



Explosive Ordnance Disposal (EOD) Community Safety Standown

SAFETY STAND-DOWN BRIEF

This brief was constructed for use across the Explosive Ordinance Disposal (EOD) community to facilitate a community-wide stand-down to decrease overall mishaps affecting risk to force/risk to mission. All classes of EOD mishaps were analyzed from 2005 through 2022 utilizing the mishap reporting program of record Risk Management Information – Streamlined Incident Reporting system (RMI-SIR). Mishaps were categorized by mission area, then ranked and analyzed by number of occurrences. The brief is only a starting point of references and training topics specific to repetitive missions and mishaps for EOD commands to expound upon in order to create unit-specific safety awareness for future safety stand-down opportunities.

Mishap Investigation, Reporting, and Recordkeeping

Mishap = “An unfortunate accident” (dictionary); Navy definition: any “unplanned” or “unexpected” event causing death, injury, occupational illness, including days away from work, job transfer or restriction, and material loss or damage (e.g., property damage).

Mishaps that result in damage to Navy facilities and equipment or occupational injuries, illnesses, or deaths to Navy personnel “degrade” operational readiness and “increase” operational costs.

The investigation into these “mishaps” is aimed at determining “how” and “why” the event occurred, to prevent future reoccurrence of similar events.

Recordkeeping is necessary to identify trends and assess the effectiveness of the overall safety program.

afsas.safety.af.mil/my.policy

Mishap Investigation, Reporting, and Recordkeeping

Reporting – Federal law governs the investigation and reporting of mishaps.

DoD and the Navy has implemented further reporting requirements to cover just about any incident, regardless of how minor, whether on or off-duty (military only). An investigation and report is required when civilian employees are injured on-duty.

Mishap reporting can be as simple as completing a mishap report and sending to the Safety Office. Depending on the severity, a Safety Investigation Board may be required. Contact your safety representative for guidance following any incident that causes injury or damage to government property.

Mishap Investigation, Reporting, and Recordkeeping

JAG Investigations (legal) are separate from safety investigations and may not be performed by the same individual. They serve two different purposes. Safety investigations are not conducted to find fault or culpability. Safety Investigations are for “mishap prevention” and JAG Investigations are for “accountability”. A mishap report shall not be used to support a JAG type investigation.

Individuals are responsible to report mishaps to the supervisor/LPO, etc. You as a supervisor are required to report mishaps to the chain-of-command and the Safety Office.

Remember, *all* mishaps, regardless of how minor, are to be reported to the Safety Office.

Mishap Investigation, Reporting, and Recordkeeping

A mishap may involve one or more of the following personnel:

Military –

- Military personnel on active duty or reserve status
- On or Off-Duty, On or Off-Base

(Includes any military personnel assigned from any service)

Civil Service –

- Navy civilian employees
- On-Duty (When they reach federal property, TAD, Travel)
- Includes Foreign Nationals and Non-Appropriated Fund employees
- Does not include Contractors (unless caused by government civilian or military personnel)

Mishap Classes Defined

Mishap Class	Property Damage	Personnel
A	Over \$2.5M	Fatality or Permanent Total Disability
B	\$600K - \$2.5M	Permanent Partial Disability or when three or more personnel are hospitalized, beyond observation, as a result of a single mishap
C	\$60K - \$600K	One or more lost workdays
D	\$25K - \$60K	Work-related/on-duty injury or occupational illness not otherwise classified as Class A, B, or C (i.e.' medical treatment beyond first aid, loss of consciousness, light/limited duty, restricted work, or job transfer).
E	\$0 - \$25K	Other on-duty mishaps that do not meet the definition of Class A – D, but are reportable, include all HRST, Cargo Air Drop, “all” parachuting incidents, all diving cases involving the central nervous system, oxygen deficiency, pulmonary over inflation syndrome, or hyperbaric treatment etc. All off-duty military injuries are reportable that require medical treatment beyond first aid, loss of consciousness, light/limited duty, restricted work, job transfer or loss of one training day.
Explosives Mishap	N/A	All ammunition or explosives events that result in unintentional firing, detonation, or launch and/or injury. Events that result in injury are reported through the Safety Officer. All others are reported as an Explosives Event per OPNAV M-8000.16. Examples of reportable events include hot gun cook-off, negligent discharge, or any round impacting outside surface danger zones.

