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PLANNING FACTORS FOR NON LETHAL WEAPONS IN COUNTER NARCOTIC OPERATIONS

by

W. R. Meese
Lieutenant Commander, U.S. Coast Guard

A paper submitted to the Faculty of the Naval War college in partial satisfaction of the requirements of the Department of Joint Maritime Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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The Coast Guard is investigating avenues to leverage technology to improve interdiction effectiveness. This is necessary since there is little likelihood for increased funding for additional interdiction resources to stem the flow of drugs via the maritime routes. One alternative, currently under development by the U.S. Marine Corps, is the deployment of non lethal weapons technology aboard Coast Guard helicopters and cutters to compel unwilling suspect vessels to stop.

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"Non lethal weapons must not create undue burdens. Rather, they should enhance the commander's ability to accomplish assigned missions. This theme--enhance operations--is critical to every decision involving the development, evaluation, procurement, deployment, and employment of non lethal weapons."[1]

~ "A Joint Concept for Non Lethal Weapons"

Preface

An airborne early warning (AEW) aircraft detects a fast moving northbound surface contact fifty nautical miles north of the Colombian coast. The AEW aircraft simultaneously alerts the Joint Interagency Task Force East (JIATF East) Joint Operations Command Center (JOCC) and notifies the nearest surface friendly unit, a Coast Guard cutter positioned in the drug smuggling route (threat axis) in the Caribbean.

The JOCC opens a new drug case, authorizes the diversion of a maritime patrol aircraft (MPA) to the area, and tasks the Coast Guard cutter to assume on scene coordinator for the mission. The Coast Guard cutter diverts to intercept and prepares to launch its embarked helicopter. The MPA acquires the contact first by radar and then visually. Successive low passes do not interrupt the progress of the now identified "go fast" suspect smuggling vessel. The cutter's helicopter arrives in time to take a positive visual handoff from the MPA, which returns to base. Running low on fuel and without armament, the helicopter's alternatives are limited. The helicopter attempts to establish radio contact with the suspect vessel with no response. The helicopter hovers low in front of the suspect vessel, but its rotor wash is ineffective at stopping the vessel.

As darkness falls, the cutter is still out of range for warning or disabling fire. The helicopter, low on fuel and unable to stop the suspect vessel returns to the cutter. Successive searches, both in darkness and in daylight, are unable to reacquire the suspect vessel. This marks the end of another go fast case in the Caribbean Sea. After successfully detecting and monitoring the suspect vessel, Coast Guard and joint task force units are unable to stop the

low profile fast vessel and consequently lose the opportunity to board and search the vessel for suspected contraband. This scenario is typical of the counter drug operations the Coast Guard faces weekly.

When the operators of drug smuggling vessels choose not to stop for law enforcement agencies, the operational commander must find a way to stop them. Since using deadly force against a vessel suspected to be engaged in felony activity is usually impractical and normally not authorized[a], non lethal weapons technology offers alternatives to the operational commander in enforcing law in the maritime environment. Non lethal weapons fit into the Coast Guard's use of force continuum at the intermediary level[3] (or lower on the continuum, depending on the technology) and their use is justifiable to compel a vessel to stop under international law.

Introduction

The preface indicates a common problem in carrying out the Coast Guard Commandant's strategic plan at the operational level. The Coast Guard Commandant, as the National Drug Interdiction Coordinator, has responsibility to execute strategic goal number four of the National Drug Control Strategy, "to shield America's air, land, and sea frontiers, from the drug threat."[4] But, while federal appropriations for anti-drug programs have increased over the last several years, the money appropriated for the resources to carry out interdiction operations represents only thirteen percent of the counter drug money. What is more, the current rate of federal spending for interdiction operations results in counter drug forces interdicting only ten to fifteen percent of the drugs shipped by sea.[5] Clearly, the need exists to leverage new technology to increase the effectiveness of patrolling units, since actual patrol hours for interdiction aircraft and vessels will remain a small percentage of the anti-drug program.

