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Marine Use of Force Continuum



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While this document is the initial product of [Evolutionary Security Management](#) (principal author noted below), it must be recognized that the current version of the document has been arrived at through the efforts of a number of individuals bringing a range of expertise. For this reason, it is only appropriate, if not necessary, that the following persons be given proper attribution for their work and efforts on this project:

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The Anti-Terrorism Accreditation Board Transportation Security Committee brings together persons with demonstrable knowledge, skills, abilities and experience within the anti-terrorism / counter-terrorism domain who have committed to making efforts to secure transportation systems against attacks through the development of policies, standards, and best business practices.

Within the above names, it should be noted that a significant number possess knowledge, skills, abilities, and experience with the maritime industry—including as recognized training providers with respect to the ISPS Code, certification as Company / Port / Marine Facility / Ship Security Officers, and operating within the maritime environment (K&M Global Security Solutions). The background of persons include counter-terrorism specialists and operators, anti-terrorism specialists, close protection specialists, Special Weapons and Tactics, Information and Cyber security, and regulatory oversight functions.

¹ ATAB TSC – the Anti-Terrorism Accreditation Board Transportation Security Committee.

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Background

Intent

This document intends to define a “Use of Force” continuum that can be used in an all-hazards environment.

Limitations of Scope

This document intends to put forward what can be described as suggestions based on best practices. It does not purport to offer legal advice that applies in every jurisdiction nor does it purport to state that a ship, if adopting these principles, will be secure from harm or attack at all times and against all attackers. Where legal questions are concerned, it is prudent to consult with appropriately competent legal authorities.

This document is not intended, nor do the authors wish to communicate, that conditions can be manipulated in order to justify an excessive use of force. Nor do the authors wish to communicate that it is unreasonable for an individual to use force to defend his or her person against death or grievous injury just because it is not expressly stated in this document. Sound judgement should prevail.

The tables and guides in this document are written for general conditions and sound judgement must be applied not only in determining the validity of a specific course of action, but also to whether or not conditions are sufficiently different (operational, environmental, threat, and cultural) to warrant exploring other approaches. Conditions must be assessed based upon the conditions at the time with judgments and decisions being made by capable and trained persons.

Shipping companies are advised to exercise their own due diligence in the conducting of Threat and Risk Assessments and ensuring that they have taken appropriate steps for the safeguarding of their ships, crews, passengers and cargo.

Definitions

Ship Reaction

Normal Application – This involves using the device in line within both the manufacturer’s suggested operating procedures and practices that are associated with achieving the best chances of success in applying those operating procedures. For example, aimed weapons will assume aiming at the center of mass of the intended target, not aiming for a peripheral part or limb.

Normal Person – Applies to an individual who has no medical or psychological condition that can exacerbate the injury associated with the application of force. For the defender applying force in self-defence, a person may be reasonably assumed to be normal unless the individual suffers the effect of the condition in view of the defender or bears commonly-known indications of suffering from the condition.

Communicative – This involves the ship being attacked attempting to clarify the intent of the other vessel or dissuade it before the intent becomes clearly hostile or aggressive.

Presence – This involves the ship being attacked (aka object) demonstrating through display that it has a comprehensive and well-founded security presence on board and that any attempt to board is likely to meet significant resistance, reducing the value of the benefits associated with any such attempt.²

Navigation (Defensive) – This involves the ship changing course or speed in such a way as to reduce the attacking vessel's ability to continue with the attack.

Display of Force – This involves the ship demonstrating the effect of on-board weapon systems in such a way that the use and effect of those weapons is visible to the attacker but is not an immediate threat in terms of serious injury, etc.³

Less-than-Lethal Attempt – This involves the ship applying on-board weapon systems in such a way that the use of effect of those weapons can be reasonably expected not to pose a risk of serious injury or death to the individual. This may include the direction of weapon systems against the ship infrastructure (engines, control areas, etc).⁴

Full Application Attempt – This involves the ship applying the weapon in such a way that serious injury or death is a reasonably predictable outcome.

Subject Location

Alongside – term used to describe the innermost zone of awareness of another vessel that results in concrete action on board the vessel. In this case, the vessel may be in direct contact or able to transfer between the two vessels without significant assistance.

Distant – term used to describe the outermost zone of awareness of another vessel that results in concrete action on board the vessel in terms of a response to that other vessel's presence.

Local – term used to describe the 2nd outermost zone of awareness of another vessel that results in concrete action on board the vessel in terms of a response to that other vessel's presence.

