

Civilian Casualty (CIVCAS) Mitigation Nonlethal Tools, Equipment, and Capabilities



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USE OF NONLETHAL WEAPONS

The use of nonlethal weapons (NLW) and munitions provides a greater range of graduated response options to leaders and Soldiers. NLW provide a safe, less-than-lethal alternative capability to warn and deter individuals during potential escalation of force (EOF) incidents that could lead to a civilian casualty (CIVCAS) event. EOF is one of the leading causes of CIVCAS and has had strategic importance due to the changing operational climate and focus to gain the local citizens trust of Coalition Forces/Units in the Host Nation. Units should use nonlethal weapons, munitions, and fielded tools whenever possible to help de-escalate situations and reduce the potential for CIVCAS incidents. Troops should conduct proper hands-on training, familiarization, and certification with each type of nonlethal munitions and fielded capabilities/tools prior to use. NLW can support a variety of missions by doing the following:

<p>Provide troops with a means to hail and warn, deter, dissuade (de-escalate, reduce tensions, increase situational understanding), and determine hostile/non-hostile intent of suspect individuals prior to applying lethal force if necessary in accordance with rules of engagement (ROE) and EOF likelihood of conflict escalation.</p>	<p>Provide EOF options in a variety of mission applications (Force Application/Force Protection) across the conflict spectrum that can effectively limit collateral damage to civilian property, reduce reconstruction costs, minimize the opportunity for escalation of force situations. Specifically, the NLW resolved past operations, the effective employment of NLW resolved the use of NLW have been a positive and powerful influence in local communities in "winning the hearts and minds" of the local populace. The employment of NLW has helped reduce the loss of life and collateral damage.</p>
<p>Counter personnel tasks: • Deny areas to individuals. • Move individuals. • Disable combatants. • Suppress combatants.</p>	<p>Counter material tasks: • Stop/disable vehicles. • Stop/disable vessels. • Stop/disable/ divert aircraft. • Deny access to a facility.</p>

NONLETHAL WEAPON TRAINING

The National Defense Authorization Act (NDAA) of 2011 highlights the importance of NLW training as a prerequisite for deploying forces stating that proper training on NLW capabilities is critical to effective fielding. Additionally, the Secretary of Defense will ensure operational training of counterpersonnel NLW capabilities prior to fielding these devices to deploying Service members.

In accordance with TC 3-19.5, three objectives are considered when using NLW:

• Accuracy (Are munitions hitting the target in the desired location and at the needed range/distance?)

• Effectiveness (Are the munitions producing an effective and reliable and desired effect on the target?)

• Reduction of injury (Are the injuries inflicted truly nonlethal?)

It has been a proven in recent operations that military forces trained in both lethal and NLW are better positioned for today's complex operational environments in which tactical actions often have strategic effects. The use of NLW can help de-escalate potentially volatile, lethal situations during military operations.

FREQUENTLY ASKED QUESTIONS

QUESTION: Do NLW legal considerations differ from lethal weapons?
ANSWER: No. In accordance with DoD Directives 3000.3, 2001 and U.S. Law, both lethal and NLW must be reviewed to ensure that they comply with U.S. domestic and applicable international law and treaties, to include the Law of Armed Conflict (Law of War). Preliminary legal and treaty compliance reviews allow the Joint Non-Lethal Weapons Directorate (JNLWD) to ensure funds are focused on viable non-lethal technologies. Based on these reviews, there are restrictions on the continued development of NLW. Final legal reviews are still required for NLW in the developmental and conceptual stages.

QUESTION: What is considered a NLW?
ANSWER: The definition of NLW includes "weapons, devices and munitions." This definition is very broad and includes devices and munitions that are not normally considered "weapons," such as acoustic hailing devices.

QUESTION: Why are NLW important?
ANSWER: NLW provide another "option" for the force. In past operations, the effective employment of NLW resolved escalation of force situations. Specifically, the NLW created the desired effect on the personnel/material targeted. The use of NLW has also generated positive "psychological effects" on others in the area and helped to contribute to mission accomplishment. The perceptions associated with the use of NLW have been a positive and powerful influence in local communities in "winning the hearts and minds" of the local populace. The employment of NLW has helped reduce the loss of life and collateral damage.

