



Maritime Security Series:

“Don’t bring a knife to a gunfight”

A Rational Analysis of Weapons and Tactics in the Prevention of Hijackings

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Executive Summary

The increase in maritime piracy has created a cottage industry of maritime security. As with all nascent industries, companies are jockeying for position and working to capture market share while attempting to differentiate their offerings. New industries provide new opportunities for innovation but are also rife with mistakes, miscalculations, and companies that put profit before safety. Recently the debate surrounding arming vessels has reached a fevered pitch. On one side of the debate are the companies espousing the need to arm ships and on the other are those that are advocating for a 'less than lethal' approach to security. As indicated in the whitpaper; "To Arm or Not to Arm"¹ it is the authors informed opinion that arming ships is necessary for security against maritime piracy. In a race to capture market share and provide low cost services, some companies are espousing what can most accurately be described as a "security light" approach to anti-piracy where vessels are outfitted with a skeleton crew using light weapons. By putting convenience and business before security the companies are not only endangering the guards but are increasing the risk to the vessel, and her crew.

The Economics of Security

It is a fact of business that unless required to implement security, many companies will choose the path of least resistance and simply ignore the need for security or find ways to pass the proverbial buck to the customer, or third party. While it is easy to cast aspersions on those that don't view security in an altruistic light, in reality it is simply a function of human nature and market forces that allow and even encourage businesses to produce products that can capture the greatest market share in the shortest amount of time. Examples abound of companies, and even entire industries, that were unsafe until required by the Federal government, or other regulating body to change their operations. A particularly relevant example can be seen in the passing of the Pure Food and Drug Act (PFDA, 1906) and the formation of the Food and Drug Administration. The catalyst for action was the publication of Upton Sinclair's book *The Jungle*, which described the horrific and unsanitary conditions inside of the Chicago meat packing industry. A particularly relevant quote from the book reads:

"This is no fairy story and no joke; the meat will be shoveled into carts and the man who did the shoveling will not trouble to lift out a rat even when he saw one." Chapter 14, pg. 162

While it is doubtful that the owners of the plant or the person shoveling would consider eating the meat from the factory, there appears to be little concern for the safety of the consumers of the product. This is a clear example of profit taking precedence over safety. Another relevant example is that of the Highway Safety Act (HSA) of 1970 passed after publication of Ralph Nadar's book, *Unsafe at Any Speed*. While this article is not proposing that Mr. Nadar's book alone fostered the passing of the law, the book highlighted for the American public what the automobile manufacturers already knew; that the cars being manufactured by some companies had serious design flaws that put drivers and passengers at risk.

¹ To Arm or Not to Arm; A Rational Analysis of Deterrence Theory in Preventing Maritime Piracy

Parallels between the maritime security industry and the aforementioned can be seen in the laissez-faire approach to security. In the absence of regulation, security companies are attempting to find ways to minimize the cost to the customer (the shipping companies). One way of keeping costs low in the attempt to being competitive is to reduce the number of guards and types of weapons being carried. This paper will illustrate that the suggested approach is not only ineffective but likely exposes the vessel and her crew to greater risk than opting to not use armed security.

Deterrence + Protection = Prevention

At the risk of oversimplifying the work of criminologists, crime prevention can be summarized as protection + prevention. Protection applies to the 'hardening' of targets by implementing controls that increase the level of difficulty of perpetrating a crime. A vault is a good example of a protective measure. While no vault is completely impenetrable, vaults do provide significant protective value. Armed guards provide two purposes. First, they are protective. In short, a guard's job is to prevent a criminal from completing the criminal act. Secondly, as this paper has attempted to illustrate, armed guards provide deterrence value. A potential criminal would need to evaluate the risk of being hurt or killed in the act of committing the crime. This deterrence value alone is often enough to dissuade criminals. In the instances where it is not, the guards provide protective value. This paper is addressing situation

Understanding Weapons & Firepower

While it is not a thought that many like to entertain, the purpose of a military style weapon is to either hurt or kill human beings. Weapons are often rated according to their lethality. For example, in the US Military (and likely other militaries) grenades and other explosives are rated according to what is known as an *effective casualty radius* and an *effective kill radius*. The effective kill radius is the distance from the grenade in which 50% of people will be killed and the effective casualty radius is the distance from the grenade in which 50% of the people will be either killed or injured. The purpose of this paragraph is not to endorse or promote violence rather simply to relay to those that may not have the experience with weapons that all weapons are not equal in terms of effectiveness (the ability to harm). When discussing the need to provide armed guards, it is important to understand the differences between the weapons and their relative lethality.