Mishap Investigation, Reporting, and Recordkeeping

The following mishaps require a Safety Investigation Board (SIB) investigation:

- All on-duty Class A mishaps (fatality) on or off a government installation.
- Military death that occurs during or as the result of a medical event that occurs within one hour after completion of any command directed remedial physical training (PT), physical readiness test (PRT), physical fitness testing (PFT), physical fitness assessment (PFA) or command sponsored activity during normal working hours regardless of any pre-existing medical condition.
- On-duty injury where death or permanent total disability is likely to occur, or where damage estimates may be expected to exceed \$2.5M.
- Hospitalization, beyond observation, of three or more personnel involved in a single mishap.
- All explosives mishaps, all ordnance impacting off range and all live fire mishaps resulting in an injury.
- Any mishap that the Controlling Command (NSWC) determines requires a more thorough investigation and report, beyond that provided by a command's safety investigator.

Mishap Investigation, Reporting, and Recordkeeping

Other Reportable Mishaps

- Property damage caused by a government evolution, operation or vehicle to other government or non-government property.
- For military fatalities and injuries occurring during Permanent Change of Station (PCS) orders, it is the gaining command's reporting responsibility.
- Any other work-related illness or injury that involves medical treatment or loss of consciousness; beyond first aid. Includes light or limited duty and job transfer or restricted work, time away from work (loss work time) or higher severity.
- Training mishaps resulting in any limited duty or loss of time from work.
- All Government Motor Vehicles or Government Rentals resulting in \$5k or more in property damage.
- Any accident involving Helo Rope Suspension Technique (HRST), Cargo Air Drop, or Parachuting (On/Off-Duty).

Mishap Investigation, Reporting, and Recordkeeping

Other Reportable Mishaps Cont'd

- Combat Zone (Any) – Not caused by Direct Enemy Action.
- Work-related accident involving DoN-supervised contractor, caused by DoN evolution or operation.
- Medically diagnosed work-related injury or illness; cumulative trauma disorder with or without lost time or further medical treatment.
- Work-related Significant Threshold Shift in Hearing.
- Work-related Needle Stick or Sharps accident.
- Work-related TB infection.

In a Nutshell – Report ALL injuries, no matter how minor, to your supervisor and safety representative.

And “near misses” where injury or damage was avoided merely by chance! Those are reportable as well.

Mishap Investigation, Reporting, and Recordkeeping

When Mishaps Occur

When a mishap occurs, the first response should be to care for injured personnel while preventing the possibility of any further injuries (initiate Emergency Action Plan).

On site personnel must secure the scene to protect evidence and support pending mishap investigation.

Document a timeline of events.

If weapons are involved, make safe and secure to prevent tampering, until level of investigation needed is determined.

Collect and provide Chain of Command with 5-Ws: Who, What, When, Where, and Why. Include the Echelon III Safety Manager in notifications.

Witnesses should write statements and photographs should be taken of the site if possible.

Secure all physical evidence and include training records, logs, risk assessments and other related documents.

Include 5-Ws and add COMNAVSAFECOM as an addressee to notification messages.

“Normalization of deviance is a phenomenon by which individuals, groups, or organizations accept a lower standard of performance until that lower standard becomes the norm for them.”

Background

- Prior to the Challenger disaster, evidence of O-ring malfunctioning was found following several shuttle flights, but the malfunction was basically ignored. Despite the O-ring malfunction, previous shuttle flights occurred without incident, leading to acceptance (normalization) of the O-ring issue, which ultimately contributed to the Challenger demise. Seventeen years later, normalization of deviance contributed to the Columbia Space Shuttle mishap (2003), when a piece of foam from the external fuel tank broke off and hit the shuttle’s wing. In both cases, a known defect that had not previously caused serious consequences was ignored. Acceptance of deviation had become the norm.

