

GroundWarrior

Marine Corps Ground Force Preservation & Readiness

Vol. 9, Issue 1



Multi-Piece Rims <<
An Unsuspecting Killer

Motorcycle Safety <<
One Marine Speaks To His
Fellow Marines

Assessing Your <<
Command Safety Climate
New Technology to Assess
Command Climate

GroundWarrior

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Mishaps waste lives, time, and resources. This magazine's goal is to make Marines aware of mishaps and hazards that have been experienced and identified by fellow Marines. The study of these lessons learned heighten awareness and identify tools that all Marines can use to avoid similar mishaps and mitigate risks.

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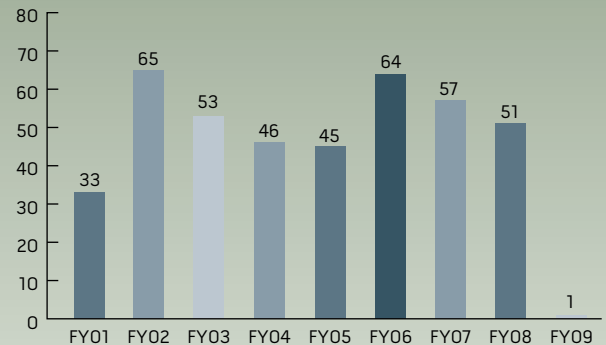
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By the Numbers

How mishaps are affecting our operational readiness

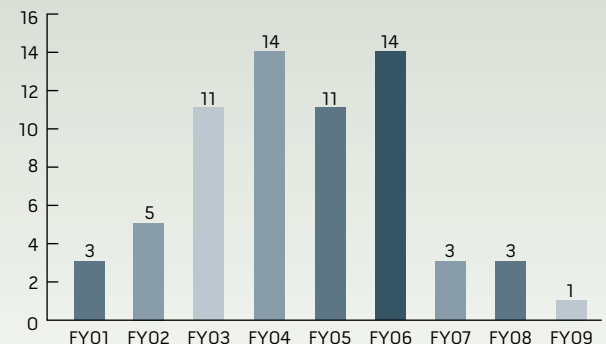
Vehicle mishaps, whether on liberty or operationally, have resulted in some of the highest mishap fatality rates in recent years. Below, the numbers compare the Fiscal Year 2009 to the last eight Fiscal Years.

PMV Fatalities



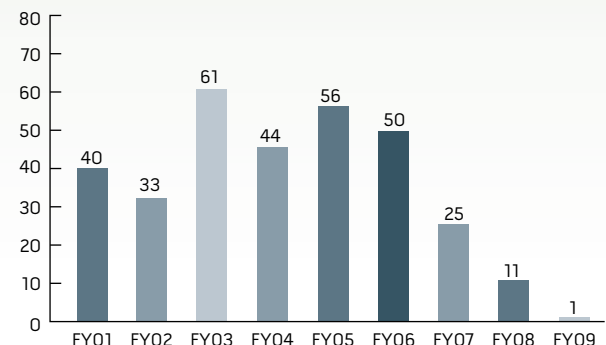
Fiscal Year

Tactical Vehicle Fatalities



Fiscal Year

On-Duty Fatalities



Fiscal Year

From the Director

Headquarters Marine Corps Safety Division



Marines,

The poet William Shakespeare once wrote, “The best safety lies in fear” – I believe that is because he never knew a United States Marine. Marines in battle are constantly faced with formidable situations and are able to accomplish mission success while simultaneously overcoming fear. That in part, is because the fundamentals of Operational Risk Management (ORM) are engrained in every Marine, becoming second nature for Marines to manage risk in critical situations and achieve the best possible outcome. It is off-duty mishaps that continue to be the number one threat to the Marine Corps because Marines are not using these same critical risk-assessment skills on the street that they utilize on the battle field. Fearless Marines continue to die in personal motor-vehicle and motorcycle mishaps due to speed, fatigue, drinking and driving, and lack of proper training. We must continue our efforts in reducing and eliminating these preventable mishaps.

Safety Division is 100% committed to force preservation, however the same commitment must be made at all levels of the Corps to truly change our culture and save lives. We are all responsible for safety, and leaders must continue to engage and empower Marines especially at the NCO and SNCO levels of the Corps. There are several tools in place to aid leadership with promoting an effective safety culture in his or her organization. The Travel Risk Planning System (TRiPS) was developed to provide trip planning tools and maintain accountability of Marines traveling long distances on leave. The Marine Corps Climate Assessment Survey System (MCASS) has recently been put in place to measure command safety climate, providing leaders invaluable access to their Marines’ anonymous perceptions of operational and safety issues, thus enabling change in a targeted area within the organization. Perhaps, most importantly there are many new and innovative motorcycle training initiatives being developed in response to the overwhelming need to manage and train the growing motorcycle population of the Marine Corps. New contracted base training will result in more course offerings and significantly reduced wait times. Sport-bike specific courses will offer the next level of training to the growing number Marines riding these powerful bikes. Our goal is not to restrict motorcycle riding in the Marine Corps; it is to provide every Marine that rides a motorcycle with the tools and knowledge to ride safely and responsibly.

The Marine Corps continues to make great strides in mishap reduction; however we still have a long way to go. Safety Division is currently reviewing the T/O structure of safety billets to identify the optimum structure of safety personnel throughout the Marine Corps. Also we are focusing on how our safety professionals are trained in an effort to ensure they can provide exceptional safety services in the field. At the end of the day, it is up to each and every Marine to take responsibility for their own actions, and to ensure that all Marines are aware of the risks around them. If we all make a small commitment to safety it will have an enormous impact on the overall culture of the Marine Corps. Take care of each other and watch your buddy’s back.

Semper Fi,

A handwritten signature in black ink, appearing to read "J. Grace".

Colonel James D. Grace
Director, Safety Division



GroundWarrior





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ON THE COVER

« A Marine tightens the bolts on a tactical vehicle

From the Editor

Hello readers,

I have investigated several mishaps involving Negligent Discharges (NDs). This appears to be the growing trend in our Beloved Corps and the individual Marines need to step up and handle their weapons as though their life and the lives of others depended on it. I say this because in my travels, I have found that the majority of these mishaps occurred as a result of Marines treating weapons as toys or not using them for their intended purpose, which is to train and win battles against the enemy. This is no game...it is your responsibility to learn, enforce, and supervise the Four Weapons Safety Rules so that they become not just a mantra to recite before a range, but part of everyday life. You owe it to yourself as well as your fellow Marines. I don't need to spell them out for you. We all have been exposed to them in some way, shape, or form. Marines are doing their jobs well on deployments to come home and be subject to an injury or a fatality as a result of the

complacency and negligence that may follow returning from that deployment.

In addition to keeping your Marines out of harms way, through Weapons Safety, we must return to the very item that keeps them from being statistics... the Standard Operating Procedure (SOP). These SOPs are methods developed over time, by the perspective unit to reduce Mishaps in training. Most importantly, they identify the appropriate way to accomplish training and operations while reducing the chances of a mishap from occurring. Most often, there are quite a few near misses that eventually evolve into serious mishaps. These incidents stem from a culture that has been developed over time where Marines don't read their SOPs and enforce them. What may seem time consuming and a crutch to how we train our Marines, may very well save their lives.

My advice would be for us to reflect on what we hold near and dear to our hearts or what we think is most important to us in your everyday lives. Once this is determined, we should apply it to Ground Safety. Yes, contrary to popular belief, Warrior Preservation is a matter of life and death and should continue to be common practice.