While the Coast Guard, with the assistance of its counter drug law enforcement partners, has improved in detecting small drug smuggling vessels, the capability of law

enforcement units to stop unwilling suspect vessels has not. The operational commander is at the mercy of the suspect vessels' masters to carry out the law enforcement action. However, as non lethal weapons (NLW) technology becomes available, the operational commander will have more tools to stop smuggling vessels. The planning problem for the operational commander is how to leverage the technological advances of NLW's to stop suspicious vessels while maintaining effectiveness. This paper will describe what non lethal weapons are and which ones may be relevant in the maritime environment. It will then discuss legal and rules of engagement (ROE) issues with NLW's; examine command and control considerations; and present task organization planning considerations for the use of NLW's in the maritime interdiction role.

For purposes of discussion in this paper, the Coast Guard district commander is the area of operations commander at operational level and, where discussed, Joint Interagency Task Force East (JIATF East) is the task force command at the operational-tactical level. Both the Coast Guard district and JIATF East have legal staffs familiar with maritime law enforcement procedures and the law of the sea.

Non Lethal Weapons Defined

There is a broad range of non lethal technology aimed at subduing both personnel and equipment. This section will discuss the current situation in the United States with regard to non lethal weapons technology, what NLW's are, what they are capable of, where they will most likely be employed, and some pitfalls inherent to the use of NLW's.

Current NLW state of affairs. The Department of Defense policy defines non lethal weapons as "weapons systems explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment."[6] The U.S. Marine Corps has been designated the executive agent for the Department of Defense for exploring the use of NLW's in today's military operational environment, which includes Military Operations

Other Than War (MOOTW). Since using conventional military forces for drug interdiction is considered a MOOTW operation by Joint Doctrine, the Coast Guard should capitalize on the Marines Corps initiative. According to John Alexander, "many MOOTW contain the basic elements of police work . . . the mission of the military and the law enforcement agencies are merging, and with it the requirements for non-lethal weapons are becoming a higher priority."[7] Moreover, one senior Coast Guard officer suggested, ". . .the deployment of NLW's with various agencies might offer a good test bed for any program. He noted the Coast Guard traditionally operates with both law enforcement agencies and the military, and could evaluate technologies from both sides."[8]

The Coast Guard operational commander is primarily concerned with technologies capable of stopping a vessel by interrupting its propulsion, navigation, or steering equipment (counter materiel employment) or by neutralizing the operators (counter personnel employment). As pointed out in "A Joint Concept for Non-Lethal Weapons," "Our [the U.S.] reluctance to impose our will through the use of lethal weapons, creates a critical vulnerability that our adversaries quickly discern. Non lethal weapons provide commanders a more extensive continuum of options."[9] Indeed, "[by] using chemical, electronic or acoustic systems, it may be possible to shut down or burn out a vehicle, vessel, or aircraft electrical system or to fuse metal parts in key equipment without harming its human operators."[10] Where the feasibility of escalating the drug war to the level of deadly force is impractical for legal, political, or diplomatic reasons, non lethal weapons offer a wide spectrum of alternatives which can provide the means to stop an uncooperative vessel for law enforcement purposes.

Types of personnel and materiel weapons. Non lethal weapons effective against personnel and materiel contain many different types of technologies. Chemicals, high intensity light and sound, foaming agents, electronic or microwave pulse generators, and physical barriers, such as entangling nets, are just of few general categories of weapons.

Annex A and B contain comprehensive lists of NLW's technology in development or available today. Weapons of interest to the Coast Guard are those which could interfere with the electronics on a drug smuggling vessel. The majority of modern engine systems contain some type of electronics to control the ignition or fuel flow of engines. Additionally, electronics are used in navigation systems and automatic steering systems. These devices are susceptible to NLW's that could interfere with, degrade, or deaden the electronics components.

How to employ them. The equipment will most effectively be employed on land-based or ship-based helicopters which have the ability to quickly intercept and remain over vessels long enough to effect the desired outcome. Moreover, the operational commander will most likely deploy the counter materiel type of non lethal weapon and not the counter personnel type to minimize harm to suspects. Inadvertent harm to suspects is counter productive to due process and is a liability problem for the Coast Guard, especially on the high seas some distance from medical treatment. Coast Guard cutters and small craft should eventually acquire vessel stopping systems as well, because there is also a significant demand for such technology in the coastal environment of the United States for both law enforcement and port security duties

