



Management of Scrap Metal from Munitions Responses

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Focus

- Ordnance or target related scrap metal
- Otherwise known as:
 - **Material that Presents a Potential Explosive Hazard (MPPEH)**
 - **Ammunition, Explosives, and other Dangerous Articles (AEDA)**
 - **AEDA scrap**
 - **Explosive Contaminated Property/Scrap**
 - **Ordnance Derived Scrap**
 - **Range Residue**



Explosives Safety Position

- Protect Navy personnel and the public
- Considered to pose an explosives hazard unless:
 - Inspected and certified as inert
 - Temperature cycled, inspected, and certified as inert
 - Manufactured as inert (requires stamping)
 - Inert certified by authorized individual
(requires certification, serialization, recordkeeping)



Chronology of Events

- **1946: DDESB subcommittee report on incidents and procedures for explosives contaminated military scrap**
↓
- **1996: Fontana incident**
- **1997: DoD IG Report**
- **1997: NAVORDCEN issued explosives safety reminder**
- **Nov/Dec 2002: 3 AEDA scrap-related mishaps reported**
(Navy ops)
↓
- **Dec 2002: NOSSA issued another reminder –
(msg title: Explosive Mishaps Involving
Munitions Residue)**



Outline

- Explosives Safety Requirements
 - OP-5
 - Message 171301Z Dec 02
- Inspection, Certification, Verification
- Demil
- Contracts
- POCs





OP-5 Requirements

- Until proven otherwise, considered to pose an explosives hazard
- Therefore, explosives safety requirements apply including:
 - SOPs
 - Storage
 - Labeling/Identification
 - Transportation
 - ESS
 - Recordkeeping
 - No Notice Inspections





OP-5 Requirements

- Sale, Salvage and Disposition of Inert Material
 - Chapter 13-15
 - All inert items shall be rigidly inspected
 - All cavities shall be opened and inspected.
 - Cavities shall not be closed after inspection.
 - Certify items safe and properly demilitarized
 - All containers subjected to 100% inspection
 - All previous markings removed.
 - Cartridge cases de-primed
 - Cases below 30 mm excepted
 - Specific list of CADs and AEPs certifiable by visual inspection.



Message 171301Z Dec 02

- Recommended stand-down for MPPEH activities
- Listed applicable references
- Stated that MPPEH must be:
 - Certified safe for any method of disposal, including thermal cutting (torch), drilling, crushing, or sawing, prior to sale to the general public.
 - Certified inert by trained, qualified, authorized personnel
- Provided recommended procedures
- Stated that No-Notice inspections will occur



Recommended Procedures

1. Visual Inspection: Only when every surface is visible and capable of being inspected.*
 - Applicable with pieces of metal, such as frag, with no cavities, holes, blind spaces, rivets, cracks, or other obscured features.
 - All internal cavities of munitions must be vented or exposed including, training or practice munitions to allow visual inspection and certification
 - (DoD 4160.21-M-1 (see App 4, CAT V, Para 12 & Para 7.))

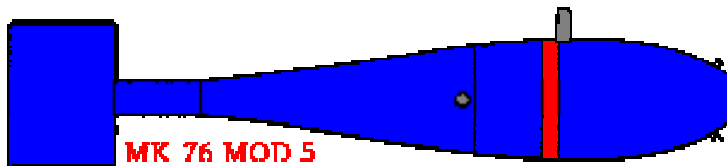
* adapted from IOCP 385-1

Recommended Procedures

1. Visual Inspection: Continued

- **The use of probes to inspect MPPEH cavities does not satisfy visual inspection requirements, as explosives residue may remain in probed cavities.***

* With the exception of steel practice bombs OR any use of probes by EOD personnel, probes should not be used.



Recommended Procedures

1. Visual Inspection: Continued

- **Expendable Jet Assisted Takeoff (JATO) bottles can not be certified inert by visual inspection or probing.**

- Chunks of ammonium perchlorate/rubber binder or chunks of NG/NC double base propellant may remain.
- It's dark in there -- JATO program manager at Indian Head says you can't certify them inert.



Uncertified JATO Bottles: Proper Storage?