Established security practices and experience in combat and security strongly support the position that to adequately protect a ship against pirates armed with AK-47's and RPGs, in high-speed boats, a minimum contingent of 4 armed-guards should be employed on each vessel. These guards should be armed with assault rifles, and long guns outfitted with optics. Recently however, some maritime security companies began suggesting that appropriate security for a vessel could be maintained by 3 (or fewer) armed-guards using light weapons such as pistols, shotguns, and sub-machine guns. The reasoning behind recommending 3 guards is obvious. 3 guards will cost less than 4 or more guards. It is unknown why any security company would advocate for light weapons when faced with more effective, longer ranged weapons such as those used by the pirates. One theory is that some of the security companies may be hampered by the export laws of the country in which they are licensed from

exporting larger, assault type weapons. Regardless of the reasons, the recommendation to outfit guards with such weapons in the face of overwhelming firepower is irresponsible and negligent. Those who have been in combat can attest to the negligence of not providing sufficient firepower to accomplish a mission.

“Don’t bring a knife to a gunfight”; While this phrase has been used repeatedly over the years it is surprisingly relevant to combat and security. Without discounting the value of training, and other variables, the unfortunate reality is that those with the larger weapons have a distinct advantage over those without. A knife is no match for a gun, a pistol is no match for a rifle, a rifle is no match for a machine gun, and a machine gun is no match for a tank.

At the risk of offending those who are knowledgeable in firearms it is necessary to compare the weapons being used by the pirates and the weapons being advocated by the “security light” companies. While this is not intended to be a comprehensive comparison of weapons, the following will allow even those unfamiliar with firearms go gauge the relative lethality.

Weapons Used by Pirates:

The following represent the common weapons used by Somali Pirates. These are weapons commonly found on the battlefield and are not considered standard small arms.

- **RPG-7-** The Rocket Propelled Grenade version 7 is Soviet designed shoulder launched, rocket propelled grenade launcher used primarily for anti-tank, and anti-material purposes. The RPG 7 has a maximum range of 900 meters. The PG-7V and PG-7VL anti-tank rounds have a maximum penetration of 720mm of armor while the OG-7V anti-personnel round has a lethal radius of 7meters against personnel wearing body armor. An RPG-7 represents the greatest threat to the vessel as it can damage the bridge, or rudder and the anti-tank rounds can penetrate the ships hull. It is imperative that RPG-7s be prevented from getting within lethal range.
- **AK-47-** The ubiquitous AK-47 assault rifle fires a 7.62 x 39mm round at a cyclic rate of 600 rounds per minute on fully automatic and 500 rounds per minutes on semi-automatic. The maximum range of the AK-47 is 750 meters while the maximum effective range is 350 meters. The AK-47 round has been used effectively from Vietnam through Iraq and Afghanistan. Combat veterans can attest to the lethality of the round commonly called a “7.62 short”.
- **PK series Machine Gun-** Is a gas operated, general purposes belt-fed machine gun which fires a 7.62 x 54mm round at a cyclic rate of 800 rounds per minute with an effective range of 1500 meters. As with all belt fed machine guns, the PK should be considered a ‘force multiplier’ as it can sustain a high rate of fire at a very long range. The round is larger than the AK-47’s and the NATO 7.62 and has significant penetration.

“Security Light” Weapons:

These are the types of weapons being recommended by some companies to combat pirates. The authors do NOT endorse arming guards with such light weaponry.