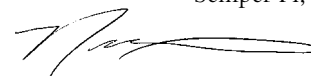
For those units that are keeping their Marines safe, continue to do so. You are definitely setting a high standard for Safety. This should be an integral part of

what we do as Marines. Leaders, the Safety Standards that we instill in our Marines today will, ultimately, control what's to come in the future. They will be the future leaders that will impact how the Ground Side will view Safety.

For the most part, Marines are responsible for themselves and others. There is no other way to accomplish our jobs without following the SOPs. The improvised ways work, but still pose the threat of danger. SOPs are there to save lives. They should not occupy a space on the shelf.

In order to keep ourselves out of harms way, we should continue to evaluate our safety practices on or off duty. When it comes to protecting ourselves and keeping our fellow Marines out of harms way, we should also apply these practices to protect our families and friends. Let's continue to implement Safety as a continuing action, especially, when we set out to take part in activities that pose an inherent danger. Continue to take care of each other. **GW**

Semper Fi,



Capt Nicolas Ramseur, USMC

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The Ground Warrior seeks your submissions

If you have witnessed or participated in an operation that involved a mishap or near-miss, submit your story, long or short, so we can learn from one another.

• By E-mail: SAFE-GrndWarrior@navy.mil or nicolas.ramseur@navy.mil

• By Letter: Ground Warrior
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• Any questions, call (757) 444-3520 x7170, DSN 564

Submissions can be completely anonymous, as the *Ground Warrior* is not used to blame Marines. We just want to teach the hard lessons.

Your submissions
help protect your own



Letters to the Editor

Readers,

The Ground Warrior staff is always looking for your feedback and submissions, good or bad.

Contact the GW via e-mail: SAFE-GrndWarrior@navy.mil –Ed



Sgt. Eugene Lewis, the barracks manager for Company A, Headquarters and Support Battalion, MCB, buckles up before backing out of his parking space.

Photo by Lance Cpl. Brandon R. Holgersen



Rim Multi-piece Wheels

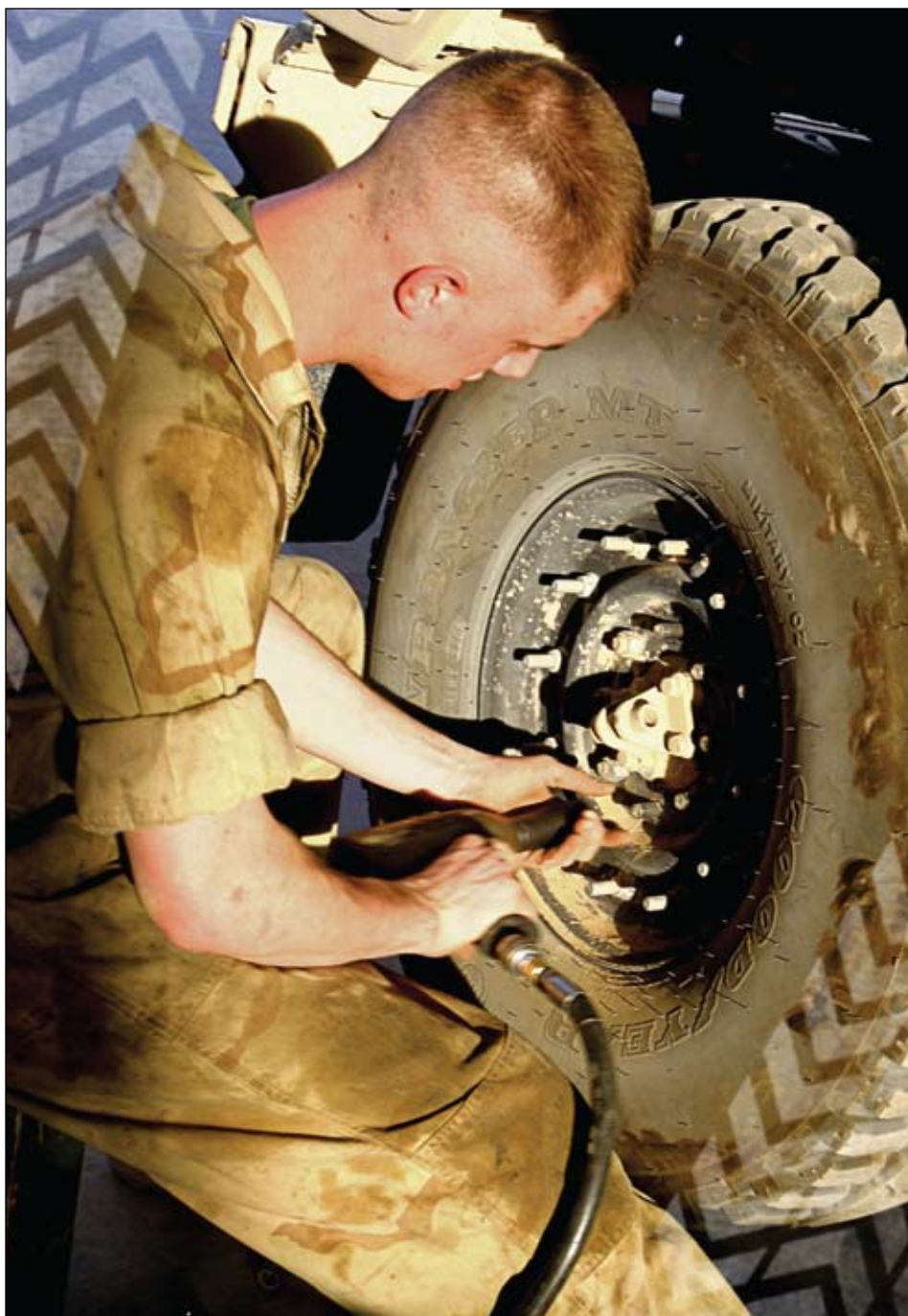
By Cynthia Young



Pfc. Joshua T. Hatfield adjusts a tire rim in the I.H.O.T. tent ("Iraqi House of Tires"). He is a motor-vehicle mechanic currently assigned to 1st Platoon, Maintenance Company, Combat Logistics Battalion 1, 1st Marine Logistics Group.

Servicing of multi-piece rim wheels is dangerous. Inflating the tires in cages and inspecting the lock rings is very important to ensure personnel safety. The tire cages are mandatory to prevent injury, due to an explosion that might occur while inflating the tire. The lock rings will pop off if they are warped or not put on the rim properly. Lock rings keep the rims in place, and once they do, they can fly in any direction. Four Marines were performing 2nd Echelon Maintenance on a LVS tire, when the locking ring flange shot off the rim injuring two of them. It broke one Marine's hand and fractured bones in one's head. Both experienced abrasions and scratches on their faces.





A multi-piece rim is a vehicle wheel consisting of two or more parts, one of which has a side or locking ring designed to hold the wheel by interlocking components when the tire is inflated. It is also known to many as a Split-Rim; however, this is not the proper term because the rims now have multiple pieces. It is usually a tube-type tire. Multi-piece rims are normally found on MTRVs, LAVs, forklifts, LVS, TRAMS, HMMWVs, and most heavy-duty tractors, dump trucks, and off road machines. When servicing these rims/tires, you should ensure

the tires are deflated before de-mounting and never inflate them outside a cage or barrier. A Corporal sat on the floor inflating the tire on a forklift and the locking ring flew off and struck him in the arm and leg. It broke his arm, but he could have been more seriously injured because of his location to the explosion. A Sergeant was hit in the leg when split ring flew off the tire he was inflating outside of a cage. He was hospitalized and lost time away from work. Training Manuals (TMs) should be available and posted in areas where the wheels are serviced. While operating in

A cage alone is not sufficient protection. Lock rings must also be inspected

the training area, the spare tire should already have the rim installed and the inflation should take place outside the trajectory. Trees may have to be used as barriers. Therefore, employees need to be trained on mounting, inflating, and other hazards associated with multi-piece rim wheels. Marines should make sure the TM procedure is followed. Guidance may be obtained from 29 CFR 1910.177 regarding servicing multi-piece and single piece rim wheels.