Factors

- At the organizational level, several factors can lead to deviation from norms, to include:
 - insufficient personnel
 - inadequate materiel resources
 - fiscal constraints
 - time pressures
- Cutting corners is an early step in the normalization of deviance process. Even a small shift in established procedures leads to accepting deviation. Over time, the shortcut can become the norm. After an extended period, this can turn into “that’s the way we have always done it.”

Examples

- Examples of areas that can result in normalization of deviance include:
 - Signing off qualifications without completing prerequisite training
 - Towing aircraft without the requisite number of personnel
 - Rushing maintenance procedures due to time constraints
 - Not wearing appropriate PPE or wearing PPE incorrectly
 - Continual operation in the gray areas of regulations

Conclusion

- People must believe they have full support from all levels of leadership to do what is right, or the culture will not change and acceptance of deviation will be normalized. Remediation requires every level of leadership to be intolerant of deviation. At times individuals, groups, or organizations may perceive backlash (negative repercussions) if tasks are not completed on time.
- Unsafe practices can become the norm if shortcuts do not result in an immediate adverse occurrence. Exacerbating this issue, cutting corners may be implicitly or explicitly sanctioned by leadership.

Explosive Ordnance Disposal Hazards

- **There are many hazardous activities associated with Naval Special Warfare. The following are just a few.**

On-Duty:

- Parachuting
- Diving
- HRST Ops
- Explosives handling
- Weapons handling
- CBRNE
- Fire and maneuver
- Boat Ops

Off-Duty:

- PMV2 and PMV4 operations
- Off-duty recreational activities

- **Each of these had some form of mishap over the past 10 years (5 being Class As – all of which were off-duty). It is good to remember the hazards associated with these to help prevent reoccurrence.**
- **In the Summer 2021 edition of Ground Warrior magazine there is an article titled the “Half Life of Scared.” Basically, we stay “scared” (and vigilant) for the first 90 days and don’t make the same mistakes. After about 6 months we lose the healthy fear, get complacent and do it again**

Explosive Ordnance Disposal Class A Mishaps 2013-2023

- **Let's review the Class A mishaps over the past 10 years**
 - 1. PMV4 accident with no other vehicle**
 - 2. SVM died while operating a PMV2 off duty when a PMV4 turned in front of SVM**
 - 3. SVM died after losing control of PMV2 and strikes guardrail**
 - 4. SVM died in PMV4 accident**
 - 5. SVM died in bicycle accident**

Off-Duty

- **PMV2 and PMV4 – these continue to be the highest producers of fatalities in the Navy (including the NSW community)**
 - Distracted driving (texting, talking, watching TV, etc.) – both the SVM and the other drivers
 - Speeding
 - Aggressive driving
 - Following too close
 - Falling asleep

- **High Risk Activities (Extreme Sports)**
 - Skydiving (to include base jumping)
 - SCUBA Diving
 - Rock Climbing
 - Mountain Biking
 - Off-Road Vehicles
 - Dirt Bikes
 - ATVs
 - Go-carts

- **Swimming (ocean, pool, lake, etc.)**
- **Camping**
- **Hiking**
- **Work around the house**
- **Hunting**

Off-Duty cont.

- **AOR Specific**
 - **Hot Weather Activities**
 - Beaches
 - » Rip Currents
 - » Marine Life
 - » Sun Exposure
 - » Lightning Strikes
 - » Dehydration

 - Water
 - » Snorkeling
 - » Boating
 - » Jet skiing
 - » kayaking
 - **Cold Weather Activities**
 - Snow Skiing/Snowboarding
 - Snowmobiling
 - Ice Climbing
 - Ice Fishing

Training

Routine work can dull alertness and relaxed attitude can replace the caution that existed when the job was new and interesting. Without some periodic reawakening to the ever-present hazards, the odds of an accident occurring can increase. Its important to have a continual training system and for commands/community to establish a culture and climate of learning to lower risks and reduce mishaps.