Legal Use of NLW

Definition

Employment

Requirements

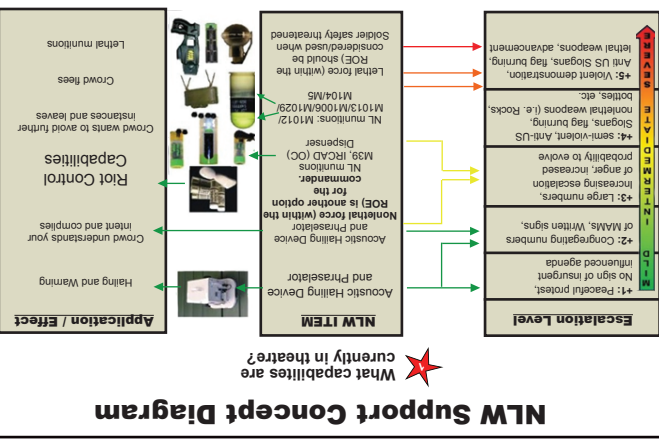
Use of Force

NLW can provide more reaction time for troops to assess the tactical situation as a preferred course of action to reduce CIVCAS. A few examples of successful techniques include, but are not limited to, the following examples:

• Use NLW capability devices, such as acoustic hailing, dazzling laser, and/or flash bang grenade, to signal and warn noncombatants and to help de-escalate.

• Use nonlethal long-range warning munitions to gain the attention of an approaching possible threat and to initiate intent.

The above techniques have proved very successful in providing hailing and warning steps that unsuspecting noncombatants will often recognize, stop, or turn away from, thus avoiding a possible CIVCAS event due to an EOF incident.



EMPLOYMENT IN MILITARY OPERATION

NLW support all military operations—including peacetime military engagement, contingencies, and major combat operations.

Nonlethal capabilities have particular application in civil support operations where there is the need to enhance the Army's ability to apply force proportionally to the threat and the desire to protect non-combatants, promote international political support, alleviate environmental concerns, and enhance post-conflict transitions and termination.

1. FOB perimeter security to prevent injury to personnel and damage to property.
2. Checkpoint operations where nonlethal capabilities protect friendly forces and improve public opinion and acceptance.
3. Convoy security in urban operations where population density and characteristics of the area require the careful employment of force to minimize loss of life and destruction of property.
4. Crowd control and civil disturbance operations where nonlethal munitions, protective equipment, and support equipment enable Army elements to execute population control missions and provide protection while minimizing collateral damage and injury to personnel.
5. Cordon and search operations where friendly forces come in close contact with the local population under stressful and often hostile circumstances.
6. In detainee operations where all displays of violence must be brought under control quickly while avoiding unnecessary injury or death to the detainees.

CERTIFICATION AND FAMILIARIZATION

Certification requires the individual to demonstrate safe handling procedures of a particular munition and firing platform and to discharge it with a reasonable degree of accuracy while completing a prescribed course of fire. Certification acknowledges that a minimum standard of performance has been set and that the individual met that standard.

Familiarization includes many of the tasks and conditions of a qualification but does not include a minimum standard. An individual demonstrates that he can perform loading, unloading, aiming, and discharging the system safely. Whether he hits the target, where he hits the target, or how many times he can repeat it is not important to the task. Accuracy and shot placement as well as fine-tuning "sweet spot" recognition is not measured in the performance.

In accordance with service directives, operational forces will have a fundamental knowledge of NLW capabilities available in-theater (weapons, munitions, and device), service-specific issued/fielded NLW capability sets/mission modules, and the employment of NLW to support mission objectives.

The "Introduction to NLW (J3OP-US1236)" online training course is available at <https://kodirect.ten.mil> (JKO)

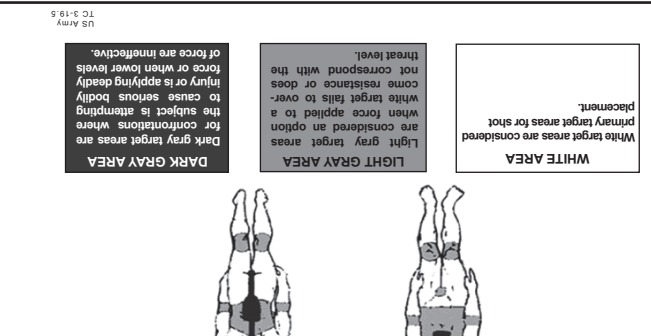
DE-ESCALATION TECHNIQUES

Escalation of Force (EOF) is a sequence of actions that begins with nonlethal force measures (i.e., pen flares, bright visual signals to include, spotlights, lasers, and pyrotechnics, including long range warning munitions) followed by flags, and may graduate to lethal measures (direct action) to include warning, disabling (i.e., long range flashbang/warning munitions), and/or deadly shots to defeat a threat and protect the force. EOF is not a substitute for, but supports the ROE.