Near – term used to describe the 3rd outermost zone of awareness of another vessel that results in concrete action on board the vessel in terms of a response to that vessel's presence.

² In this context, the use of the term presence is its common usage, but applied to how the ship is being perceived by the potential attacker. This parallels the definition of presence pertaining to the ability to command respectful attention or the ability to project self-assurance and effectiveness that allows a performer to achieve a rapport with his or her audience. <http://www.thefreedictionary.com/presence>

³ This definition includes concepts associated with coercion or the ability to compel through the application of pressure. The concept of force in this context may be looked at in terms of the law-enforcement or military application of the term, but in the context of the use of force continuum or rules of engagement.

⁴ The concept of less than lethal is one that stems from

Subject Response

Cooperative (Directed) – The subject (ship, etc) responds appropriately to direction, but does not take action unless instructed to do so

Cooperative (Self) – The subject (ship, etc) responds appropriately and does so of its own accord, without having to be instructed by the vessel

Resistance (Passive) – The subject (ship, etc) fails to follow instruction, but does so though not moving or otherwise following the instructions provided

Resistance (Active) – The subject (ship, etc) takes steps to avoid following instructions.

Aggressive (no weapons) – The subject (ship, etc) shows signs of attacking or otherwise posing a security risk to the vessel, but does so without weapons being in plain or clear view. In this context, the presence of materials used to support weapons (ammunition crates, etc) point to the presence of weapons.

Aggressive (risk of harm) – The subject (ship, etc) carries on with a course of action that poses both a security risk to the vessel but also poses a risk of injury to those on board the vessel. This may include attempts to board, unsafe navigation, tossing of lines with hooks, etc)

Aggressive (risk of serious physical injury or death) – The subject (ship, etc) carries on with a course of action that poses both a security risk to the vessel but also poses a risk of serious injury or death to those on board the vessel. This may include firing weapons, etc.

Lethal / Less-Lethal / Less-Than-Lethal

Lethal – that force that is reasonably likely to cause death or grievous injury.

Less-Lethal - Recalling that Lethal Weapons are 'likely to cause death or great bodily harm', less-lethal weapons will continue to pose a great risk of lethal injures, but do not measure up to the definition of "likely". Various Specialty Impact Munitions meet this definition, others do not. Factors that influence the fine divide between 'less-lethal' and 'lethal' are mass, velocity and payload content.

Less-Than Lethal - By definition, 'less-than-lethal' implies a greater likelihood of serious bodily injury or death over 'non-lethal'. There is a greater tolerance in the industry for the lethality level which is considered inherent in the margin of error. This term is ordinarily prescribed for various munitions deployed from higher velocity -lethal weapons, batons, electronic devices and is some venues chemical agents.

Methodology

This document was originally drafted by Evolutionary Security Management. The draft is then provided to a trusted community of persons that can demonstrate experience and expertise in the subject matter. This community then provides commentary back regarding the document. The final draft of the

document is then published with those individuals who have provided substantial comments able to use it without let or hindrance.

Recommended Policies

Adhering to this structure does not reduce an individual's right to self-defence in the face of a clear and immediate threat to his or her person. Any individual has the right to use reasonable force in order to protect his or her person against death or grievous injury.

The policies below apply to the vessel's actions in response to threats against its crew, property or operations. It should be noted that the use of force continuum does not apply when responding to the legitimate instructions of law enforcement persons who are exercising legitimate authority.

Policy 1 – Use of Force in Self Defense

The organization will only use force as a tool for clear self-defence, particularly its personnel, assets and legitimate operations.

The intent this policy is to both empower individuals to act in self-defence but also to protect the organization against legal entanglements that could pose a risk to the organization or its operations.

Policy 2 – Proportionate Force

The organization will ensure that it only uses that force that is necessary to remove its personnel, assets and operations from injury or unlawful interference.

The intent of this policy is to again protect the organization and the individual in the legal context.

Policy 3 – Continuum of Force

All personnel who are part of the organization, either through membership or contract, will adhere to the use of force continuum.

The intent of the use of force continuum is to ensure that the goals defined by Policies 1 and 2 can be clearly demonstrated. It is also intended to protect the organization against individuals or actions that tend to apply excessive amounts of force leaving the organization exposed to legal risk.

Policy 4 – Accountability

The ultimate accountability for the “use of force continuum” resides with the most senior management of the organization.

The decision to apply force within a specific situation is the responsibility of the senior delegated officer of the organization. Within the maritime context, this is the master of the vessel. This includes the decision to begin applying the use of force continuum and escalating to the next level.