Recommended Procedures

2. Thermal Processing: The most effective way to ensure that MPPEH is inert is to heat the article to a temperature above the decomposition temperature of any potential explosives residue.
 - A flashing furnace or oven should be used in this process.
 - Use of flashing ovens is generally not practical at this time.
 - There is no specific time and temperature requirement, but 650 degrees F for two hours is a ballpark range.
 - Point paper available from OESO/NOSSA on time and temperature requirements.



Transportable El Dorado car-bottom furnace.



Used at Kaho'olawe - Cost approx. \$450K





Recommended Procedures

3. Enclosed Munitions: Enclosed munitions may explode, when heated, due to pressure build-up even if no explosives are present.
 - Recommended methods to vent or expose internal munitions cavities are remote operations, such as mechanical and explosives cutting, crushing, and shearing, conducted with appropriately-engineered safety controls (blast shields or walls.)
 - Hand-held torches are only suitable if all surfaces are clearly visible and free of explosives.*

*COMNAVFACENGCOM LTR 2 May 03 states “Under no circumstances, should UXO be cut with a torch during demilitarization and salvage operations”

Example: Hand-Held Torches





Recommended Procedures

4. Chain-of-Custody & Control: Ensure that inspected and inert-certified MPPEH is secured and segregated from uncertified material.
 - Containers and holding areas for MPPEH should be clearly marked to identify that it has been inert certified.
 - A legible copy of all inspection and certification documents must accompany certified MPPEH.



Secured and segregated.





Recommended Procedures

5. Avoid releasing inert-certified material to the public that still looks like ordnance.
6. Use recommended methods to completely deform these items prior to disposal.
 - DoD 4160.21-M para B.3.A.(5) : “... the property will not be in original configuration when released from DoD control.”



Caution on use of DLA Pubs

- DLA posts irregular updates of its pubs, such as DoD 4160.21-M and M-1 <http://www.demil.osd.mil/>. They are not signed, dated, or coordinated, but DLA's position is that they apply.
- Recommend using the last officially promulgated versions.
- One exception: AEDA & Range Residue interim policy, Chapter 4 Para B.3.A.(8)



Inspection, Certification & Verification

- Required by DLA pubs
- Interim policy located at DoD 4160.21-M Chapter 4 Para B.3.A.(8)
- Dual signatures
- Releasable to public
- Equates to 5X condition



Dual Signatures

- Certifications require dual signatures:

1. (certifier) DoD or Contractor
2. (verifier) DoD U.S. citizen.*



- “This certifies and verifies that the AEDA residue, Range Residue and/or Explosive Contaminated property listed has been 100 percent properly inspected and to the best of our knowledge and belief, are inert and/or free of explosives or related materials.”

- * Current NOSSA position is that the verifier requirement may not be waived.



Dual Signatures

- Each generating activity shall ensure that its servicing DRMO [or QRP] has a current list of the personnel and their sample signatures who are qualified and authorized to inspect, certify and verify AEDA Residue, Range Residue and ECP.
- This letter is generated by direction from the C.O. referring to personnel in a Qual/Cert program. (“OPNAVINST 5090.1B para. **14-5.5.1.1** “Trained personnel designated in writing by the commanding officer”)



Demilitarization

Demilitarization (DEMIL): The act of destroying the military offensive or defensive advantages inherent in certain types of equipment or material. The term comprehends mutilation, dumping at sea, cutting, crushing, scrapping, melting, burning or alteration designed to prevent the further use of this equipment and material for its originally intended military or lethal purpose and applies equally to material in unserviceable or serviceable condition, that has been screened through the Inventory Control Point (ICP) and declared surplus or foreign excess. (DOD 4160.21-M-1, APP. 2 item 25, 1995 version; there are newer versions of this definition out there)



Eliminate Functional or Military Capabilities.

- Demilitarization does not equal certification as inert.
 - May be merely MUTILATION.
- DRMS system of control laid out in the DLA pubs, or its equivalent.
 - Includes Economic analysis, surveillance, Demil code verification and challenge, trade security controls, weight and other documentation processing, determine method of DEMIL/Mutilation, buyer qualification.



Degree of Demil

- Specific requirements for specific munitions items
- Best Practice: Ensure that the item no longer resembles anything that could be confused with a piece of live ordnance.
- Some examples follow. These examples are interpretations of existing guidance in demil manual.