If you are using a tire changing machine, the tires should be inflated outside a restraining device only to a minimum pressure sufficient to force the tire bead onto the rim ledge; otherwise, the tire should always be inflated in an OSHA approved cage. After tire inflation, tire and wheel components shall be inspected while they still remain inside the restraining device/cage to make sure they are properly seated and locked. No attempt shall be made to correct the seating a side and lock rings by hammering, striking, or forcing the components while the tire is pressurized. Deflate the tires completely by removing the valve core to ensure no air pressure remains in the tire. One Marine was struck on the forehead by flying debris when the tire exploded as he removed the wheel bearing with a hammer and socket wrench. Supervisors must ensure the recommended tools in the rim manual, for the type of wheel being serviced, are provided. They should also ensure that those tools are used only to service the rim wheels.

A cage alone is not sufficient protection. Lock rings must also be inspected. Cracked, broken, bent, or damaged rim components shall not be reworked, welded, brazed, or heated. Rim flanges, rim gutters, rings, bead seating surfaces, and the bead areas of tires shall be free of any dirt, surface rust, scale, and loose or flaked rubber prior to



Motor transportation operators Lance Cpl. Mackenzy Crawford, 21 from Jackson, Miss., and 19-year-old Greenville, Miss., native, Lance Cpl. James W. Buckner repair a tire. Photo by Cpl. Ken Melton

mounting and inflation. Lock rings have been known to fly off the rim after the tire has been inflated, because the ring was not assembled correctly or warped. The Air Force experienced two separate serious mishaps where both individuals were struck and seriously injured when rim parts separated. The Army has issued a Hazard Alert on the HEMETT three-piece split rim wheel lock ring NSN 2530-00-278-6567, because some of the rings issued were warped to the extent that the ends of the split ring were offset and not in alignment causing a hazardous condition. When the rims are aligned properly, it could result in the wheel/tire assembly coming apart and the tire exploding after being removed from the cage, due to the amount of pressure when the rims are not aligned. Forty-three percent of our mishaps involving multi-piece rims, occurred when the restraining/lock rings shot off and hit nearby Marines causing injury. These injuries have caused loss of sight, broken arms and legs, and disfigurement.

Trajectory range is especially important while inflating un-caged tires. A sufficient length of hose between the clip-on chuck and the in-line valve is needed to allow the employee to stand outside of the trajectory. In one of the mishaps, a Marine crimped the hose with his hands to regulate the pressure to the tire and his Supervisor was present. As a result, the rim struck him in the face. He underwent re-constructive surgery and lost vision in one eye, because the seal ruptured.

Refer to the technical manuals, manufacturer's recommendations and OSHA standard 29 CFR 1910.177 for guidance on the servicing of split rims or multi-piece wheels. Visit OSHA's website for the regulation (www.osha-slc.gov). Supervisors must ensure employees, who service these rims/wheels are properly trained. Training is essential for all employees who service these rims. OSHA training requirements are: understanding the applicable chart data and knowledge of the standard. A Marine changing the tire on a forklift, removed the

bolts while the tire was still inflated and it exploded. He explained, "He didn't know the forklift had a split rim." Luckily, it only broke his ankle. Supervisors must evaluate each employer's ability to perform required tasks and provide additional training as required to ensure each employee maintains his or her proficiency. If uncertain whether the wheels are multi-piece or split-rim, refer to the owner's manual and place the charts in an area where the work is being performed. When Supervisors have reason to believe that any of his or her employees are unable to read and understand the charts in the manual, they shall ensure the employee has been in a manner in that he or she understands. Most manufacturers provide detailed instructions on how to service these rims with warnings of the possibility of explosion and the use of cages being essential. Contact your local OSHA office or write the U.S. Department of Labor, OSHA Publications Office, Room N-3101, Washington DC, 20210, (202)523-9667. **GW**



Lightning Protection for Field Storage

By Mr. Chris Batchelor, Mr. Christopher Karabin, Major Steve Lengquist, and Mr. Mike James

How Powerful is Lightning? Each spark of lightning can reach over five miles in length, soar to temperatures of approximately 50,000 degrees Fahrenheit, and contain 100 million electrical volts. Lightning Is A Random, Chaotic And Dangerous Fact Of Nature

At any given moment, there are 1,800 thunderstorms in progress somewhere on the earth. This amounts to 16 million storms each year! We know the cloud conditions needed to produce lightning, but cannot forecast the location or time of the next stroke of lightning. There are lightning detection systems in the United States and they monitor an average of 25 million flashes of lightning from the cloud to ground every year!

Lightning strikes at ammunition storage areas are not uncommon. The most famous and most costly single bolt of lightning occurred on July 10, 1926, in northern New Jersey. This bolt struck the Naval Ammunition Depot at Lake Denmark, triggering a series of explosions that ended in a major catastrophe. All buildings for half a mile were destroyed, debris fell 22 miles away, and 16 people lost their lives.

Since the Lake Denmark explosion vast improvements in Lightning Protection Systems (LPS) have been made. LPS standards are outlined in NAVSEA OP 5 Volume I and National Fire Protection Association (NFPA) 780. These standards provide invaluable information on the installation of an LPS on magazines and operating buildings however, provide little information for the protection of ammunition stored in a tactical environment.

The Marine Corps/Navy constantly trains with ammunition and explosives in a tactical environment. This training is invaluable in preparing Marines/Sailors in their primary mission which, is to close with, and destroy the enemy by fire, and maneuver. This mission is primarily achieved by the employment of ammunition and explosive ordnance. To accomplish this, Marines and Sailors on the battlefield must have direct access to their ammunition and explosive ordnance. The sterile storage and operating conditions enjoyed at Naval Installations are not available during contingency operations at forward operating bases.

In the inherently dangerous combat environment, ammunition and explosives are

often stored, handled, packaged and transported in a manner not compatible with their design, in order to support mission needs. The result of a lightning strike at a combat storage area is heightened due to the condition of the ammunition, unpackaged and in a ready to fire configuration. The operational environment is fast paced and sometimes safety is sacrificed in order to accomplish the mission. Accomplishing the mission is critical, but loss of life and property can also lead to mission failure through destruction of essential assets. Loss of ammunition assets due to a lightning strike could have catastrophic effects and jeopardize the success of the mission. While it is not practical to install an LPS at every operational location where ammunition and explosives are stored, consideration must be given to locations where major ammunition supply points (ASP) are constructed at forward operating bases (FOB). The intent of this paper is to provide a means to install a Lightning Protection System for the most common types of materials used to construct an ASP, field barricades or HESCO Barriers. This system has been adapted from



NFPA 780. This design meets the intent of NFPA 780 and NAVSEA OP-5.

In the interest of minimizing the equipment and supplies required to install an LPS, the design has been limited to use 1/0 bare copper cable and 10 foot ground rods. In addition, this guidance should only be applied to barricades that have span across the cell less than 60'. For the purpose of this design, an LPS can be defined by three distinct subsystems, (1) Air Termination/Strike Intercept, (2) Down Conductors or Current Carrying/Controlling, and (3) Earth Electrode System/Grounding.