Policy 5 – Training

Only personnel that are trained in the appropriate use of force will be authorized to apply that force, unless the individual is acting in clear self-defence.

For example, when an individual is asked to apply force using a weapon, he or she must have received appropriate training in the use of that weapon.

Ideally, this will involve instructors who fully understand the use of force, are competent to apply that use of force, and who are trained in the ship's defensive equipment.

Policy 6 – Equipment Selection

Equipment must meet the following criteria in order to be authorized for use of force activities:

- Must be directed in the sense that the operator must be able to direct the application of force and must have reasonable control over the final decision to apply that force;
- Must be designed in such a way that an individual facing the application of such force has the opportunity to take a course of action not to be subjected to the application of force; and
- Must be designed taking into account the safety of those nearby to the application of force in order to reduce, to the greatest extent possible, collateral damage.

Policy 7 – Requirement for Follow Up

All uses of force must be clearly documented for the purpose of future review and oversight.

Recommended Normative Structures

Normative structures provide stability and consistency to decision making processes. Where a policy defines the goal or outcome to be achieved, the normative structure defines what tools and inputs are considered appropriate in arriving at that outcome.

Normative Structure 1 – Identification of Potential Injury

The following must be identified in order to reach the conclusion that an individual is at risk of injury:

- The **means** of attack must be either under the control of the attacker or being disputed as part of the action to defend one's self (possession of the weapon, struggle for the weapon, in possession of communications tools or controllers used to activate or direct the weapon);
- The attacker must have the **opportunity** to attack in the sense that the attacker has the ability to make the decision to attack and carry out that attack before he or she can be prevented from attacking (prevention requires a physical barrier that protects the intended victim from harm); and
- The **intent** of the potential attacker must be identified as being either to cause harm or to constrain the person under conditions where harm to the individual may be reasonably assumed (e.g. statement to attack, overt act, past behaviour).

Normative Structure 2 – Level of Injury (Applied)

The following applies to determining the level of injury that may be caused by the application of force:

- **Lethal** – where the injury associated with the normal application against a normal person can be reasonably expected to cause grievous bodily injury or death to the individual.⁵
- **Less Lethal** – where the injury associated with the normal application against a normal person may still cause grievous injury or even death, but where the design of the weapon makes it less likely than lethal weapons. While the intent may be to deliver a non-lethal attack, it does not eliminate the possibility;
- **Less-than-lethal** – where the injury associated with the normal application against a normal person can be reasonably expected to incapacitate the individual. It must be noted that less-than-lethal does not imply that it is not lethal in all circumstances, particularly where it applied outside of the two conditions above; and
- **Controlling** – where the use of force applied to the individual can be reasonably expected not to injure the individual but rather to ensure that the individual cannot proceed further with the unwanted course of action.

Normative Structure 3 – Level of Injury (Potentially Suffered)

The level of injury potentially able to be suffered follows Normative Structure 2. Certain elements need to be taken into account:

- Firing in the direction of the vessel constitutes a potential use of lethal force. This applies to all small arms (rifles, assault rifles, grenade launchers, etc); and
- The brandishing of knives or similar items constitutes a threat of use of lethal force;
- The attempt to board the vessel bearing arms and without the master's authorization constitutes a reasonable threat to personal safety or liberty. Where there have been past incidents of hostages being executed, then there may be a reasonable expectation that one's life is in danger during a similar attack by a similar organization.

Procedures to be Followed

Two appendices provide graphical representation regarding the escalation of force. These are the following:

- Appendix B – Option on Defence in Depth Approach.
- Appendix C – Option on Escalation of force.

Planning

1. Identify required distance for zones;

⁵ This can be commonly found at <http://legal-dictionary.thefreedictionary.com/Lethal+force>

2. Identify sources of operational and threat intelligence available while underway;
3. Identify major threats in terms of tactics;
4. Identify the major threats' apparent knowledge, skills, abilities and resources;
5. Identify potential risks to the ship, persons on board, and material carried on board;
6. Ensure plan has steps to address major risks to persons, ship and operations; and
7. Ensure plan established and stores on board (includes approvals by company and master).

Preparation

1. Establish range markers and prepare tools to identify range;
2. Test lines of communication with threat and operational intelligence;
3. Update all threat information;
4. Prepare defensive works not able to be prepared when underway;
5. Test all other stores and supplies to be used;
6. Conduct initial training and drill routine; and
7. Inform master of vessel of progress, readiness of the vessel and any potential vulnerability (include options on how to mitigate).