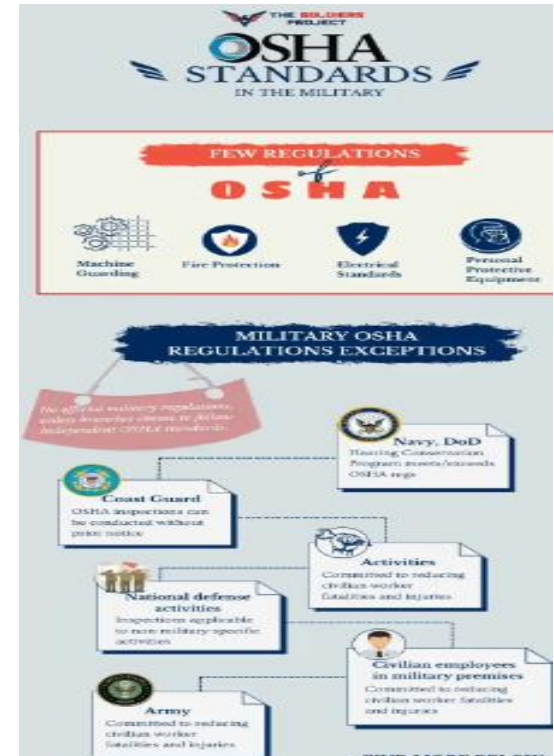
Workers may not always recognize the importance of safety training and may think of it as unnecessary because they've "*been doing it for years.*" But an important benefit of periodic safety training is the reminder that a *danger can exist* and that *no one is immune to accidents*. Therefore, it is important for workers to understand the purpose of the training session, why it will be useful to them, and what can result from not following the rules, procedures and SOP's.

A good process or procedure can organically go bad unless it is routinely and constantly updated as the environment and situation changes. If people are doing things 'the way they've always been done' without regard to evolving facts of the situation then there is fertile ground for a foreshadowed accident.

Training

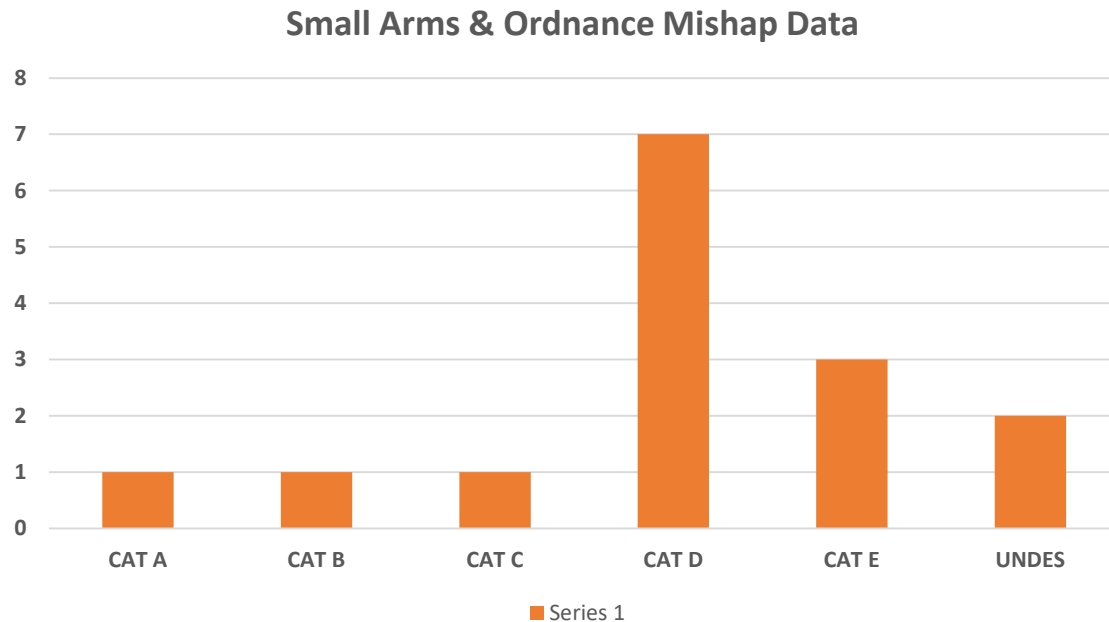
Many standards promulgated by OSHA, DoD, and the Navy explicitly require the employer to train employees in the safety and health aspects of their jobs. Other OSHA, DoD, and Navy standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified" - meaning they have had special previous training, in or out of the workplace.