1. The Air Termination system is commonly comprised of air terminals or lightning rods. Lightning rods are generally arranged in an array pattern over the structure to be protected. The array is spaced to conform to the 100' rolling ball method to ensure coverage and protection for the structure. This design intends to implement standard 10 foot ground rods as air terminals to minimize the number of components needed to be stocked for a field deployed unit.

2. The Current Carrying system is designed to provide multiple paths for the lightning currents to follow to ground. The current carrying system is sized and installed to minimize the impedance from the air terminals and the earth electrode system.

3. The Earth Electrode System (EES) is intended to dissipate the lightning current safely in the ground, thereby preventing damage to the structure. The EES must provide a low impedance connection with Earth with sufficient capacity to quickly dissipate the lightning current into the Earth.

All bonding and electrical connections must conform to NAVSEA OP-5. Electrical testing and inspection for the systems shall conform to guidance provided in OP-5.

Application of Lightning Protection System on Existing HESCO Barricades

For existing HESCO Barricades:

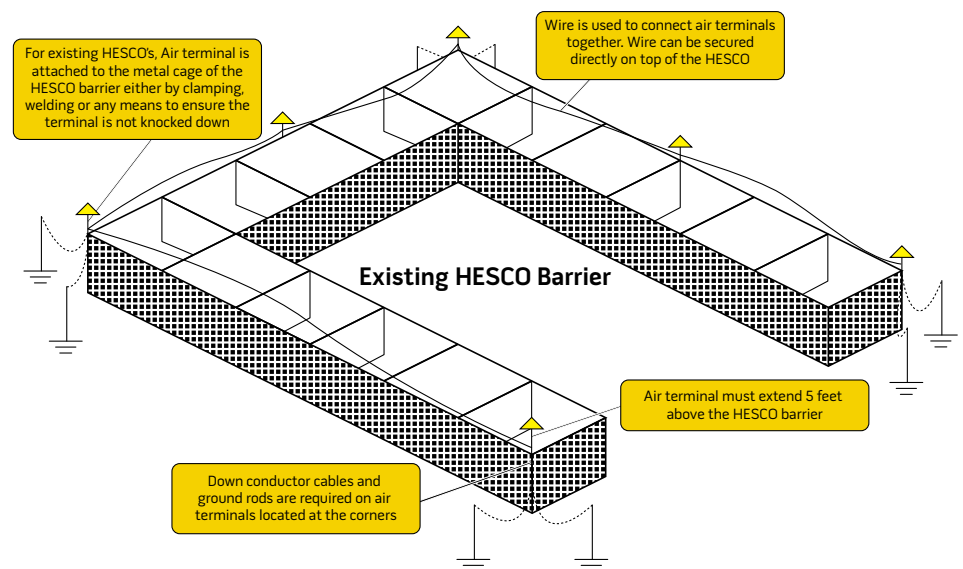
Determine the number and placement of air terminals. Air terminal must be placed at the corners of the barricades. Intermediate air terminals are required if the corner terminals are greater than 30' apart. Air terminals should be spaced evenly between the corner terminals to ensure that there is a terminal at least every 30' around the barricade. Air terminal should be firmly mounted to the HESCO barriers and protrude at least 5' above the top of the barricade. For simplicity, it is recommended that ground rods be used as air terminals for this design. The

ground rods can be mounted to the HESCO Barriers' outer mesh using 2 – 4 U-type bolts, ensure that environmental conditions will not affect the installation.

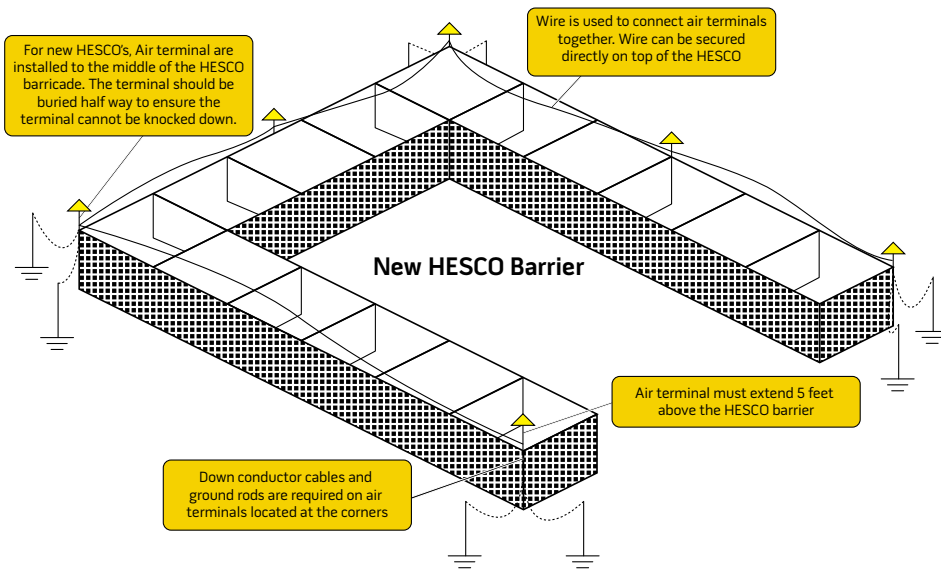
Once the air terminals have been installed they must be bonded together via a cross run conductor. 1/0 bare copper should be run across the top of the HESCO Barriers interconnecting all of the air terminals.

A minimum of two ground rods shall be installed for every corner air terminal. To optimize their effectiveness the ground rods should be driven into the ground, as close to vertical as possible and placed no closer than 20' apart and at least 3' outside the HESCO. To avoid trip hazards the ground rods should not protrude above grade. It is recommended that ground rods be installed such that they are a minimum of 6" below grade. A PVC pipe and cap can be installed to form a ground well to assist with access. In the case of shallow topsoil where ground rods can not be driven vertically, they can be installed at an angle. If the angled installation can not be achieved, a trench can be dug, ideally two feet or deeper, and the rods can be laid in horizontally.

Once the ground rods have been installed, down conductors (1/0 bare copper cable) shall be installed to connect the corner air terminal to its ground rods. It is important that the corner air terminals are provided with two separate cables, one for each ground rod. The down conductors should be secured to the HESCO barricade to prevent damage and should course underground to its ground rod.



A minimum of two ground rods shall be installed for every corner air terminal



Application of Lightning Protection System on New HESCO Barricade Construction

For new HESCO Barriers:

The ground rods should be installed first, then the down conductors should be installed underground to the center of the HESCO Barricade. The down conductor should be left long enough to course up through the center of the HESCO to attach to the Lightning Rod.

Determine the layout for the HESCO Barricades.

Determine the number and placement of air terminals. Air terminal must be place at the corners of the barricades. For simplicity, it is recommended that ground rods be used as air terminals for this design. Intermediate air terminals are required if the corner terminals are greater than 30' apart. Air terminals should be spaced evenly between the corner terminals to ensure that there is a terminal at least every 30' around the barricade. Air terminals should be installed to the center of the HESCO barriers and protrude 5' above the top of the barricade.

A minimum of two ground rods shall be installed for every corner air terminal. To optimize there effectiveness, the ground rods should be driven into the ground, as close to vertical as possible and placed no closer than 20' apart and at least 3' outside the HESCO. To avoid trip hazards, the ground rods should not protrude above grade. It is recommended that ground rods be installed such that they are a minimum 6" below grade. A PVC pipe and cap can be installed

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Once the ground rods have been installed, down conductors (1/0 bare copper cable) shall be installed to connect the corner air terminal to its ground rods. It is important that the corner air terminals are provided with two separate cables, one for each ground rod. The down conductors should be coursed through the center of the corner HESCO's and run underground to the Ground Rods. The corner HESCO

Barricades should be filled half way taking care to pull the down conductor up to ensure they can be attached to the lightning terminal. The lightning terminal should be bonded to the down conductors, and secured, to withstand the filling process, such that the top of the terminal is at least 5' above the top of the HESCO. Once secured, the HESCO's can be filled. After the HESCO barriers' are filled the intermediate the air terminals can be driven into the top of the HESCO Barriers.