- Initially employ a signal device such as a pen flare/ long range warning munition, or bright pyrotechnics initially followed by one of the following:
- Audible warning
- Visual aids (lights, signs)
- Nonlethal means (barriers)
- Show weapon; demonstrate the intent to use (aiming weapon)
- Fire warning shots, if approved by ROE, and if surrounding would not result in CIVCAS
- Use disabling fire (on personnel and/or vehicles)
- Use deadly force

NLW MUNITIONS & DEVICES

Nonlethal munitions (NLM) are explicitly designed and primarily employed to incapacitate personnel or materiel while minimizing fatalities, permanent injury to personnel, and collateral damage to property and the environment. Achieving the proper aiming point is critical for all nonlethal munitions training. Where a particular nonlethal projectile is aimed will play a great part in what effect the round will have on the target. Typically, Soldiers are taught to aim center mass. However, striking larger muscle groups such as the thigh or lower abdomen are more effective for nonlethal munitions and reduce the chance of serious injury or death.



The "sweet spot" is the finite distance between the point away from the launcher muzzle where the projectile has lost enough energy that it will not cause serious injury and the point where the projectile has lost so much energy that a hit is no longer effective and/or accurate. The "sweet spot" will be different for each munition, but typically it is between 10 and 55 meters.

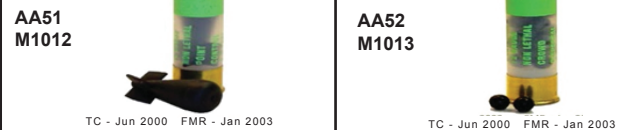
NLW Effects at Distances

Type of Nonlethal Munition	Potential to Cause Serious Injury or Death	Sweet Spot	Potentially Ineffective
40MM Sponge Grenade Round, M1006	0m-10m	10m-50	50m+
40MM Crowd Dispersed Round (area), M1029	0m-10m	10m-30m	30m+
12-GA Crowd Dispersal Round (area), M1013	0m-10m	10-20m	20m+
12-GA Fin Stabilized Round, M1012	0m-5m	0-5m	5m-15m
66MM Nonlethal Grenades, L96, M98 & M99	0m-80m	80m-100m	100m+

Accuracy is a key factor that works in combination with "sweet spot" and aim point to achieve the desired effect in the targeted subject. Nonlethal rounds while in some cases are considered accurate, will never be as accurate as lethal rounds. They are most accurate at the beginning of their "sweet spot" and less accurate at the terminal end of the "sweet spot." This is due to their loss of energy and the possible effects of the environment such as wind, rain, or extreme temperature on relatively slow and large rounds.

The only way to predict how a particular nonlethal munition will perform across the "sweet spot" area is to train with it and the appropriate firing platform. Accuracy is where the "sweet spot" and aim point intersect on the target to produce a desired effect.

12 Gauge Non-Lethal Cartridges



AA51 M1012	AA52 M1013
<ul style="list-style-type: none"> 12 gauge low velocity cartridge Projectile - Fin stabilized "bomblet" shaped rubber Delivers strong non-penetrating blow to the body Fired from Mossberg 500 shotgun Engagement Range - 10m - 20m Muzzle Velocity - 500 ft/sec (152.4m/sec) Length - 2.45 (62.2 mm) Total Weight - 500 grains 	<ul style="list-style-type: none"> 12 gauge low velocity cartridge Projectile - 18, 32 caliber rubber balls Delivers strong non-penetrating blow to the body Fired from Mossberg 500 shotgun Engagement Range - 10m - 20m Muzzle Velocity - 900 ft/sec (274m/sec) Length - 2.37 (60.2 mm) Total Weight - 500 grains

The M1012 Point Round and the M1013 Area Round are the Army's current 12 gauge NLM. Both rounds engage targets at close range only. The XM1116 is an extended range NL round which will greatly increase the reach of the Soldier in engaging approaching targets.