- **Mossberg 590 12 Gauge Shotgun (or equivalent)**- A pump action, repeating shotgun which fires a 12 gauge round of either buck-shot or slug. The shotgun holds 5-8 rounds in the internal tube magazine and 1 round in the chamber and has a maximum range of 40 meters. Common for household defense and close combat, the shotgun is not intended for standoff targets and has limited penetration.
- **MP5 Submachine Gun**-The Heckler and Kock MP-5 submachine gun fires a 9 x 19mm Parabellum pistol cartridge at a cyclic rate of fire of 700-900 rounds per minute to an effective range of 200 meters. As with any weapon firing a pistol round, there is limited range and lethality. While the MP5 and variants were popular through the early mid 1990’s for close combat, they have since been fallen out of favor and been replaced by the more lethal 5.56 x 45 mm NATO round. The 9mm round has limited penetration and can be effectively neutralized by type IIa body armor.

Recommended Weapons:

The following are the minimum types of weapons recommended the as the minimum needed to counter piracy and adequately protect the vessels and their crews. These recommendations are based upon real-world experience as well as formal training.

- **M-4 Carbine style assault rifle**- The standard M-4 assault rifle fires a 5.56 x 45mm NATO round at 700-950 rounds per minute at a maximum effective range of 500 meters. The M-4 style assault carbine is a variant on the US M16 rifle and typically holds 30 rounds in a standard magazine. The M-4 is accurate to 500 meters with open sights and can achieve 600 meters with optics. This is sufficient to keep RPG-7’s at bay. The penetration of the 5.56 round is sufficient to penetrate all body armor except that classified as type III or type IV. Depending upon the ship and area of transit, some guards are outfitted with 7.62 x 51mm M-4 Carbine style rifles. These combine the same penetration and accuracy as the sniper rifles with the rate of fire and flexibility of the 5.56 x 45mm variant.
- **Remington 700 style 7.62 x 51mm Sniper Rifle**- The Remington 700 is a bolt-action, precision rifle which fires a 7.62 x 51mm NATO round. A well trained marksman can fire approximately 20 rounds per minute to an effective range of 1000 meters. The 7.62 x 51mm can penetrate all but type III and Type IV body armor and is the primary weapon to disable boat motors and ensure RPG-7s remain at standoff range.

Analysis of Guard Force Sizes

As stated previously some security companies are recommending a 3-person guard force as adequate to protect vessels in areas where pirates are active. This is inconsistent with industry accepted security practices, is a questionable recommendation, at best and does not account for the size of the vessel or other factors. As security requires a guard on duty 24 hours per day, a 3 person guard force requires that each guard take an 8 hour shift every day and is standing post alone while the other guards rest. In the event of a situation in which the guards need to take protective measures, a 3-person team leaves the ship vulnerable, as it is not possible for 3 people to protect starboard and port, as well as the bow and stern of a vessel. A common theme to security is a concept known as 'intersecting fields of fire'. Intersecting fields of fire requires that each person has a designated field of fire for which they are responsible and the person to their right and left intersect with this field of fire providing comprehensive coverage. On a ship, it is difficult to envision how a 3-person guard force can effectively cover the ship from stern to bow in the event of a 'swarming' type of attack, which is increasingly common in attacks off of Somalia, and the Gulf of Aden. It is also important to remember that the 3 people that are assigned to the ship are not sufficiently armed, thereby further decreasing their ability to protect the ship. Finally, while it is never a comfortable thought, the reality of armed conflict is that people may be wounded or killed. If a guard is rendered ineffective in the course of their duties, this leaves the ship with a 2-person guard force trying to protect the ship.