Once the air terminals have been installed they must be bonded together via a cross run conductor. 1/0 bare copper should be run across the top of the HESCO Barriers interconnecting all of the air terminals.

Below is provided for the minimum material requirements if the ground rods are not used for air terminals. It should be noted that air terminals must be secured

Copper

Type of Conductor	Parameter	English	Metric
Air Terminal (Solid)	Diameter	3/8 inch	9.5 mm
	Diameter	5/8 inch	15.9 mm
Air Terminal (Tublar)	Wall Thickness	0.033 inch	0.8 mm
	Size Each Strand	17AWG	
Main Conductor (Cable)	Weight Per Length	187lb/1000ft	278 g/m
	Cross Section Area	57,400 CM	29 mm ²
	Thickness	0.051 inch	1.30 mm
Main Conductor (Solid Strip)	Width	1 inch	25.4 mm
	Size Each Strand	17 AWG	
Bonding Conductor Cable (Solid or Stranded)	Cross Section Area	26,240 CM	
	Thickness	0.051 inch	1.30 mm
Bonding Conductor (Solid Strip)	Width	½ inch	12.7 mm
	Length	10 feet	

from turning over, either from the lightning strike or from environmental elements. The official requirement is “Air terminals exceeding 24 in. in height above the area or object they are to protect shall be supported at a point not less than one-half their height.” Additionally, aluminum components shall not come in contact with earth and shall not be used within 18 in. of earth. Given the design provided above, the installation in close proximity of earth and to eliminate the possibility of increased corrosion by galvanic reaction, aluminum should be precluded from use.

Parts Supply

The following companies stock the parts to construct the lightning protection described in this document. The part numbers annotated are applicable at the time this document was published however, recommend reviewing the web site to ensure the part numbers are applicable. **GW**

Distributor	Description	Part Number	Web Address
McMaster	Copper Clad, nickel plate steel ground rods.	7500K16 5/8" - 10' 7500K18 3/4" - 10'	www.McMaster.com
	Ground Rod Clamps Light Duty	7491K74 5/8" 7491K77 3/4"	
	Ground Rod Clamps Heavy Duty (Recommended)	7491K92 5/8" 7491K93 3/4"	
	Ground Rod Clamps U-Bolt type	7511K46	
	Ground Cable strand bare copper	7512K67 1/0 19	
Harger	Copper Clad, nickel plate steel ground rods.	5810 5/8" - 10' 3410 3/4" - 10'	www.Harger.com
	Solid Copper ground rods	5810C 5/8" - 10' 3410C 3/4" - 10'	
	Ground Rod Clamps Light Duty	301LD 5/8" 302LD 3/4"	
	Ground Rod Clamps Heavy Duty (Recommended)	301 5/8" 302 3/4"	
	Ground Rod Clamps U-Bolt type	305	
	Ground Cable strand bare copper 250' reel	1/0-19 1/0 19	
Nehring	Copper coated sectional ground rod	NCCS5810 5/8 - 10 NCCS3410 3/4 - 10	www.nehringwire.com
	Ground Rod Clamps (Not recommended)	NGC58 5/8 NGC34 3/4	
	Stranded Concentric	1/0-19 1/0 19	





The title is framed by two sets of decorative, symmetrical flourishes. Each set consists of two curved, scroll-like elements that mirror each other, creating a balanced, ornate border around the central text.

Two Fists in the Wind

By GySgt Caputo

Motorcycle riders are at least three times more likely to die in a traffic accident than someone that travels by car. Most of our mothers plead with us not to ride one. Motorcycle riding is flat out dangerous, especially if you are doing it on the streets with other people that cannot pay enough attention to notice another full size vehicle, much less a bike.



A staggered column of 22nd Marine Expeditionary Unit Command Element Motorcycle Club. It is mandatory that all Marines who own a motorcycle join their unit motorcycle club to promote motorcycle safety and responsibility within the Marine Corps.

Photo by Cpl. Peter R. Miller

Our beloved Corps is full of thrill seekers and risk takers that love to put, “Two fists in the wind.”

For some, the above reasons are more than enough justification not to ride. Then again, for others, the above reasons are the perfect justification to ride! It all has to do with a certain type of person; a person that feels the need to seek more excitement, someone that craves a thrill. The people that love to ride motorcycles often times cannot think of anything better than throwing a leg over a machine that most people see as very dangerous. Our beloved Corps is full of thrill seekers and risk takers that love to put, “Two fists in the wind.”

Some riders prefer a finely tuned, low and slick, road hugging sport bike. Other riders are a little rougher around the edges and they prefer a bike that is offensively loud and obnoxious. The type of bike that makes the weak hearted members of our society, feel intimidated by its rumble and menacing presence. I happen to prefer the latter type personally. There is something that is just plain cool about sitting on an asphalt-devouring beast that is dripping in chrome. The feel of having my fists and heels in the wind tearing down the road with the force of the wind beating against my chest makes me feel free and alive.

I was experiencing that free and alive feeling last July, when I was cruising down route 1 in Virginia. The sun was hot and the air was thick, but I did not care. I was focused on the fact that soon enough, I would be joining some other riders. We would be tearing through the Shenandoah Mountains, where it would be nice and cool. I am glad that I was only daydreaming for a short moment. Then I realized that the sport utility vehicle that I was certain was not going to pull out in front of me, just did! At that instant, I squeezed the front brake of my bike hard enough that I could feel the steel pedal dig into my foot through my heavy boots. I pulled hard on the handlebars with my right hand and pushed with my left, just like I have learned in the Experience Riders Course. Thankfully, I was able to avoid smashing into the side of the vehicle. However, I was not able to keep the bike upright. I remember the left side of my body slamming into the sun-baked pavement with the violence of exploding dynamite. Next came the smack of my helmet-covered head; followed by the agonizing grinding sounds of steel, rubber,



Sgt. Maj. Thomas F. Hall (right), the 22nd Marine Expeditionary Unit Sergeant Major, leads a staggered column of 22nd MEU Command Element Motorcycle Club.

Photo by Cpl. Theodore W. Ritchie

and flesh. This all seemed to happen in an eerie, slow motion. I was aware of every second that it took me to go from 50 MPH to a complete stop, the hard way.

Next, I recall getting up as quickly as I could, to avoid getting run over. There was a shooting pain that I immediately felt in my hip. I attempted to pick up my bike, but my left arm would simply not work. I later figured out why. It seems that I had dislocated my shoulder. I was finally able to lift the bike and move to the side of the road. Unfortunately, no one seemed to want to exit their vehicles to assist me. I quickly assessed the rest of my body to see if I had lost any body parts that I may need later in life. Luckily, everything was still attached. I next remember looking for the vehicle that had caused me to go down, but it was gone. I wonder if the driver ever noticed me? I began to try and remove my helmet (which proved challenging with my shoulder). Once I got my helmet off, I noticed that I needed to put my shoulder back into socket. I was able to accomplish this by placing my left hand atop of the guardrail, squatting at the knees and then

lunging forward until, POP! My shoulder was back in the socket. I highly recommend not doing this! It really hurt, and it turns out that I may have caused more damage to the joint (at least that's what the doctor said). Then, I remember just reflecting for a moment that I was happy to be alive. My helmet was trashed, my gloves were mangled, and the toe of my left boot was nearly sheared off. My jeans were shredded and the long-sleeve t-shirt, that I was wearing, was in pretty poor shape, but it did serve as a good rag to soak up blood that was oozing from my shoulder down to my wrist).