40mm Non-Lethal Cartridges



BA06 M1006	BA13 M1029
<ul style="list-style-type: none"> 40 mm low velocity cartridge Projectile - Foam rubber Delivers strong, non-penetrating blow to the body Fired from M203 Grenade Launcher mounted on M16A1 or M4 Engagement Range - 10m - 50m Muzzle Velocity - 265 ± 20 ft/sec (81 ± 6 m/sec) Length - 5.272" (13.4 cm) Total Weight - 68gm (0.15 lb) 	<ul style="list-style-type: none"> 40mm low velocity cartridge Projectile - 48, 48-caliber rubber balls Delivers a strong, non-penetrating blow to the body Fired from M203 Grenade Launcher mounted on M16A1 or M4 Engagement Range - 10m to 30m Muzzle Velocity - 450 ft/sec Length - 4.8" (12.2cm) Total Weight - 202.22gm (7.0 oz)

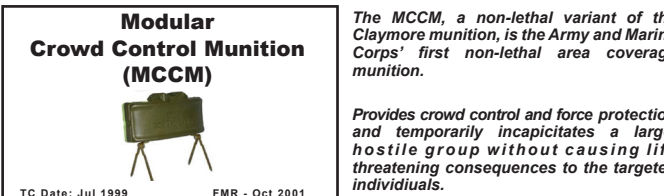
The U.S. Army currently fields the M1006 Non-Lethal Cartridge, designed for point target engagement, and the M1029 Crowd Dispersal Cartridge, capable of engaging multiple targets at once. Each is intended for close quarter engagement and is fired from standard M203 and M320 Grenade Launchers.

Stun Hand Grenade (M84) Reloadable Stun Practice Hand Grenade Body (M102) Fuze (M240)



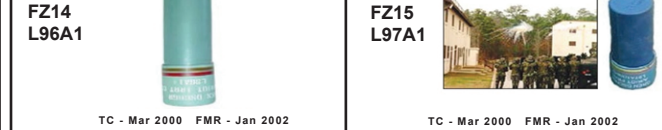
GG09 M84	GG18 M102	GG19 M240
<ul style="list-style-type: none"> Nonlethal, nonfragmenting, flash/bang Used primarily indoors for forced entry and room clearing Intense flash over 1 million CP Noise level range from 170-180 db @ 5 ft Fuze delay time range 1.5 + 0.8/0.5 sec 	<ul style="list-style-type: none"> Full function trainer Intense flash over 1 million CP Noise level range from 170-180 db @ 5 ft Fuze delay time range 1.5 + 0.8/0.5 sec 	

The M84 Stun Grenade uses a bright flash and loud report to disorient individuals allowing for dispersal or easier apprehension. It is intended for use in confined spaces such as room clearing.



The MCCM, a non-lethal variant of the Claymore munition, is the Army and Marine Corps' first non-lethal area coverage munition. Provides crowd control and force protection and temporarily incapacitates a large, hostile group without causing life threatening consequences to the targeted individuals. Gives the field commander the option to apply non-lethal force as a first line of defense against progressive noncombatants. MCCM is command control initiated and disorients and incapacitates targeted individuals for approximately 10 seconds.

L96A1/L97A1 Anti-Riot Grenades



FZ14 L96A1	FZ15 L97A1
<ul style="list-style-type: none"> Provides NL, riot control (tear gas), standoff capability to 66 MM equipped vehicles Enhances capability of friendly forces to conduct force protection without contact with rioting crowds Deploys 23 countermeasure resistant CS (2-chlorobenzalmalonitrile) canisters 65-90 meters from the launcher 	<ul style="list-style-type: none"> Employed from any 66 mm smoke discharger Simulates L96A1 CS grenade for training purposes Projectile - 23 canisters filled with cinnamic acid (CA) Range - 65m - 95m Length - 185 mm (7.28 in) Total weight - 568 gm (1.25 lb)

The L96A1 Riot Control Grenade projects a cloud of CS riot control agent at extended ranges to subdue and disperse large groups. The L96 and L97 can also be used as training simulators.