Demil Manual Requirement for Practice Bombs:



Minimal demil per manual

- Demilitarization will be accomplished by deforming fuze cavity threads or removing base plate by other than normal disassembly (such as sawing) or by detonation. [See notes for venting requirement]



Better Demil for MK 83 1000lb/BDU 54 practice bombs.

1. Use an excavator-mounted shear to cut the bomb into 18" by 40" pieces. The tail section is cut from the body. The nose cones are collected and cut with a torch making it unrecognizable as ordnance. (or)
2. Processing will result in at least two (2) pieces (after the tail and front portions of the weapon have been removed/cut off). The inner filling (normally low-strength concrete and vermiculite or sand) will be removed, and left on site.

Genesis GMS 1000 Magnum Shear



1,500 tons shear force

Visually inspect each bomb
and certify it inert (no demil)
or...



Bring in heavy equipment...



And DEMIL those puppies!





End Result

- Items no longer resemble ordnance

Crushed BDU Cast Iron





Excluded Materials

- **Excluded Materials.** Materials that may not be sold through a Qualified Recycling Program (QRP).
- Proceeds from the sale of excluded materials **SHALL NOT** be returned to a QRP... Excluded items include:
 - Weapons, and other material required to be demilitarized or mutilated, and scrap resulting from demilitarization
 - All Munitions List Items (MLI) and Strategic List Items (SLI) as defined in DOD 4160.21-M-1”



Expended Brass

4160.21-M Chap. 4 Para. B.3.b.(5)d.

Expended small arms cartridge cases, caliber .50 and under, after being properly inspected, certified, and verified, shall be crushed, shredded, or otherwise destroyed prior to public sale through a Qualified Recycling Program.

“Firing range expended brass or mixed metals gleaned from firing range cleanup” means .50 cal-and-less brass, and clean frag. Anything else is stretching it. Larger calibers may show up (gray area).



Looks like "eligible material" (brass and mixed metals gleaned from firing range cleanup), but is it really explosively **SAFE?**



The fuzes are "mixed metal", but they are also MLI. (CAT III.B., Fuzes for artillery projectors, CAT II.A.)



Example: Ordnance Deformer



(Another alternative is to use a baling machine.)

Brass must be dented to prevent loading before turn in to QRP.

Ordnance deformer is for demil to allow sale, NOT for inert certification.

DDESB-KT memo 09 Jun 03 on siting these.

No denting required if DRMO sells brass.



Contract References

- DFARS 252.223-7002-7003 DOD
- DOD 4160.21-M-1
- NAVSEA OP 5, Vol 1, Rev 7
- 4160.21-M
- DOD 6055.9-STD
- DODI 4145.26-M

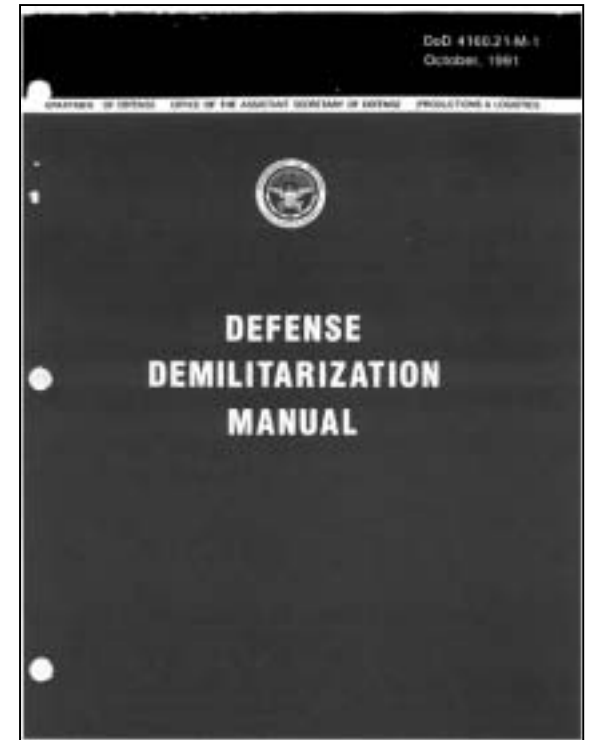


Demilitarized projectiles. Photo
courtesy of U.S. Navy.