Possible adverse effects. There are some negative aspects to incorporating NLW's in the inventory of weapons. One drawback is the majority of NLW's are commercially produced and are available to any buyer, including drug smugglers. Operational commanders must be cognizant of non lethal weapons, if for no other reason, to counter the smuggler NLW capabilities. "Regardless of a weapon's potential worth or our relative vulnerability . . . there is some value in pursuing these technologies if only to develop appropriate countermeasures and policies."[11]

Moreover, the Department of Defense Council on Foreign Relations Task Force considers six risks inherent in the use of NLW's: unwanted escalation; retaliation by

opposition forces, proliferation to many countries or groups, unrealistic expectations by users, an assumed cost effectiveness, and questionable casualty limiting benefits.[12] These inherent risks can occur during any situation. NLW users at the operational and tactical levels must be aware of the negative aspects to prevent blunders with possible strategic consequences. Operational mistakes with strategic consequences could be the loss of friendly international relations throughout the Caribbean area toward the United States. This would be especially true of foreign countries unfamiliar with NLW technology and the Coast Guard's non lethal weapons implementation policy.

Despite the risks, non lethal weapons offer the operational commander a wide array of tools to defeat the smuggler. The remaining sections will examine the planning considerations of legal and ROE issues, command and control, and task force organization associated with the employment of non lethal weapons.

Legal Considerations

The writer's experience in counter drug operations has shown there is a degree of hesitation at the operational-tactical level in implementing new technology. One cause of the hesitation might be the lack of familiarity with the legal basis and justification of using new technologies. Operational level commanders must be comfortable with the legal aspects of the use of non lethal weapons to provide continuity of operations for tactical level commanders whose time in the area of operations is on a temporary basis. This section will explain how non lethal weapons systems are approved for use within the U.S. Armed Forces and what rules of engagement considerations must be developed for the employment of NLW's in the area of operations.

Approval process. Department of Defense lawyers will likely approve most NLW's for use in drug interdiction or other MOOTW. Non lethal weapons are thoroughly examined legally prior to becoming available to operational commanders. The Department of Defense policy requires any new weapon undergo a legal review by the Judge Advocate General

(JAG) of the appropriate military department to ensure the weapons intended use is consistent with the "obligations assumed by the United States government under all appreciable treaties, with customary international law, and, in particular, with the laws of war."[13] The chief concern for NLW's is to ensure they do not conflict with customary international law or with international treaty prohibiting a particular type of weapon. One example is chemical weapons. Some chemical irritants, like pepper spray and tear gas are forbidden for use in military operations, but are acceptable in certain law enforcement roles such as crowd and riot control. "With regard to the Law of Armed Conflict, lawyers investigate three major issues applicable to NLW's: proportionality of inflicted suffering balanced against military necessity; discrimination in effort; and extant rules of law. Domestic laws, including those that regulate environmental and occupational health considerations may also effect NLW's and their use."[14]

Assuming the NLW passes the initial legal assessment, certain legal principles, such as necessity and proportionality, will govern their application. Only that force necessary to achieve legitimate objectives will be permitted; likewise, the scope, intensity and duration of force must be proportional to the threat. In short, with regard to non lethal weapons, Coast Guard operational commanders should apply the principle of minimum force to compel compliance regardless of what technology they are using. Despite the tendency or efficiency of escalating up the force continuum, it will always be necessary to move up and down the continuum as the merits of the case dictate, even with non lethal weapons.

Rules of engagement. The preceding discussion leads to an analysis of how non lethal weapons will fit into the standing rules of engagement in the counter drug environment. This is particularly true of Department of Defense--familiar with standing rules of engagement--but perhaps not as familiar with the Coast Guard use of force policy, which will govern counter drug operations.

First and foremost, the right to unit self defense is always present regardless of the types of weapons systems on board a particular unit. In this respect, NLW's actually may give an operational commander more alternatives in force protection than if only lethal weapons are available. The drawback, however, is that when an instant decision is required, NLW's may complicate the decision to use deadly force when it is required. The bottom line is non lethal weapons technology does not alter a unit's inherent right to self defense.