Supervisors are required to provide safety training to employees. This training should include topics relative to the employees and their work place, and can be provided in stand-up safety meetings, safety stand-downs or by routine handouts/publications (manually and/or electronically).



Small Arms & Ordnance

- **Explosive, Ordnance, and Weapons Operations: The EOD community experienced approximately 15 ordnance and weapons-related mishaps between 2005 and 2022 (Class A – 1, B – 1, C – 1, D – 7, E – 3, Undesignated – 2).**



Mishap Trends and References

- **Mishap trends include:** cartridges detonating out of battery during live-fire gun shoots causing injury, ricochets causing injury to service members, heat casualties during small-arms gun shoots, injuries due to bullet fragmentation, negligent discharges, and accidental self-inflicted gunshot wounds.
- **Small Arms & Demolition references:**
 - a) OPNAVINST 3591.1G – Small Arms Training and Qualification
 - b) EODB 60A-1-1-4, Protection of Personnel and Property
 - c) EODB 60A-1-1-22, General EOD Safety Precautions
 - d) EODB 60A-1-1-31, General Information on EOD Disposal Procedures
 - e) EODB 60A-1-1-12(U) EMR Precautions
 - f) NAVSEA OP 5 Volume 1 – Ammunition and Explosive Safety Ashore
 - g) NAVSEA OP 3565 – Volume 2, Hazards of Electromagnetic Radiation to Ordnance (HERO)

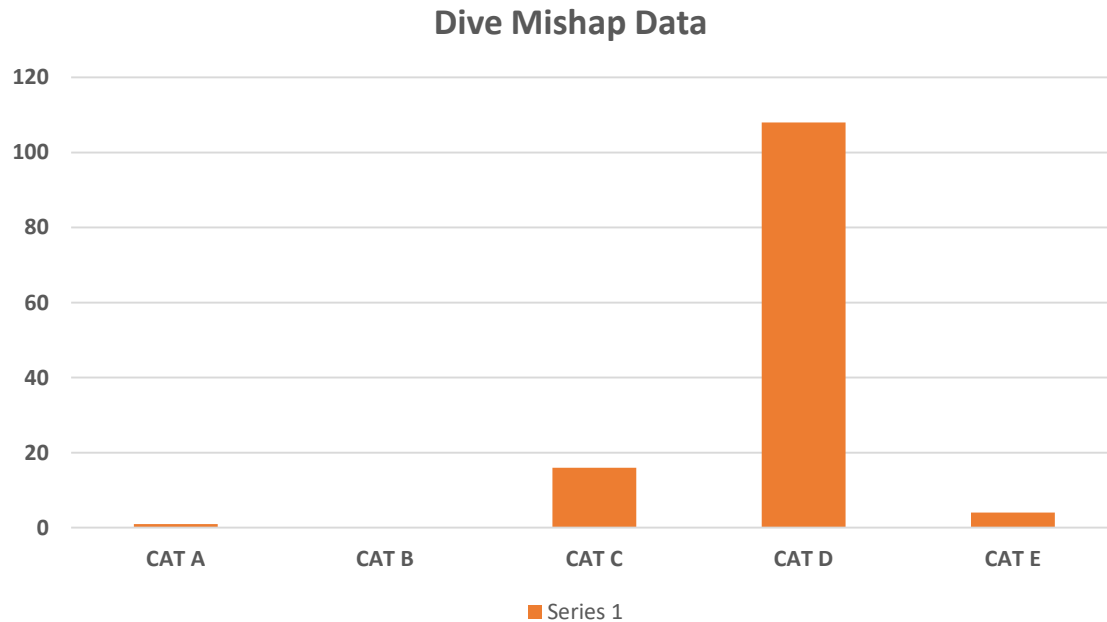
Explosive, Ordnance and Weapons Operation Stand-Down Topics:

- **Small Arms:**
- Unit Small Arms Marksmanship SOP review
- Enforcing universal gun safety rules
- Review of heat-related injuries, diagnosis and treatment
- Weapons range safety fundamentals
- Personal Protective Equipment (PPE) – (prevention of eye injury due to cartridge detonation out of battery, enforcing PPE compliance while engaging steel targets, etc.)

