(possible)	60/40 (100/100)			60/40 (100/100)			
K.	60/39 (99/100)	5.25"X4.75"	24.9"	59/40 (99/100)	9" X 13"	117"	-79.0%
D.	50/36 (86/100)	5.50"X6.00"	33.0"	55/38 (93/100)	10" X 12"	120"	-72.5%
H.	54/33 (87/100)	4.50"X8.75"	39.0"	56/37 (93/100)	6.6"X11.75"	76"	-49.0%
C.	57/33 (90/100)	6.00"X8.75"	52.5"	55/36 (91/100)	8.0"X10.5"	84"	-37.5%
P.	53/39 (98/100)	4.50"X7.00"	31.5"	58/38 (96/100)	6.625"X5.75"	38"	-17.0%
G.	56/40 (96/100)	4.00"X7.50"	30.0"	58/39 (97/100)	6.375"X5.0"	32"	-6%
G2.	58/38 (98/100)	5.75"X10.10"	57.5"	56/36 (92/100)	7.5"X6.75"	50.5"	+14%
R.	54/34 (88/100)	3.5"X9.5"	33.25"	54/38 (92/100)	5.875"X10.25"	80.7"	-60%
F.	49/35 (84/100)	5.5"X17.5"	96.25"	55/37 (92/100)	7.875"X10.375"	81.7"	+17%
A.	50/36 (86/100)	10.00"X11.00"	110.0"	25/35 (87/100)	10.25"X9.25"	94.8"	+16%
M.	54/37 (91/100)	3.25"X6.5"	21.1"	52/37 (89/100)	6.00"X5.5"	33.0"	-36%
H2	60/39 (99/100)	8.75X7.50"	65.6"	55/93 (94/100)	12.12"X10.5"	128.0"	-49%
Y	55/39 (94/100)	7.375"X11.0"	81.1"	56/38 (94/100)	7.25"X9.375"	68.0"	+19%
S.	57/39 (96/100)	7.75"X12.375"	96.0 "	55/36 (91/100)	11.0"X9.875"	108.6"	-11.6%
C2.	59/40 (99/100)	2.875"X4.375"	12.6"	58/40 (98/100)	4.5"X5.5"	24.8"	-49%
A2.	59/38 (97/100)	4.75"X5.125"	24.3"	50/37 (87/100)	6.5"X9.25"	60.2"	-60%
C3.	56/39 (95/100)	3.625"X5.750"	20.8"	55/38 (93/100)	9.0"X5.75"	51.8"	-60%
M2	55/35 (90/100)	5.875"X10.250"	60.2"	48/37 (85/100)	8.750"X12.0"	105.0"	-43%
H3	58/39 (97/100)	4.250"X7.250"	30.8"	58/36 (94/100)	4.375"X3.750"	16.4"	+87%
K2	58/39 (97/100)	7.5"X8.750"	65.6"	57/38 (95/100)	10.375"X12.5"	130.0"	-49%
S2	57/38 (95/100)	8.5"X8.375"	71.2"	53/38 (91/100)	4.375"X10.5"	45.9"	+55%
C4	55/36 (91/100)	8.25"X9.0"	74.25"	52/38 (90/100)	12.875"X11.250"	144.8"	-49%
S3	58/38 (97/100)	6.25"X4.750"	29.7"	60/40 (100/100)	6.875"X5.5"	37.5"	-21.4%
M3	59/40 (99/100)	3.250"X3.750"	39.6"	58/38 (98/100)	8.0"X6.250"	50.0"	-20.8%
L1	59/40 (99/100)	3.250"X3.0"	9.75"	58/38 (98/100)	4.375"X4.5"	19.7"	-51%
Totals	1406/940 (2346/100)			1383/942 (2325/100)			-612.8

Accum.Dept. Score= +21pts.
Averages 56.24/37.6 (Dept. Group Size REDUCTION)= -24.5%

**Service Weapon Qualification Data and Analysis:
For the Warren Township Police Department.
By Kenneth Lamb**

Purpose:

The purpose for the collection and subsequent evaluation of this data was to evaluate certain changes made by the Warren Township Police Department regarding their officer's service weapons.

Department Changes:

To begin with, the Department decided to no longer issue the semi-automatic Smith & Wesson model 4006 in the .40 S&W caliber. Instead the Department opted to issue the Sig Sauer model P220 in the .45 ACP caliber. The second and only other significant change to the officer's service weapons were the sites; from the standard notch and post to the **HexSite Sighting System™** by **Goshen Enterprises**.