For the operational commander who is required to use force, including non lethal technology, ". . .three separate, and sometimes contradictory, criteria are involved in making the decision to use force or not to use force:

- Political criterion - Does the use of force meet or detract from the political objective of the mission?
- Operational criterion - Does the use of force meet the military objective of the mission?
- Legal criterion - Is the use of force lawful?"[15]

The sensitive nature of most MOOTW, including counter drug operations, requires a heightened awareness of the use of force. This is especially true in the Caribbean area of operations where units interact with vessels from many countries on a daily basis. Most countries in the region are cooperative with U.S. forces, but some are predictably unhelpful when it comes to issues of vessel sovereignty during law enforcement operations.

Operational level staffs that construct rules of engagement for the tactical level commanders should ensure the ROE are ". . .clearly articulated and understood to establish the role of non-lethal weapons as an additional means of employing force, for the specific purpose of limiting the probability of death or serious injury to non combatants or, in some circumstances, to enemy combatants."[16] As Lieutenant Colonel Duncan indicates, "certain key elements within the process will change based on the mission and the threat level. The most important of those elements, the tactics for utilizing non-lethal weapons and the rules of engagement, are closely entwined with the expressed and implied taskings of the mission and

the political policy upon which the mission is grounded."[17] Moreover, "not providing ROE that match a service member's capability to respond with the level of force called for by the situation creates an insoluble solution that at best promotes mission failure and at worst results in excessive force and unnecessary injury or death."[18] As with lethal weapons, straightforward, succinct ROE are necessary for the operators in the counter drug effort.

In summary, Coast Guard operational commanders will receive NLW's for use within their areas of operation that have been legally approved by higher authority. The ROE developed by operational staffs must be clear, concise, and easily applicable under the stress of fast developing and quickly executed interception and interdiction cases in counter drug operations. From an operational standpoint, ROE for non lethal weapons employment must enhance, not impede, counter drug forces.

Command and Control Considerations

The development of proper rules of engagement for NLW's is one facet of the command and control function. The assumption at this point in this paper is NLW's have been legally approved and are deployed to the area of operations. This section will examine those operational command and control considerations necessary for successful employment of NLW's in counter drug operations.

Professor Milan Vego defines command and control as "the process that commanders, including command organizations, use to plan, direct, coordinate, and control forces and assets in the accomplishment of a mission."[19] Professor Vego also adds, "the most important elements of command and control are information, authority, and communications."[20] The goal of the operational commander must be to orchestrate these command and control elements to produce an operation that emphasizes centralized direction and decentralized execution, that is well synchronized, and that is bound together with unity of effort throughout the area of operations. With a radical change in equipment and procedures, such

as employing non lethal weapons, adherence to these concepts will smooth and enhance the transition.

Direction and execution. Centralized direction and decentralized execution is appropriate in Coast Guard counter drug operations, especially when NLW's are employed. As alluded to in the previous section, task units must overcome the hesitation associated with an unfamiliar technology in order to be effective. The operational commander must provide the central oversight of the use of NLW's--while not telling tactical commanders how to do the job. The tool to accomplish this measure is effectively crafted rules of engagement. As indicated previously, ROE must be designed in such a way to promote effective operations without jeopardizing important political and diplomatic relationships in the area of operations.

Authority for use. Placing the authority to use NLW's at the appropriate level is concomitant to centralized control and decentralized execution. In unit self defense situations, the authority to employ NLW's rests with the unit commander. In fact, according to Lovelace and Metz, it may be more politically and psychologically advisable to use some type of NLW in defense. "Nonlethality shows promise for limiting unintended or undesired effects, and for allowing military forces to attain a degree of psychological precision to complement physical precision."[21]

In instances which are clearly offensive in nature--interdiction of suspect vessels--the authority to engage must usually come from the operational commander. In general, the operational commander must retain the authority to use any system which fires energy or chemicals at a vessel to stop it for the following reasons. The operational commander must provide operational oversight to ensure the tactical commander uses the appropriate level of force. Moreover, the operational commander may have limited distribution information about the case, e.g., there may be a undercover agent on board whom the U.S. government wants to protect, or a political situation may exist which is unknown at the tactical level.

However, if communications are such that authority from the operational level cannot be obtained, the tactical commander must weigh the commander's intent and concept of operations with the situation at hand. In the absence of good communications, a well written commander's intent and concept of operations will leave little doubt at the tactical level when elevated use of force is authorized.