Mitigation

1. Maintain watches (not less than 2 man) with eye towards fatigue and concentration deterioration;
2. Increase monitoring of sources of information regarding distant zone;
3. Continue drilling routine with those responsible for security;
4. Ensure that defensive layers are well established and ready for execution; and
5. Ensure off-duty personnel balance rest and exercise to remain alert and ready.

Response

1. Initial notification by watchkeeper to person responsible;
2. Defensive plan activated taking into account actions in distant zone and escalation of force;
3. Ensure communications to authorities completed (note potential attempts to jam transmissions);
4. Ensure recording and other methods of maintaining records are actively recording (use for later defence); and
5. Activate and escalate use of force through defensive layers.

Parallel Sources of Information

Several sources of information can be found with respect to the use of force continuum. It is recommended that, when seeking additional information or clarification of existing information, the following are used as part of the quality assurance process:

- Legal advice should be provided by legal entities that have significant experience in maritime law;

- Where the use of force continuum is involved, legal entities with backgrounds in civil liability, rules of engagement and similar kinds of issues may be of service, depending on the topic.

Goals to be Achieved

Success in terms of the use of force continuum is measured in terms of the attack being stopped, casualties being minimal (if existent), damage being minimal, and legal risk being minimized.

How to measure success

The first measurement (attack being stopped), requires that each time the vessel is attacked, the actions taken and results achieved are recorded. In this case, it is particularly important to note those activities that led to success and those activities that appeared to be inconsequential.

Casualties being minimal can be measured in terms of the number of casualties being measured in terms of the following:

- Deaths;
- Debilitating injuries;
- Serious injuries;
- Minor injuries; and
- No injuries.

In this context, the goal is to have as few injuries as possible.

Appendix A - Delineation of Zones

Calculating Distances

The following are used to calculate the distances associated with the four zones:

- **Alongside** - The distance at which the ship is considered alongside is that distance from the hull to where an individual can toss an item on board without assistance. The distance associated with being alongside will be affected significantly by the ships' freeboard, elevation of decks, and the nature of the object commonly used in the attack;
- **Near** – Beginning from the outer edge of the alongside zone and ranging to the effective range of the weapons being carried on board;
- **Local** – Beginning with the outer edge of the near zone, and ending at a distance calculated by using Formula 1; and
- **Distant** – Beginning at the outer edge of the local zone and extending to a distance calculated by Formula 2.

Formula 1 – Outer Edge of Near Zone / Near Edge of Local Zone

The following variables are used in this calculation:

- Let **NZ** equal the outer edge distance of the near zone / near edge of the local zone;
- Let **TR1** equal the distance it takes for the ship to accomplish a 90 degree turn in the most difficult direction (against wind and current);
- Let **SS** equal the maximum speed that can be achieved by the defending vessel; and
- Let **AS** equal the maximum speed that can be achieved by the attacking vessel.

$$NZ = TR1 \times (AS / SS)$$

For example:

- Given that the RPG-7 maximum effective range is 500m but that it will self-detonate at 920m, this will be considered the first threshold. We are using the Rocket Propelled Grenade (a shoulder fired rocket propelled grenade commonly associated with Eastern Block forces) since it has been used frequently in this environment.
- Given that the sample vessel can make a 90 degree turn (at $\frac{3}{4}$ speed) with a radius of 1200m, this is considered to be the first part of the threshold. Where the sample vessel has a maximum speed of 13 knots and the attacker has a maximum speed of 26 knots, the range of this zone is extended out to 2400m.

Formula 2 – Outer Edge of Local Zone / Near Edge of Distant Zone

The following variables are used in this calculation:

- Let DZ represent the outer edge of the near zone / near edge of the distant zone;
- Let TR2 equal the distance it takes the ship to accomplish a 180 degree turn in the most difficult direction;
- Let **SS** represent the maximum speed that can be achieved by the defending vessel; and
- Let **AS** represent the maximum speed that can be achieved by the attacking vessel.