DOD 4160.21-M-1

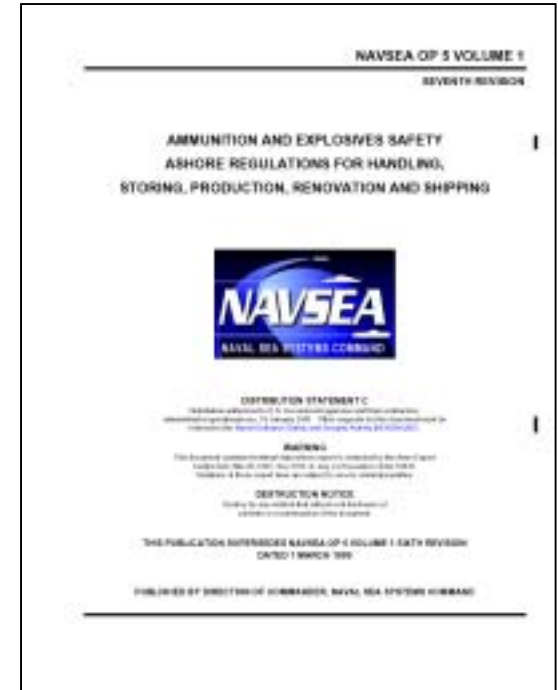
- Why DOD 4160.21-M-1?
- Because this document, the Defense Demilitarization Manual, provides the instructions (vague as they may be) for demilitarizing various munitions list items.





NAVSEA OP 5, Vol 1

- Why NAVSEA OP 5, Vol 1?
- Because: Para 1-4.3.2. It is the commanding officer's responsibility to require personnel of other agencies, including contractors and tenant commands, while on the facility under his/her command, to conduct their activities in accordance with established safety rules. The commanding officer shall be guided by the provisions, and enforce the mandatory requirements, of this manual.





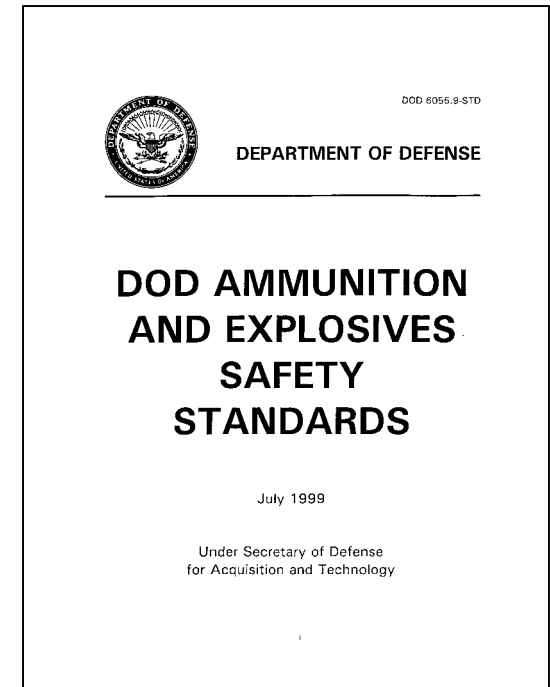
DOD 4160.21-M

- Why DOD 4160.21-M?
- Because: The Defense Materiel Disposition Manual gives broad guidance on demil program, and the special instructions for AEDA and range residue.
- Required by OP 5 Para 13-15.1. The local activity must certify items safe prior to release in accordance with DOD 4160.21-M and that the items have been properly demilitarized in accordance with DOD 4160.21-M-1.



DOD 6055.9-STD

- Why Ref (f) DOD 6055.9-STD?
- Because: The DOD Ammunition and Explosives Safety Standards establishes broad guidance on explosives safety.
- (NAVFAC requires it now in their contracts pr COMNAVFACENGCOM LTR 2 May 03, "Munitions Response Program Language for Environmental Contracts".)