M98/M99 66mm NL Grenades



FZ16 M98	FZ17 M99
<ul style="list-style-type: none"> Employed from any 66mm smoke discharger Projectile: 3 ground bursting sub-munitions with pyrotechnic charges for audio and visual stimuli Disorients individuals with intense light and sound Each sub-munition functions with a 160 dB report Range: 100m (50m-100m with LV0SS) Deployment radius: 5m - 10m Length - 25.25 cm (9.94 in) Total weight - 725.7 gm (1.6 lb) 	<ul style="list-style-type: none"> Fired from any 66mm smoke discharger Projectile: 3 ground bursting sub-munitions of 140, 32 caliber PVC balls each Delivers strong nonpenetrating blow to body Range - 100m - (50m-100m with LV0SS) Deployment radius: 5m - 10m Length - 25.25 cm (9.94 in) Total weight - 725.7 gm (1.6 lb)

The M98 and M99 are the latest in a growing arsenal of NLM. The M98 Distraction Grenade releases three stun sub-munitions that produce a bright flash and loud report to disorient individuals or large groups. The M99 Blunt Trauma Grenade fires three sub-munitions that each release a shower of high velocity rubber pellets into a crowd.

M104 Non-Lethal Bursting Hand Grenade (NLBHG)



GG04 XM104	USER PAYOFF	MILESTONES
	<ul style="list-style-type: none"> Crowd dispersal Room clearing Forced entry Range - 65m - 95m Force protection Detainee operations 	<ul style="list-style-type: none"> TC by USMC Nov 06 ONS approved Mar 07 Assets to theater TBD Army TC TBD Army FMR TBD

The XM104 Non-Lethal Bursting Hand Grenade produces a shower of high velocity rubber pellets that sting and disorient potential targets.

Launched Electro Stun Device



Potential Applications:	Technical Applications:
<ul style="list-style-type: none"> Counter-personnel Control crowds Incapacitate individual(s) and groups 	<ul style="list-style-type: none"> Electro-muscular Incapacitation (EMI) Overrides sensory & motor nervous system with electrical impulse Transmits EMI effect through up to two inches of clothing Effective range - up to 35 feet

The LESD is an electro-muscular incapacitation device, used to propel wired probes or to conduct energy directly to affect sensory and motor functions, allowing control over a targeted individual. It can deliver an electrical shock capable of arching up through two inches of clothing and can incapacitate a target without permanent injury or known side effects. The effective range is up to 35 feet.

Individual Serviceman's Non-Lethal System (ISNLS)



Potential Applications:	Technical Applications:
<ul style="list-style-type: none"> Counter-personnel Control crowds Incapacitate individual(s) and groups 	<ul style="list-style-type: none"> Greater stand-off range, 100m-300m Greater Non-lethal and Effective engagement ranges 10m to 150m+ Consistent Target Effect at wide engagement ranges Variability/Scalability of Effect Greater Integration with lethal systems for flexible use of force

The ISNLS is a compressed air-operated, semi-automatic launcher designed to fire non-lethal projectiles at ranges of 10m to 100m. The pneumatic launcher fires a polystyrene .68 caliber projectile that can either mark or deliver a blunt impact to a target, giving Soldiers the ability to engage targets with non-lethal force at increased distances and accuracy. The magazine holds 15 rounds and the pressurized air tank has a 110-shot reservoir capacity.

Acoustic Hailing Device (AHD)



Potential Applications:	Capabilities:
<ul style="list-style-type: none"> Helps Soldiers more effectively determine the intent of a person, crowd, vessel, or vehicle at a safe distance, potentially deterring them prior to escalating to lethal force. 	<ul style="list-style-type: none"> Non-lethal, counter-personnel, long-range hailing and warning device Capable of producing highly directional sound beams, allowing users to project warning tones and intelligible voice commands beyond small arms engagement range.

AHDs are designed to deny access into/out of an area to individuals, move individuals through an area, and suppress individuals. This technology has the potential to support multiple missions including force protection, checkpoints, patrols/convoys and crowd control.

Portable Vehicle Arresting Barrier (LESD)



Potential Applications:	Technical Applications:
<ul style="list-style-type: none"> Non-lethal vehicle capture system Access denial to vehicle capability Use at tactical checkpoints and facility entrances 	<ul style="list-style-type: none"> Able to stop 7,500 lb vehicle moving at 45 mph Vehicle cannot escape after capture Net wraps around doors, impeding occupant escape Deploys in less than two seconds Stand-by mode allows for normal traffic flow over speed bump

The PVAB enables security forces to stop forward progress of vehicles without firing lethal weapons at engines and tires. It is portable, easily emplaced, reusable and recoverable.