I have always been hesitant to wear the prescribed Personal Protective Equipment (PPE) designated by the order. I am glad that I decided to exhibit some personal discipline and not cut any corners. I paid for another driver's mistake that day. I paid with lots of damage to my bike; I paid with my flesh, blood, and three months of recovery time which keep me from training. The bike is fixed, my wounds have healed, and I am alive to tell this story. I owe it to God and PPE. IT WORKS! **GW**

I paid with lots of damage to my bike; I paid with my flesh, blood, and three months of recovery time which keep me from training





MY LIFE IS IN YOUR HANDS

MGySgt Keith R. Johnson, Parachute Safety, Naval Safety Center

Personnel parachutes and parachute equipment have been around for many years. They have impacted the military in many different ways. From the parachute operations conducted during the D-Day landing in World War II, the combat inserts and resupply of the remote outposts in Viet Nam, to the present day resupply missions of ground units in support of Operations Enduring Freedom and Iraqi Freedom. The parachute is and can be a battlefield capability multiplier. >>>>>



Lance Cpl. Chris Pabon puts on his parachute with the assistance of Pfc. Joshua Antonson at Clark Air Field before a jump.
Photo by Lance Cpl. Terence L. Yancey



As time and technology moves ever so steadily into the future, the once durable and almost indestructible parachute systems have become much more sensitive. The new automatic activating devices, precision cargo airdrop control modules, and exposed metal components all present areas that can be damaged rather easily. Therefore, it is always important to remember that the proper handling of the parachutes by the Jumpers and Parachute Riggers is extremely important. The days of tossing a parachute out of the back of the old 5-ton truck when unloading no longer exist.

Proper handling of life support equipment should be part of each Jumpmaster brief or at a minimum the equipment Non-Commissioned Officers (NCO) should brief all of the participants of the parachute operation on proper handling of the parachutes and parachute equipment. This will help to ensure that the equipment is not being prematurely damaged potentially resulting in a mishap. Each Parachutist receives multiple inspections by a current and qualified Jumpmaster when conducting a parachute operation. Multiple inspections are conducted on Cargo Airdrop loads by current and qualified Joint Airdrop Inspectors as well. What they cannot see is damage done to internal parts, stress fractures or breaks in metal components when parachutes and parachute equipment is not handled properly.

It is always important to remember when handling personnel parachutes, cargo parachutes, and supporting equipment that this equipment is intended to save a life. This means the life of a jumper conducting premeditated personnel parachute operations, and the life of an Infantry Unit is depending upon the airdrop for a re-supply. The success of these important operations may well rest in how the equipment is handled. Units should use the Buddy System or a Chain Gang to load and unload supporting vehicles, avoid dropping the equipment either at the departure airfield or when coming off the drop zone, and avoid kicking the equipment at any time. These are simple actions, yet they are valuable to mission success.

As the Subject Matter Experts for Marine Corps Parachuting, the responsibility firmly rests on the Parachute Riggers to ensure the proper handling of parachutes and parachute equipment. Remember, how you handle your equipment today may directly impact mission success tomorrow. **GW**

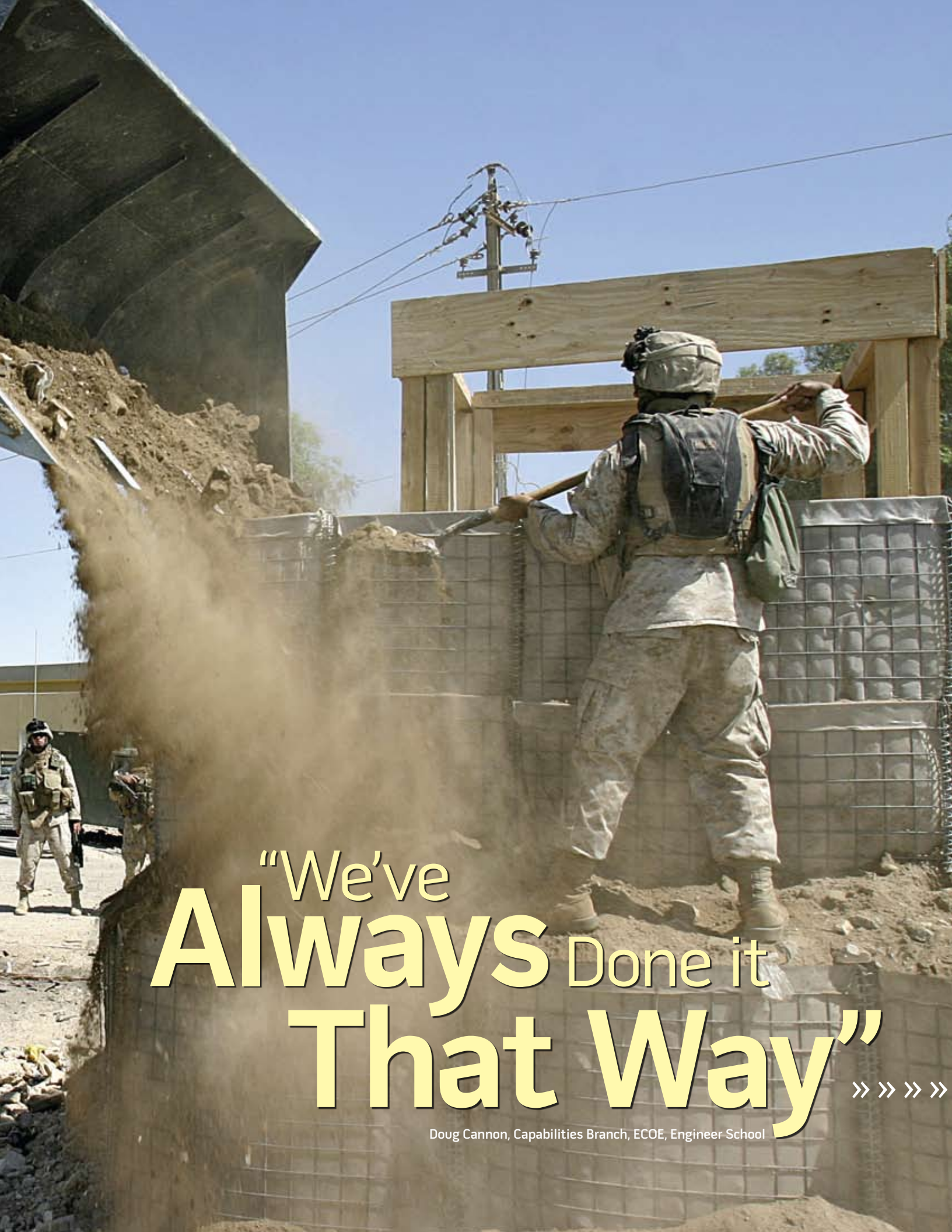


Force Reconnaissance Marines assigned to the 22nd Marine Expeditionary Unit (MEU) Special Operations Capable (SOC) freefall over Djibouti, during parachute training.