- **Demolition:**
- Unit Demolition SOP review
- 60A-1-1-31 basic EOD disposal procedures (current approved demolition tools, determining Blast Overpressure minimum safe distances, etc.)
- 60A-1-1-4 basic safety precautions associated with explosive and energetic materials
- Review of electric and non-electric misfire procedures and current fielded Remote Firing Devices (RFD)
- Demolition safety and basic skills (review how to conduct a burn test, location/distance of cap buildup, etc.)
- Review separation of initiators, boosters and demolition materials while conducting routine operations (mounted, dismounted, etc.)

Diving Operations

- The EOD community experienced approximately 85 SCUBA and 44 MK16 Mod 1 dive-related mishaps between 2005 and 2022 (Class A – 1, B – 0, C – 16, D – 108, E – 4).



Mishap Trends

- **Frequently Observed Trend:** Water intrusion into the MK16. Water intrusion into MK16 mouthpiece resulting in flooding of Underwater Breathing Apparatus (UBA), with multiple accounts of barrel valve leaks through the weep hole and execution of Emergency Procedures (EP), leaks in the MK16 center section, bubbles observed coming from divers rig and execution of EP and water intrusion during exhalation on MK16.
- **Frequently Observed Trend:** Divers experiencing various dive-related disorders.
- **Frequently Observed Trend:** EP execution leading to omitted decompression. EP execution due to rig malfunctions and erroneous primary and secondary display readings on the MK16, and lack of diver discipline leading to omitted decompression, exceeding ascent rate and uncontrolled ascent to the surface.
- **Additional Frequently Observed Trends:** Improper Pre-dives resulting in unfilled MK16 Mod1 Carbon Dioxide (CO₂) canister, running out of diluent at depth necessitating buddy breathing, entanglement, improper supervisory checks resulting in diver air inadvertently being turned off, “caustic cocktail” and rig flood out, failure of rig to transition at 40 fsw, divers going unconscious before, during and upon surfacing, material failure resulting in high pressure (HP) indicators separating from hoses, lack of diver discipline leading to omitted decompression, improper pre-dive resulting in cut o’ring in Bendix connection to Primary Electronics Assembly (PEA) and rig malfunction and improper pre-dive resulting in secondary display nut falling off resulting flooding of display.