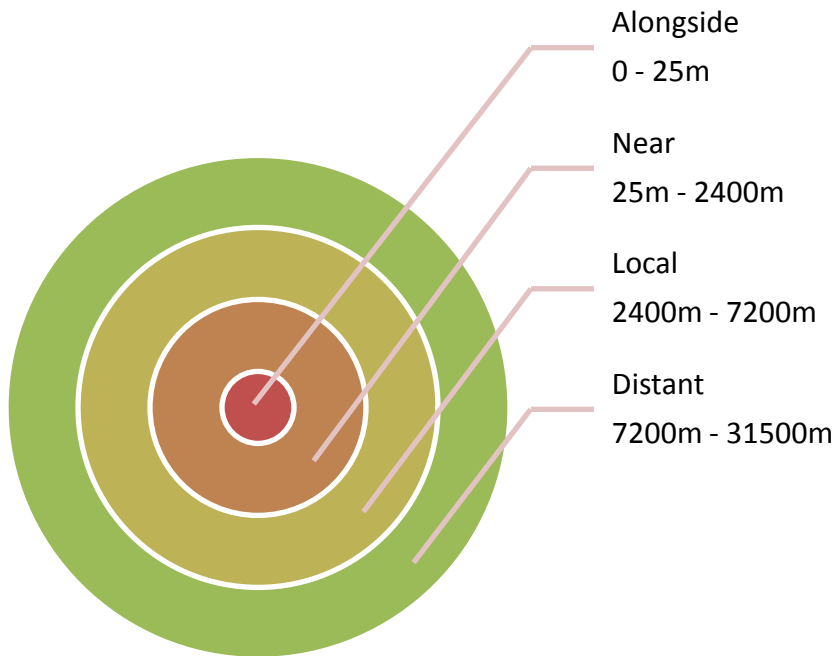
$$DZ = 1.5 \times TR \times (AS/SS)$$

Given our sample ship, we will assume that the full 180 degree turn would take 2400m. In this case, the Local Zone would end at 7200m.