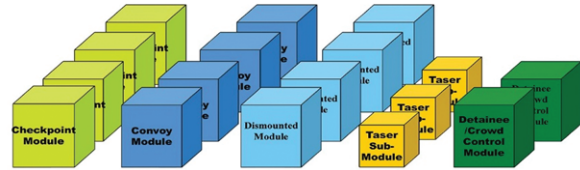
Vehicle Lightweight Arresting Device M2 Net



Potential Applications:	Potential Applications:
<ul style="list-style-type: none"> Non-lethal vehicle capture system Access denial to vehicle capability Use at tactical checkpoints and facility entrances 	<ul style="list-style-type: none"> Able to stop 5,500 lb vehicle moving at 30 mph within 200 ft Net dimensions - 3m x 6m Weight - 45 lbs Deploys in less than one minute

The VLAD is a pre-emplaced, man-portable, expandable spiked net. When a vehicle runs over the spikes, they puncture and grab the tires, and the net wraps around the axle to stop the vehicle.

Bridge NLCS Mission Modules



QUADCON CONFIGURATION

- Quadcons 1-4 Checkpoint Modules
- Quadcons 5-6 Crowd Control Modules
- Quadcons 7-8 Convoy Modules
- Quadcons 9 Dismounted Module and 2 PVABs
- Quadcons 10 Dismounted Module, Taser Modules, and 2 PVABs



Procurement and fielding is accomplished via NET utilizing a cadre of Mobile Training Team (MTT) Instructors.

For more information, contact PM Close Combat Systems
Link: <http://www.pica.army.mil/pmccs/Default.html>

Ordering NLW Munitions

Munitions type	DODIC	Description
M1012	AA51	12 ga point round
M1013	AA52	12 ga area round
M1006	BA06	40mm point round
M1029	BA13	40mm area round
M98	FZ16	66mm Distraction Grenade
M99	FZ17	66mm Blunt Trauma Grenade
L96A1	FZ14	66mm CS Grenade
M84	GG09	Stun Grenade
M104	GG04	Stingball Grenade
M5	WA97	Modular Crowd Control Munitions
XP25 Ft	JN17	25ft Taser Cartridge

PRINCIPLES FOR MITIGATING CIVCAS AND ITS IMPACT

Consider tactical alternatives. Determine the most effective means of achieving the desired effects for protecting forces with minimum CIVCAS (i.e., could use of NLW help achieve desired effects while still accomplishing the mission?)

Address major threat. Vehicle-borne IEDs are the largest threat to U.S. and Coalition Forces, Hail and warning NLW capabilities have proven to mitigate ID for hostile intent of an approaching vehicle or vessel.

Partner with local leaders to the fullest extent possible. Leverage relationships with local military and civilian leaders before, during, and after operations to share responsibility.

Learn what is "normal." Know and understand what is normal local behavior and patterns of life (POL).

Improve situational awareness. Clearly and objectively share details with other forces and higher headquarters.

Conduct battle damage assessment (BDA) whenever possible.

Know where civilian groups are operating in your area.

Ethical leadership matters.

Be fast, but not wrong. Communicate information as soon as possible. However, to avoid damaging our credibility, do not report details that are speculative.



For additional information regarding NLW training, see U.S. Army Training Circular 3-19.5, *Nonlethal Weapons Training*, May 2014.

Tactics, techniques, and procedures (TTP) for the tactical employment of NLW are described in FM 3-22.40. Additional information can be found in the following publications: TRADOC Pamphlet 525-99, *Concept for Nonlethal Capabilities in Army Operations*, CALL Handbook, No. 07-21, *Escalation of Force*, August 2007; CALL Handbook, No.12-16, *Afghanistan Civilian Casualty Prevention*, June 2012



Additional information regarding NLW is available at:

U.S. DoD Non-Lethal Weapons Program
<http://jnlp.defense.gov/Home.aspx>

U.S. Army Project Manager Close Combat Systems
<http://www.pica.army.mil/pmccs/Default.html>