The most critical aspect of command and control for the operational commander in the counter drug effort is to create effectiveness through unity of effort. The complexity of the task organization requires a solid command and control function which uses coherent, applicable ROE and meaningful and an explicit commander's intent and concept of operations. Within such an environment, unit commanders can optimize interdiction results with non lethal weapons when authority for their use is at the appropriate level.

Task Organization Considerations

The deployment and employment of NLW's into the counter drug area of operations will impact the operation of the task organization in several ways. The operational commander must be aware of the impact and plan accordingly to maintain maximum effectiveness of the organization. This section discusses the existing counter drug task organization and how the deployment of non lethal weapons will emphasize the importance of centralized direction--the key feature of the existing organization. Moreover, deployment of NLW's will affect flexibility, interoperability, and continuity of operations.

Current counter drug operation structure. In terms of organization structure, the current Coast Guard counter drug task organization is a geographically based organization, with district headquarters in Miami, Florida. The operational commander (Coast Guard district commander) executes the mission from the district headquarters. The Joint Interagency Task Force East (JIATF East), under SOUTHCOM, is an operational-tactical level organization which coordinates the efforts of a dozen federal law enforcement and Department of Defense agencies in the detection and monitoring phase of the counter drug

operation. In the grand view, JIATF East assets coordinate operational intelligence, detect contacts of interest, monitor their progress, and then pass them off to the Coast Guard for law enforcement action.[b]

Importance of centralized direction. As Professor Vego discusses, "The main advantages of an area based command organization is that it provides for centralized direction of forces of several services operating within its boundaries; it ensures familiarity on the part of the commander and his staff with the geographic, demographic, political, economic, and military aspects of the region. . . . [the area of operations] can be fully developed based on long-range plans and requirements."[23] With such diverse U.S. and foreign assets patrolling the area of operation and with so many nations using the Caribbean for legitimate business, the Coast Guard is extremely careful not to overstep its bounds, for fear of political and diplomatic embarrassment. Since NLW's provide <u>more</u> alternatives for the use of force to field units, centralized control is even more critical and will ensure mistakes are minimized.

Impact to flexibility. NLW's will provide more flexibility in the design of the task force. With NLW's employed on board helicopters throughout the area of operation, the operational commander has more options in the deployment of forces. For example, the ability for a ship-based helicopter to effectively stop a drug smuggling vessel by disabling its propulsion system negates the need for the existing multiple layers of defense in the area of operations. As the effectiveness of interdiction assets increases and the multiple layers become unnecessary, the operational commander can redeploy forces to other critical sectors or missions, in effect creating a viable perimeter defense in lieu of a defense in depth. Furthermore, effective NLW's used seaward of foreign territorial seas and airspace, would reduce the reliance and time spent on host nation's support for coordinating interdiction and law enforcement action within the host nation's territorial waters.

Interoperability and continuity of operations. During the phase-in period for NLW's, problems will develop with interoperability and continuity of operations of cutters and aircraft assigned. This situation occurred when the ion scan[c] sensor devices were fielded several years ago. Since there were a limited number, they were transferred between ships on station. However, sometimes decisive points (the channels and passes through the islands) were gapped without the equipment, which degraded operations. In terms of the continuity of operations, the operational commander will need to plan for cutters and air crews with varying degrees of proficiency with new equipment. The design and complexion of the task organization should reflect the strengths and weaknesses of various units during the phase in period for non lethal weapons.

To sum, the employment of non lethal weapons will impact flexibility, interoperability, and continuity of operations of the counter drug operation and the units assigned. Consequently, the operational commander, through centralized direction, must be prepared to change the task organization to maximize the effectiveness that NLW's will bring. With Department of Defense, federal agency, and foreign units involved, great opportunity exists to integrate the deployment of NLW's into the area of operations and improving the effectiveness of the organization.

Conclusions

The literature indicates non lethal weapons will have a direct impact on MOOTW and drug interdiction operations. The United States, with the U.S. Marine Corps as the executive agent, is presently leading the world in NLW development and employment. At home, many police units throughout the country already use various NLW technologies. With the integration of NLW's into the Coast Guard inventory, operational commanders must be prepared exploit them to full advantage in counter drug operations.