Photo by Cpl. Robert A. Sturkie

Marines with 2nd Platoon, Company A, 2nd Combat Engineer Battalion fill barriers with dirt and rubble to fortify a new observation post they erected along the Euphrates River here Sept. 5.
Photo by Cpl Mike Escobar





“We’ve
Always Done it
That Way”



Doug Cannon, Capabilities Branch, ECOE, Engineer School



⚡ Pfc. Ryan Cheney, a combat engineer with 2nd Platoon, Company A, 2nd Combat Engineer Battalion, digs up a hole in a field outside Saqlawiyah May 22, as he searches for hidden weapons.

Photo by Cpl Mike Escobar

⚡ Lance Cpl. Jason Murray, a team leader with 2nd Squad, 2nd Platoon, Company A, 2nd Combat Engineer Battalion, observes an Iraqi soldier cut a strand of concertina wire.

Photo by Cpl Mike Escobar

One of the many hazards people face is the “We’ve always done it that way” syndrome. Instead of researching updated information, such as Marine Corps Order (MCO) or proper technical manuals, have you ever performed procedures based on hearsay or because that is how you were taught? The problem with this mindset is that people become complacent, and safety concerns arise. This especially occurs in the Engineer Community. How often have you observed another Marine performing an unsafe act while operating engineer equipment throughout the military? At the Engineer Center of Excellence (ECO), things are being done to correct this problem.

Since 1983, engineer equipment operators and formally school-trained incidental operators have been licensed using the Engineer

Equipment Licensing Examiner’s Manual (also known as TM 11275-15/4). This manual is the “Bible” on licensing policy and procedures used by the engineer field. Because it hasn’t been updated in almost 15 years, this is a prime example of “We’ve always done it that way”. The information is still somewhat reliable. If followed, then it is not breaking any rules or regulations.

The problem is that most of the time the TM 11275-15/4 is not followed. Decisions are being made using personal interpretation of the manual such as: deciding what equipment those in charge will require personnel to be licensed on. How this manual became so far outdated is a question certainly up for discussion, but answering it will not stop a Licensing Officer in any unit from using his own version of what it says. This is more of

a problem with Incidental Operators than an actual school trained Engineer Equipment Operator within the Military Occupational Fields of 11XX or 13XX. Incidental Operators can be service members or civilians whose unit has an occasional need for a Licensed Operator to accomplish their assigned mission. These operators are required to be tested on all equipment they will be operating and pass a written examination. Unfortunately, this is not always happening.

The Capabilities Branch, at the ECO, is attempting to strengthen the Marine Corps Engineer Equipment Licensing Program by proposing a MCO to establish a standard licensing policy for operators of Government-Owned Engineer Equipment. The intent of this effort is ensure the safety of our Marines and all federal contracted employees, who

have a need to operate Engineer Equipment. This order will encompass every aspect of the Engineer Equipment Licensing Process, to include the following:

Training Permit:

The Capabilities Branch is recommending a new stage in the license procedure by issuing a training permit. It will be issued to personnel undergoing training to qualify for a standard OF-346. This will be used so the operator can acquire the required time and experience on one or more pieces of equipment. This training will be conducted by a qualified Engineer Equipment Operator within the units licensing program or a Staff Non-Commissioned Officer.

Shop Use:

For the Safety of our mechanics within the 11XX and 13XX, all mechanics will be issued a license to operate the piece of equipment they are working on. An example of this would be Lift Testing a forklift or Load Testing a generator set to ensure the repaired equipment meets all specifications.

Status of Forces Agreement:

This agreement's testing procedures will be stringently enforced. All engineer operators will receive the appropriate test per the requirements of the country they are operating in or deploying to.

Suspension/Relocation/Reinstatement:

Commanding Officers or appointed Licensing Officers would have the discretion to suspend, relocate, or reinstate a license. It will be at their discretion if personnel receive and maintain an operator's license for Engineer Equipment within their unit, or any incidental license they are asked to issue that will enable other units to accomplish their mission.

Command:

This order is applicable to Marine Corps Total Forces.

We can elevate these concerns by rewriting and updating Tactical Engineer Equipment Licensing Examiner's Manual (TM 11275-15/4). It should include input from all engineering units in the Marine Corps and as many engineers as possible to include Non-Commissioned Officers, Staff Non-Commissioned Officers and Engineer Officers. Topics to be addressed are Equipment Knowledge, Physical Requirements, Skill Performance Equipment



⚡ Combat Engineers prepare a field expedient Bangalore Torpedo.

requiring a license, complete record keeping directions, Preventive Maintenance, and Safety. Maintenance and safety should be of the utmost concern. These licensing requirements have always been outlined by the Tactical Engineer Equipment Licensing Examiner's Manual but are being resubmitted due to times when they were disregarded.

Upon recognizing this problem, the Capabilities Branch decided to initiate an

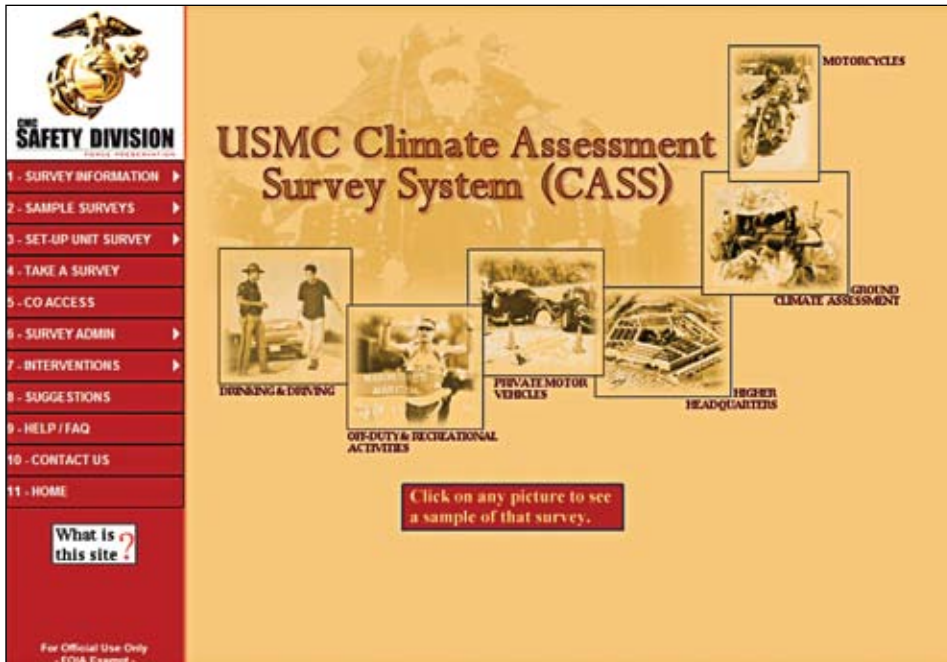
updated order because of a particular interest the ECOE had in assisting Engineer Equipment Operators to be safe and proficient in their duties. By providing clear guidance, this order will ensure safety is met and gives the Marine Corps and even other military branches a tool to support its leaders. **GW**

Climate Assessment Survey System (CASS)

Colonel James D. Grace, Director Safety Division

You have just assumed command and would like to get a sense of the work ethic, safety climate, and other issues impacting the unit's operational effectiveness. Your organization has probably undergone several changes over the last few months – perhaps personnel turnover, high operational tempo, lack of desired resources, morale concerns, and a few off-duty recreational incidents.

Figure 1. Climate Assessment Survey System (CASS) Homepage



As such, you would like to measure the success of the current, long-standing, safety programs. Is your organization's safety climate improving, stagnant, or declining? Which safety-related issues concern your personnel? What do they believe are the organization's strengths or weaknesses?