The increase in capability of a 4-person or larger force over a 3-person force is greater than the sum of its parts. The larger the force, the greater the protective measure. Consider the shift duty described in the previous paragraph. The extra guard allows for much more flexible scheduling and provides two sets of eyes to watch the horizon for suspicious activity. In the event of a 'swarming' attack, the ship is protected on each side by two guards each covering an intersecting field of fire. In the unfortunate situation where a guard is rendered ineffective, the decrease in capability is minimized, as there are 3 or more guards left protecting the ship. Finally, by ensuring the guards are well armed, it is likely that a pirate attack would be stopped well before a close firefight ensued. It should be noted that at a minimum it is recommended that a 4-person guard force be deployed. Depending upon the size and type of vessel, as well as evolving tactics of pirates, additional security personnel may be required to sufficiently protect the vessel and her crew.

The Disadvantage of Light Weapons

While deterrence and evasion are always preferable to engaging in a firefight if it is necessary to use arms to protect the ship and crew then it is imperative that the guards are sufficiently trained, and armed to protect the ship and her crew. While a ship that does not fight back may be taken, experience with Somali pirates suggest that the crew will likely be treated as hostages and not seriously hurt without cause. The unfortunate reality is that if a ship decides to fight and hurts or kills the pirates and is subsequently taken the likelihood of the crew being mistreated or killed increases exponentially. It is absolutely imperative that if a company makes the decision to arm a vessel that they do so with the objective of preventing a ship from being taken by employing necessary firepower to repel any attack that the pirates may attempt. By using a small force of lightly armed guards it is likely that an attack

may be delayed but it is difficult to envision a situation where a motivated adversary with AK-47s and RPGs could not take a ship armed with a small contingent of guards armed only with shotguns and submachine guns.

Example Case Study

In one recent example, a maritime security company outfitted a ship traversing waters in the Middle East with a 3-person security crew. Due to various export restrictions and other unknown factors, the security company was unable to supply the guards with weapons before they deployed. In an effort to secure the contract, it appears that the company acquired weapons through questionable back channels to ensure the guards were armed. As can be seen in the pictures in Appendix A there is a guard using what appears to be a Moisan Nagant rifle to protect a large vessel. Moisan Nagant rifles are Soviet/Russian designed bolt action weapons which have been produced since the late 1890's (prior to the formation of the Soviet Union). While they were considered marginally effective weapons during World War I, their value in modern maritime security is debatable. In the second picture, it can be seen that the security contingent's arms consists solely of the previously mentioned Moisan Nagant rifle and a 12-gauge shotgun. In this scenario not only is the vessel understaffed, but it is severely under armed to adequately defend against pirates using high powered, automatic weapons and rocket propelled grenades.

Summary

In an effort to offer low cost solutions with the objective of capturing market share, several security companies have fielded small teams of inexperienced, and improperly trained operators. It is the opinion of these authors that using small teams of improperly armed individuals exposes both the ship and her crew to increased danger in a situation in which the guards must take action to protect the vessel from pirates.

Appendix A



Figure 1; Moisan Nagant on Ship



Figure 2; Moisan Nagant and 12 Gauge Shotgun

About the Authors

Chris Mark is a recognized payment security and risk expert. He is the former founder and CEO of the two companies and has worked for both MasterCard and Visa on their security programs. Chris has

conducted payment security and risk management globally on behalf of Visa and the PCI SSC. He is the founder of the Society of Payment Security Professionals (SPSP) and led the development of the Certified Payment-Card Industry Security Manager (CPISM) and Certified Payment Card-Industry Security Auditor (CPISA) certifications. Chris is a former enlisted US Marine and US Navy Officer. He is a qualified Marine Infantryman (0311), Scout/Sniper (8541) and Reconnaissance Marine (8654) and a former Reconnaissance Instructor. Chris is a combat veteran of Operation Continue Hope and has attended numerous military training courses including: Basic Infantryman, Scout/Sniper, Urban Sniper, Basic Reconnaissance, Urban Surveillance and Reconnaissance, Airborne, Pathfinder, Navy Scuba, HRST Master, and Security Forces. Chris holds a CISSP, CIPP, CPISM/A, and numerous technical certifications. He also holds MBA and BA degrees. Chris has published numerous articles on risk, risk management, and information security and is a frequent speaker on the topics of payment card security and risk management.

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