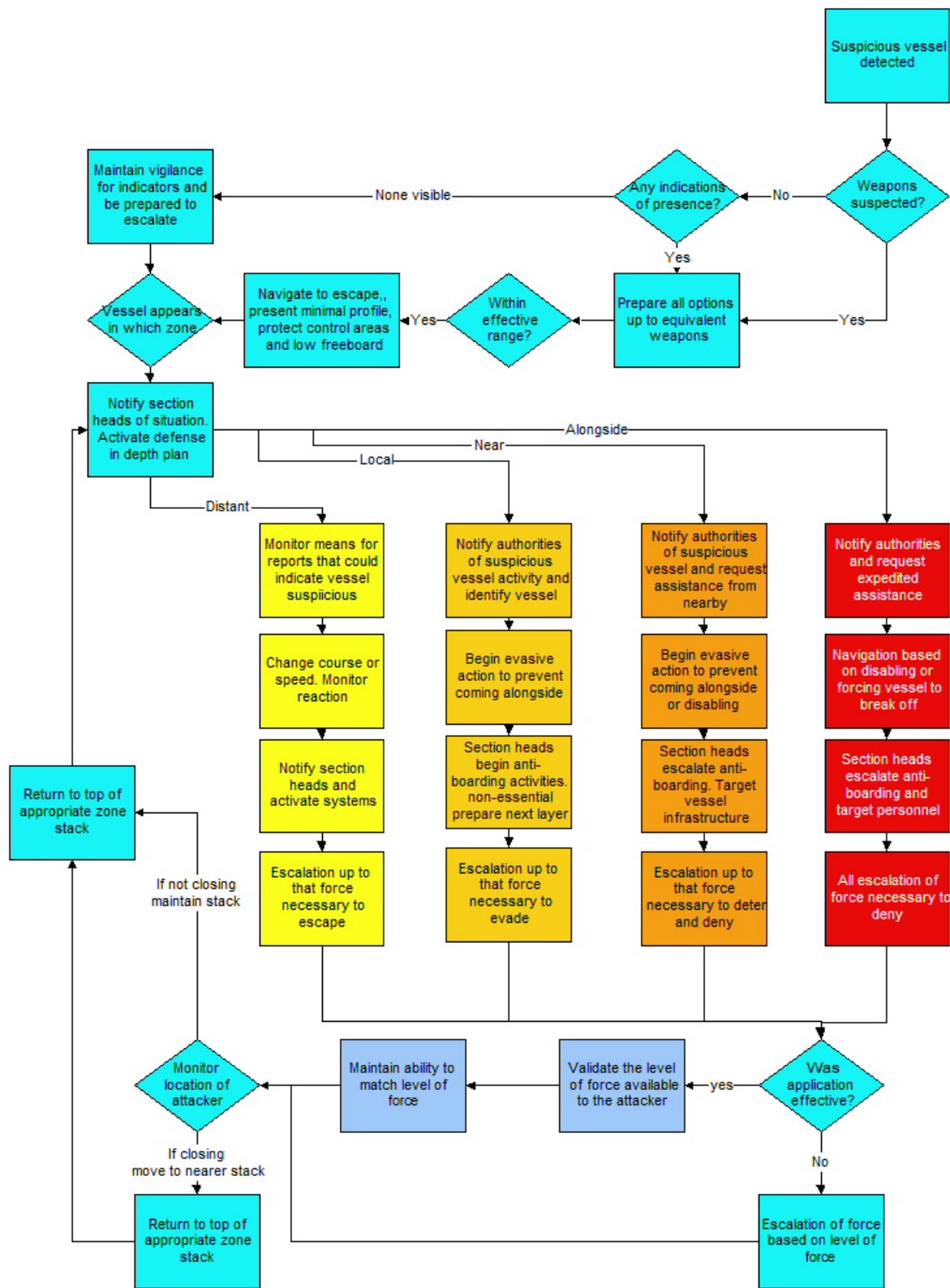
Far Edge of the Distant Zone

The far edge of the Distant Zone can be calculated based upon the apparent risk in the area. It is somewhat more arbitrary, but should be based upon the time it would take to prepare the ship from a state of unreadiness to a state of readiness so that an attacker traversing the distant zone at maximum speed would be met with a ready ship upon arrival at the perimeter into the local zone. In this context, the formula is a straight time x rate question where if it takes the ship 30 min to prepare and the attacker can travel at the equivalent of approximately 49km / h (26 knots x 1.852 kmph / knot) or 24.5km. In this context, the zone would extend out another 24.5km.

In this context, the zones would appear as follows:



Appendix B – Example of Operational Decision Tree



Appendix C – Option on Escalation

General

The priority of effort for the vessel involves the following:

- **Evade the attacker** – through the effective use of intelligence, planning and navigation, avoid the attack;
- **Deter the attacker** – displays of capability used to convince the attacker not to attack (presence, verbal warning, non-verbal cues or signals, etc);
- **Deny the attacker**; - actions that are used to eliminate or greatly reduce the attackers opportunity to board the vessel or direct effective fire against it (manoeuvring, wake, defensive works);
- **Delay the attacker** – actions that are used against the attacker’s person or vessel in order to slow their forward progress or make the attack to difficult to accomplish (flooding, blinding, nets, etc);
- **Warning** – involves firing weapons that will next be used to either disable or destroy the attacker. This is meant to give the attacker the opportunity to abort the attack.
- **Disable the attacker** – involves directed and effective fire against the attacker’s infrastructure (not persons) in such a way that the attacker no longer has the means to carry on with the attack; and
- **Destroy the attacker** – involves directed and effective fire against the attacker or its infrastructure (including the use of automatic fire against a point target) for the purpose of ending its life or causing adequate harm to the attackers that they are no longer a viable threat to the vessel.

Attacker’s actions

The following describes the response of the attacker to the direction:

- **Cooperative** – responds of own accord and without direction;
- **Cooperative with Direction** – responds by following direction, but only after being informed;
- **Non-responsive** – No response to direction, carries on with apparent activities;
- **Attempts to by-pass** – makes attempt to move closer (quick turns into the vessel, etc) or to progress to the next apparent step in either stopping, boarding or otherwise attacking the vessel;
- **Brandishes or Boards** – Attacker displays weapons in a way that can be reasonably construed as threatening to use those weapons if the ship or crew does not comply with threats. Attacker attempts to gain access to the vessel or control surfaces without authorization;
- **Fires or Taking control** – Attacker directs lethal force towards the ship or crew. Attacker gains access to the vessel and gains access to critical spaces, control areas, etc.

It should be noted that the reasonable person test applies. This involves whether or not an individual who is not under pressure, has comparable experience and education would, after prudent consideration, arrive at the same conclusion.

Continuum

This continuum is used to describe the general track of the force continuum through an escalating attack against a vessel.

Ship Defensive Action		Purple = Excessive / Green = Defensible / Red = Inadequate					
Alongside to Near	Destroy						
	Disable						
	Warning						
Near to Local	Delay						
	Deny						
	Deter						
Local to Distant	Evasion						
	Navigation						
		Cooperative	Cooperative with direction	Non-responsive	Attempts to bypass controls	Brandishes Boards	Fires Taking Control
Attacker Actions in Response to Use of Force							

Again, it should be clear that an individual or organization is expected to use sound judgement when applying the use of force continuum. The key is to evaluate the situation in front of you and respond appropriately, not blindly follow the full process.