To successfully deploy and employ NLW's into the Caribbean area of operations, the operational commander should plan to employ counter materiel NLW's on helicopters and

cutters to stop suspect vessels. The operational commander's staff must design succinct, applicable rules of engagement for their use. The Coast Guard district commander will provide the oversight of non lethal weapons use within the area, but execution will still be the responsibility of the task units. Finally, the employment of NLW's will prompt manageable changes in command and control and the task organization, for which the operational level planners must prepare.

The Coast Guard's vision of leveraging technology in the 21st century has arrived. Non lethal weapons technologies provide feasible options for politicians, provide aggressive alternatives for operational commanders, and provide a sound, safe method of stopping vessels for tactical commanders.

> *"Critical advances will have momentous impact on all military forces. Successful adaptation of new and improved technologies may provide great increases in specific capabilities. Conversely, failure to understand and adapt could lead today's militaries into premature obsolescence and greatly increase the risks that such forces will be incapable of effective operations against forces with high technology."*[25]
>
> ~ "Joint Vision 2010"

Recommendations

1. The Coast Guard should leverage new non lethal weapons technology to enhance the effectiveness of finite interdiction assets. To that end, the Coast Guard should partner with the U. S. Marine Corps efforts with regard to non lethal weapons. The Coast Guard should be willing to test and evaluate Marine Corps developments which apply to the maritime environment.

2. When deploying non lethal weapons into the task organization, the operational commander should ensure succinct, appropriate rules of engagement are developed to facilitate the use of non lethal weapons. The rules of engagement should enhance, not impede, the use of non lethal weapons in executing the mission.

3. When integrating non lethal weapons into the task organization, the operational commander should take the opportunity to analyze the command and control function and the design of the task organization. Deploying a major weapons change, such as non lethal weapons, is the appropriate time to make required changes.

Annex A - Counter Personnel Non Lethal Weapons[26]

Acoustic Pulses (high frequency sound pulses designed to cause blunt object trauma)

Curdler Units (a system designed to produce a very loud shrill noise which is used to irritate and disperse rioters)

Dazzling Lasers (lasers designed to cause temporary blindness from 12-24 hours)

Electrical or Mechanical Water Stream (systems using charged water stream to immobilize or stop an adversary)

Entangling Nets (sticky nets and high voltage nets fired from a 40 MM grenade launcher to stop or subdue a fleeing or disorderly individual)

Foaming Agents (designed to impair mobility and vision)

Infrasound (low frequency sound designed to cause disorientation and physical discomfort)

Markers (systems designed to identify personnel through some form of marking)

Obscurants (systems designed to disorient and obscure observation)

Odoriferous Agents (non-toxic systems designed to temporarily blind or disorient)

Optical Munitions (flash systems designed to temporarily blind or disorient)

Stun Guns (systems that use electric shock to stun and immobilize)

Vomiting Agents (agents designed to cause nausea and vomiting by personnel)

Ultrasound (an acoustic system using high frequency sound whose wavelength is outside the audible band)

Annex B - Counter Materiel Non Lethal Weapons[27]

Acoustic (Acoustic bullets that cause resonant oscillations in physical structures)

Combustion Modifiers and Fuel Viscosifiers (chemical additives which change fuel characteristics)

Concentrated Electromagnetic Pulse (a non-nuclear generated pulse disrupting electronic equipment including motor vehicles with electronic ignitions)

Filter Clogging Materials (airborne materials designed to clog the air filters of combustion engines)

High Power Microwave Fields (pulsed microwave beams to destroy electronics)

Liquid Metal Embrittlements (to cause treated metal to crumble and disintegrate)

Motor Vehicle Electrical Arrestors (an electrical charge is directed at a motor vehicle as it passes which causes it to stop)

Motor Vehicle Obscurants (opaque covering to block windows and sensor lens)

Motor Vehicle Taggers (a projectile delivered transmitter tag with polymer adhesive to allow a vehicle to be tracked)

Super Adhesives (used to prevent movement by motor vehicles and personnel)

Supercaustics or Super Corrosives (dissolve most metals, plastics, rubber, polymers, and glass)

Superlubricants (chemicals which make surfaces extremely slippery)

NOTES

[1] "A Joint Concept for Non-Lethal Weapons," Marine Corps Gazette, March 1998, A3.

[a] The Coast Guard's Maritime Law Enforcement Manual, cited below, contains in depth discussion of the procedures regarding using various levels of force to stop suspect vessels. The responses differ based on nationality of the vessel, type of suspicious activity, and other variables of the situation.