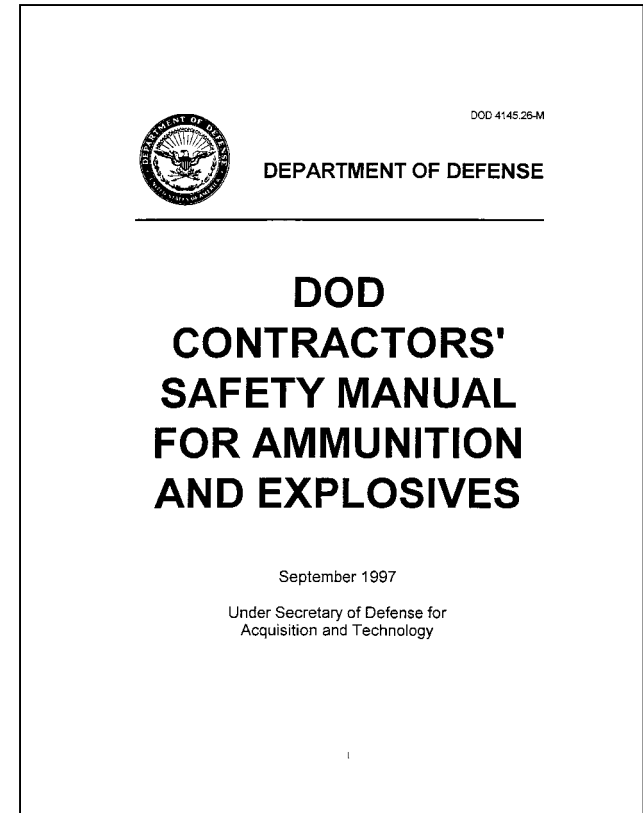
DFARS 252.223-7002-7003

- Why DFARS 252.223-7002-7003?
- Because: The Safety Precautions for Ammunition and Explosives are required in the Defense Federal Acquisition Regulations Supplement at Subpart **223.370-5** for all contracts involving the use of ammunition and explosives, specifically including demil and disposal.



DODI 4145.26-M

- Why DODI 4145.26-M?
Because: “DoD policy is to ensure that its contractors take reasonable precautions in handling ammunition and explosives so as to minimize the potential for mishaps...”*
- And....



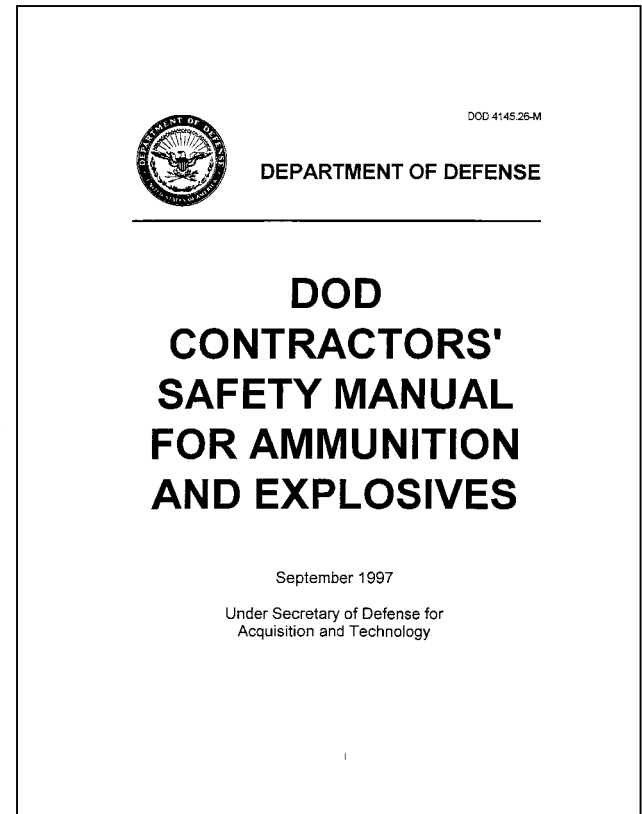
***DFARS 223.370-3 Policy.**



DODI 4145.26-M

- **Why DODI 4145.26-M?**
- The manual contains mandatory safety requirements for contractors.
- Allows the contracting officer to use the ammunition and explosives regulation of the DoD component or installation as a substitute for, or supplement to, DoD 4145.26-M, as long as the contract cites these regulations.”*
- This allows citation of OP-5 and DoD 6055.9-STD

***DFARS 223.370-3 Policy.**





DoD Contractors' Safety Manual Contents

- Oriented toward explosives production.
- Parallels and adds to DoD 6055.9-STD
- Special Mishap Investigation and reporting requirements
- This is the DCAS (Defense Contract Administrative Services) bible for E.S.
- C3.3. Requires SOPs -- no format specified.
- C3.3.6. Operator training shall be documented
- C10.5. Hot Work Permits