There are several methods to accomplish the daunting task of measuring organizational safety climate. Typically, leaders rely upon traditional approaches, such as staff feedback, select performance measures, and personal observations. However, another proven safety tool is now available to assist you in this task – the web-based Climate Assessment Survey System (CASS). See Figure 1. Currently in use by the Army, Navy, and Air Force, this tool provides a suite of surveys that give key organizational leaders rapid access to their members' anonymous perceptions regarding operational and safety issues. This on-line survey process is invaluable to leaders who desire one-on-one personalized feedback, measurable results, and suggested intervention options. CASS can be viewed at: <https://www.SemperFiSurveys.org>.

Background

Based upon high reliability organization (HRO) theory pioneered by Dr. Karleen Roberts from University of California Berkeley, these on-line surveys analyze key

organizational attributes that lead to successful risk reduction in hazardous operations, to include:

- Process Auditing – a system of on-going checks to identify and correct safety issues
- Reward System – expected promoting quality performance
- Risk Management – systematic process used to identify hazards and control risks
- Command & Control – policies/actions used to reinforce safe or correct unsafe behavior
- Quality – policies and procedures for operations and safety management
- Communication & Functional Relationships – coordination among departments, activities, etc.

Value

Commanders who have conducted one or more safety assessment surveys routinely extol the virtues of this web-based tool during their individual survey debriefs. Some of the unique capabilities CASS provides include:

- Participant anonymity
- Organizational confidentiality
- Ease of implementation via the online format

- Worldwide access 24/7
- Surveys immediately available upon request (no advance notification/scheduling needed)
- Personalized service for survey setups/debriefs/questions
- Unit survey results only provided to select leaders (individual Access ID protected)
- Open-ended survey items provide unit-specific insights
- Data sorting options allow prioritization of safety concerns . . . and interventions
- Intervention suggestions provided by survey item
- Website provides opportunity for anyone to suggest additional potential interventions
- Historical safety assessment (data comparison options with prior organizational results)
- Higher Headquarters can view aggregate results/conduct analysis (i.e., individual anonymity and organizational confidentiality preserved)

Privacy of Data

Of primary importance to survey participants is a feeling of confidence that their responses will remain anonymous. Leadership can view survey results only when a specified minimum number of survey participants have taken the survey. This encourages individuals to communicate their unbiased perceptions without fear of retribution. Of equal importance to leaders is the confidentiality of data at the organizational level. Access to a particular organization's results is restricted to that organizational leader.

With individual anonymity and organizational confidentiality preserved, leaders have the ability to look first-hand at composite data collected from individuals within their organization, and then address their concerns. Additionally, organizational survey data are compiled with results from other organizations into a single database. As such, leaders have the ability to compare their unit responses with these aggregate results. Lastly, higher headquarters have the ability to view aggregate results and intervene on broader, cross-organizational issues.

Sample Survey

Figure 2 provides a sample view of an on-line survey. Surveys contain demographic, Likert-scale, and open-ended survey questions. Each survey takes approximately 10 minutes to complete. Note, the survey results are provided to leaders in consolidated chart and table formats. Thus, the demographic

data are separated from and cannot be tied to a participant's survey item responses to ensure individual response anonymity.

Survey Results

Figure 3 provides samples of the various survey data charts available to Marine leadership. Survey items may be viewed

individually, in total, or combined and compared with other aggregate survey data to form tailored comparisons by time frame, mission, location, etc. Thus, these presentations provide the commander with an overview of organizational strengths and areas that may warrant attention. This offers the commander an increased capability to focus and apply limited safety resources.

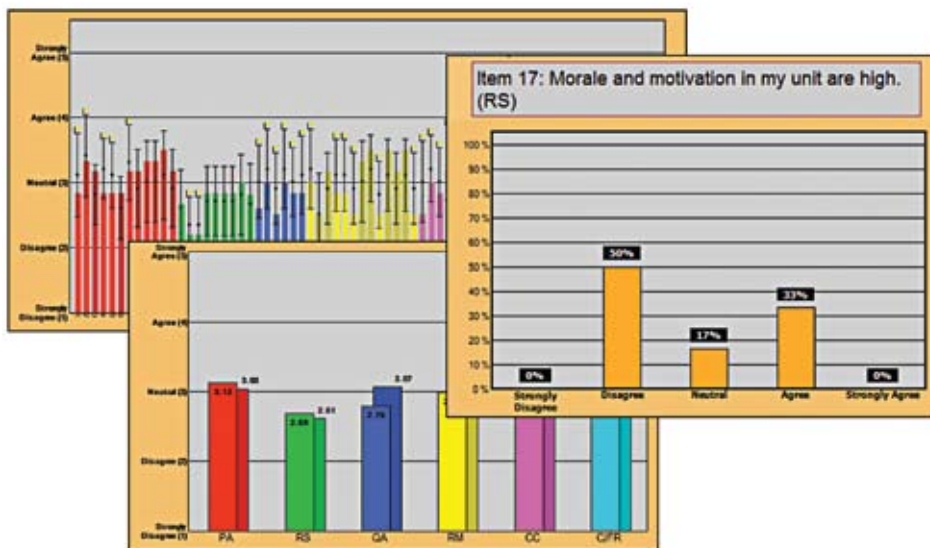
Figure 2. Sample Survey

The screenshot shows a survey interface with three main sections:

- Demographic Items:** A box with a red arrow pointing to a form section titled "PART I. DEMOGRAPHIC INFORMATION". It includes fields for "Your organization", "Age", "Military Branch", "Your grade", "Are you currently a Company/Platoon Commander or Section Head", "Time in Current Unit", "Are you currently deployed?", and "Your current location".
- Likert-scale Items:** A box with a red arrow pointing to a table of survey items. Each item has a Likert scale with five options: Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Don't Know)
1. My unit adequately reviews and updates safety standards and operating procedures. (PA)						
2. My unit closely monitors qualifications to ensure everyone is qualified to perform their job. (PA)						
3. Training is often postponed or cancelled in my unit due to operational commitments. (PA)						
4. Supervisors routinely monitor operations in my unit. (PA)						
5. Signing off personnel qualifications is taken seriously in my unit. (PA)						
- Open-ended Items:** A box with a red arrow pointing to text input fields for questions 65, 66, 71, and 72.

Figure 3. Sample CASS Data Displays



Survey Options

Currently, Marines have six survey options available that measure perceptions of organizational safety climate, as well as, off-duty activities:

- Ground Climate Assessment survey
- Higher Headquarters survey (designed specifically for HHQ staff)
- Private Motor Vehicle
- Drinking and Driving
- Motorcycle Safety Assessment (designed specifically for motorcycle operators/passengers)
- Off Duty and Recreational Activity

Summary

The on-line Climate Assessment Survey System (CASS) provides leaders with the capability to quickly identify pertinent safety issues and implement interventions prior to an adverse occurrence. Well-grounded in academic theory, these surveys collectively assess an organization's ability to safely conduct operations in terms of leadership, culture, policies, standards, procedures, and practices, as well as examine the attitudes and habits of survey respondents concerning off-duty activities. These results provide leaders with a solid foundation for enhancing a proactive organizational safety program.

Contact

For additional information, contact CASS survey administrators at (888) 603-3170 or via the CASS website (www.SemperFiSurveys.org). **GW**

Information You Need is Just One Click Away



ORM

OPERATIONAL RISK MANAGEMENT

- ORM Training
- Checklists
- Models
- Articles
- Tools and References



WESS

Web-Enabled Safety System

- Account Setup
- Training Links
- Online System Links

Work, Play, Live... Safely

Naval Safety Center
www.safetycenter.navy.mil

GTW

Marine Corps Ground Force
Preservation & Readiness