[3] U.S. Department of Transportation, Maritime Law Enforcement Manual, COMDTINST M16140.1(series)(Washington: 1993). The Coast Guard use of force continuum consists of: 1) officer presence; 2) verbal commands; 3) soft empty hand control; 4) hard empty hand control; 5) intermediary force; 6) deadly force.

[4] Congress, House, Committee on Transportation and Infrastructure, Oversight Hearing on the Overview of the U.S. Coast Guard's Drug Interdiction Strategy, Hearings before the Subcommittee on Coast Guard and Maritime Transportation, 105th Congress, 29 September 1998, 4. The complete list of strategic goals is: 1) Educate and enable America's youth to reject illegal drugs as well as alcohol and tobacco; 2) Increase the safety of America's citizens by substantially reducing drug related crime and violence; 3) Reduce health and social costs to the public of illegal drug use; 4) Shield America's air, land, and sea frontiers from the drug threat; and 5) Break foreign and domestic drug sources of supply.

[5] Ibid., 1-2.

[6] " A Joint Concept for Non-Lethal Weapons," A1.

[7] John B. Alexander, "Shoot, But Not To Kill: Non-Lethal Weapons Have Yet to Establish a Military Niche," Jane's International Defense Review, June 1996, 78. Dr. Alexander, a non lethal weapons advocate, has written extensively on the potential of non lethal weapons in military applications.

[8] Ibid., 77. The officer was Captain John Clay, who was working at Coast Guard Headquarters Office of Operations at the time the article was written.

[9] "A Joint Concept for Non-Lethal Weapons," A4.

[10] Ibid., A8.

[11] Joseph W. Cook, III, and others, "Non-Lethal Weapons Technologies, Legalities, and Potential Policies," Journal of Legal Studies, 1994-1995, 24.

[12] Margaret-Anne Coppernoll, LTC Army National Guard and Xavier K. Maruyama, "Legal and Ethical Guiding Principles and Constraints Concerning Non-Lethal Weapons Technology and Employment," paper presented at the Non Lethal Defense Industrial Conference III, held at the Johns Hopkins Applied Physics Laboratory, 25-26 February 1998, <http://www.dtic.mil/ndia/NLD3/copp.pdf> (13 December 1998), 6.

[13] Coppernoll and Maruyama, 1. Department of Defense Instruction 5500.15, Review of Weapons Under International Law, directs a thorough legal review prior to weapons entering the inventory.

[14] Ibid.

[15] Eric S. Miller, quoting Norman Friedman in Interoperability of Rules of Engagement in Multinational Maritime Operations (Alexandria, Virginia: Center for Naval Analysis, CRM 95-184, October 1995), 8.

[16] "Joint Concept for Non-Lethal Weapons."

[17] LCOL James C. Duncan, USMC, "A Primer on the Employment of Non-Lethal Weapons," Naval Law Review, Summer 1998, 35.

[18] Lovelace and Metz, 30.

[19] Milan Vego, On Operational Art (Third Draft), (Newport, Rhode Island: Naval War College, September 1998), 175.

[20] Ibid.

[21] Lovelace and Metz, 1.

[b] .Both organizations have tactical level units in the area of operations, so some overlap of responsibility exists. However, when JIATF East law enforcement units interdict a vessel for law enforcement purposes, they shift tactical control to the Coast Guard operational commander. This procedure is the linking pin between JIATF East and the Coast Guard and avoids violating posse comitatus statutes, where Department of Defense controlled elements are forbidden to enforce law.

[23] Milan Vego, Guidance For Task Organization (1st Draft), (Newport, Rhode Island: Naval War College, September 1998), 12.

[c] The ion scan is a sensor which ionizes small samples of an unknown material to determine if it is a prohibited substance. The device is able to detect cocaine, opiate based substances, marijuana, and other common prohibited drugs. The Coast Guard fielded the ion scan devices in 1995-96.

[25] Joint Vision 2010, 11.

[26] "A Primer on the Employment of Non-Lethal Weapons," 18-20. LCOL Duncan's list is exhaustive. I have listed items in Annexes A and B that may be feasible for application in the marine environment.

[27] Ibid, 15-17.

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