References and Diving Stand-Down Topics

- **Diving References:**

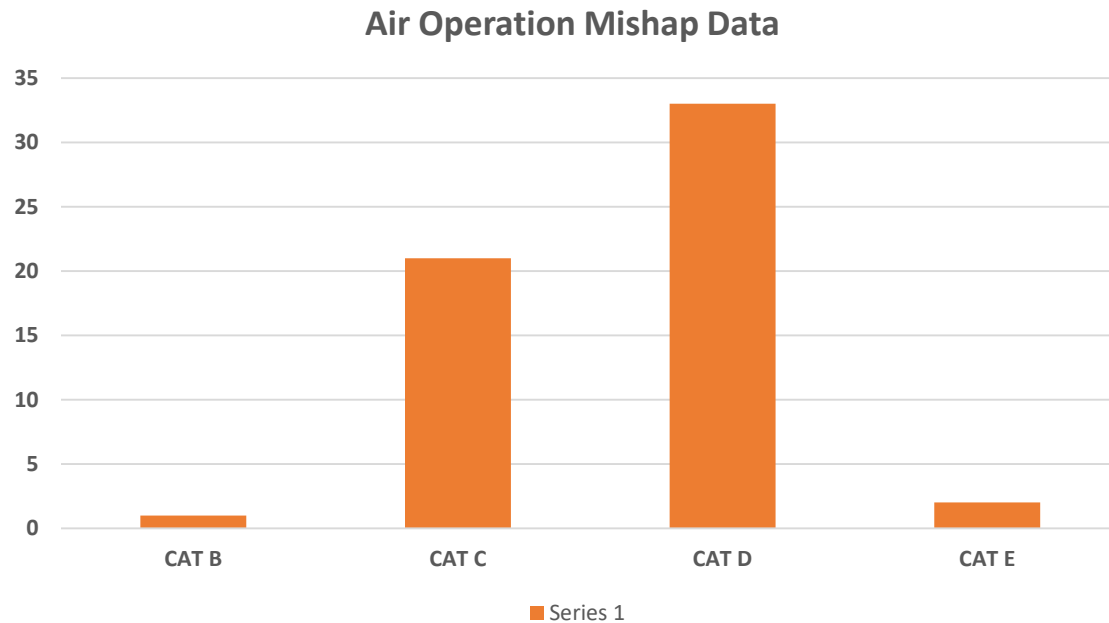
- a) OPNAVINST 3150.27D – Navy Diving Policy and Joint Military Diving Technology and Training Program
- b) U.S. Navy Diving Manual Rev. 7
- c) SS600-AQ-MMO-010 – Technical Manual Underwater Breathing Apparatus Manual MK 16 MOD 1

- **Diving Operations Stand-Down Topics:**

- Review command-specific dive SOP
- Proper maintenance practices associated with the MK16 Mod 1 (two-man rule, proper packing of CO2 absorbent, how to adjust Bendix connectors, proper installation of the PEA, etc.)
- Review of MK16 Mod 1 EPs
- Dive disorder scenarios to gauge both diver and supervisor (scenario, diagnosis, COA, further considerations, etc.)
- Review of MK16 barrel valve (how to open/go on gas, how to close/purge, etc.)

Air Operations

- The EOD community experienced approximately 57 Air Operations-related mishaps between 2005 and 2022 (Class B – 1, C – 21, D – 33, E – 2).



Mishap Trends

- **Frequently Observed Trend:** Cut-away of main parachute due to pilot chute hesitation, bag-lock and severe line twists.
- **Frequently Observed Trend:** MFF/Static Line injuries caused by improper landing techniques, hard landings, missing DZ and down-wind landing into obstacles.
- **Frequently Observed Trend:** HRST operations, including multiple injuries caused by improper landing techniques, bumps and scrapes during HRST tower and helicopter operations, sprained and fractured extremities while Fast Roping, and HRST tower injuries due to slips/falls.
- **Additional Frequently Observed Trends:** Total malfunction (horse shoe), Instability resulting in bag-lock, riser separation, MC-6 canopy sustaining damage to gores and control lines, damaged control lines, steering line becoming entangled around risers or broken, shoulder dislocations while in freefall, parachute malfunctions during Combat Rubber Raiding Craft (CRRC) cargo air drop, and stowed brake failing to release.

References and Air Operation Stand-Down Topics

- **Air Operations References:**

- a) COMNAVSPECWARCOM INSTRUCTION 3000.3C – Naval Special Warfare Parachuting and Cargo Airdrop
- b) COMNAVSPECWARCOM INSTRUCTION 3000.2 – Naval Special Warfare Helicopter (and Tiltrotor) Rope Suspension Techniques and Cast and Recovery Operations Manual
- c) USSOCOM M350-6 – Standards for Rotary Wing and Tiltrotor Infiltration/Exfiltration Training (Joint Instruction)
- d) OPNAV INSTRUCTION 3500.43 – Navy Helicopter Rope Suspension Techniques and Helicopter Cast and Recovery Policy and Administration

- **Air Operations Stand-Down Topics:**

- Review of unit air operations SOP
- Proper PLF/landing procedures for HRST/Static Line/MFF operations
- Review proper HRST tower operations including PPE, proper rigging and tower safety
- EP overview for HRST/Static Line/MFF operations
- PPE for HRST/Static Line/MFF operations

Questions?