Testing:

The Department conducted a standard qualification drill to evaluate their officer's performance with the old issue service weapons, prior to issuing the new Sig Sauer P220 pistols equipped with the **HexSite Sighting Systems™**. There were 25 officers tested in the qualification drill. The Department then issued the new Sig Sauer P220 with **HexSite Sighting System™**, and conducted a standard qualification drill to evaluate their officer's performance with the new issue service weapons. The same 25 officers were tested in the qualification drill.

Results:

Points Scored, S & W 4006 w/ traditional sites

The mean (average) score was approximately 93.16 points out of a possible 100 points total. The median score was 93 points. This means that 50% of the 25 officers tested scored a 93 or better. The standard deviation was 3.83 points. This means that about 68% of the 25 officers tested scored between 89 and 97 points.

Points Scored, Sig P220 w/ HexSite Sighting System™

The mean (average) score was approximately 93.92 points out of a possible 100 points total. The median score was 96 points (a 3 point increase). This means that 50% of the 25 officers tested scored a 96 or better. The standard deviation was 4.75 points. This means that about 68% of the 25 officers tested scored between 89 and 99 points.

Testing Limitations of point scoring method

Though the scores did improve over all, the increase in points was rather insignificant. This led to the question how the scores corresponded to shot group sizes (i.e. what measure of performance would result in a score of 93 points out of a possible 100?) Thus the second analysis began to examine the 'shot groupings' over 'shot placement'. User errors, such as trigger control, will no doubt exist irrespective of the sighting system employed, and must be considered when evaluating these products. Ideally, a superior sighting system will minimize opportunity for user error when it comes to sighting the weapon, and thereby minimizing the over all opportunity for misses. We began by re-examining the qualification drill with the old issue service weapons and the new service weapons and discovered the following.

Shot Grouping in sq. inches, S & W 4006 w/ traditional site

The mean (average) shot group was approximately **71.93** sq. inches.

The median shot group was 72 sq. inches. This means that 50% of the 25 officers tested shot a group size smaller than 72 sq. inches.

The standard deviation however, was 36.10 sq. inches. This means that about 68% of the 25 officers tested shot a group size between 35.8 and 108 sq. inches.

*Shot Grouping in sq. inches, Sig P220 w/ **HexSite Sighting System**™*

The mean (average) shot group was approximately **48.42** sq. inches.

The median shot group was 39.3 sq. inches. This means that 50% of the 25 officers tested shot a group size smaller than 39 sq. inches.

The standard deviation was 27.4 sq. inches. This means that about 68% of the 25 officers tested shot a group size between 21 and 76 sq. inches.

Conclusion:

The new service weapons equipped with **HexSite Sighting Systems**™ returned insignificant improvements on qualification scores when compared using a two sample t-test (degrees of freedom = 48, t-score obtained = .609). A two sample t-test was conducted to compare the shot groups of the Sigs equipped with **HexSite Sighting Systems**™ compared to the S & W 4006 (with the standard notch and post). The test results indicated that the Sig P220 equipped with the **HexSite Sighting System**™ was significantly better than the S & W 4006 with the notch and post (degrees of freedom = 48, level of significance = .02, critical t-score = 2.42, t-score obtained = 2.541, VERY SIGNIFICANT).

The average score with the S & W 4006 was 93 points and the average group size was 71.93 sq. inches. The average score for the Sig with the **HexSite Sighting System**™ was 93 points, and the average group size was 48.42 sq. inches. A tall A-zone (probably something like 6 inches by 12 inches) may account for larger shot groups that still result in higher scores, though this far from preferable. Since the Sig P220 with the **HexSite Sighting System**™ performed on average around 48 inches, officers are more likely to keep their groups in the A-Zone when it counts most and with less stragglers, and far fewer misses. Thanks to the Warren Township Police Department's decided changes, 84% of their officers are now able to shoot a group size smaller than 76 sq. inches.

Lastly it should not go unnoted that there are differences between the Smith & Wesson 4006 and the Sig Sauer P220, particularly in such areas as inherent bore accuracy and trigger design. However, as any professional will tell you, most shooters will never aspire to the level of performance inherent in their weapons, what ever weapon they may choose. The numbers reported for the Smith & Wesson 4006 do not seem indicative of its inherent capability, and therefore it seems unlikely that switching to the Sig P220 is the sole and only reason for the noted improvements. Indeed, such considerations like the larger .45 ACP caliber, greater recoil and higher bore axis of the P220 would seem to put the odds in favor of the Smith & Wesson. Though I am convinced the **HexSite Sighting System**™ significantly contributed to the overall performance improvements, I must concede that it remain inconclusive exactly "how much" the **HexSite Sighting System**™ caused them. It could be minimal but it could be significant! Though future testing is needed, the **HexSite Sighting System**™ has a promising future in personal defense.