



Physical Security and Stockpile Management (PSSM)

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Agenda

- **Physical Security/Stockpile Protection**
 - Hazard Classification
 - Storage Structures
 - Basic Quantity Distance Principles
- **Stockpile Management**
 - Key Control
 - Inventory Procedures
 - Life Cycle Management
 - Explosive Hazardous Waste
 - Surveillance
 - Safety

Hazard Classification

- **Basis of safety for ammunition storage**

- Assigned to munitions;
 - As tested
 - In their shipping configuration



- **Hazards identification**

- Hazard Divisions (HD):
 - 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6
- Compatibility Groups (CG):
 - A, B, C, D, E, F, G, H, J, K, L, N, and S



Hazard Classification (2)

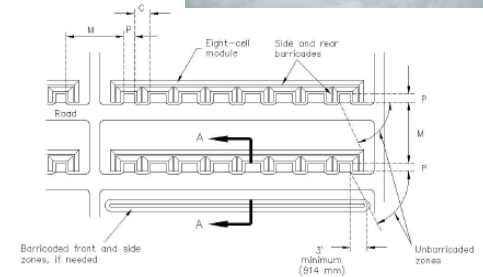
Mixing of Compatibility Groups.

Compatibility Group	B	C	D	E	F	G	H	J	K	L	N	S
B	X		X ¹⁾	X ¹⁾	X ¹⁾							X
C		X	X	X	²⁾	X					X ⁴⁾	X
D	X ¹⁾	X	X	X	²⁾	X					X ⁴⁾	X
E	X ¹⁾	X	X	X	²⁾	X					X ⁴⁾	X
F	X ¹⁾	²⁾	²⁾	²⁾	X	X						X
G		X	X	X	X	X						X
H							X					X
J								X				X
K									X			
L										³⁾		
N		X ⁴⁾	X ⁴⁾	X ⁴⁾							X ⁶⁾	X ⁵⁾
S	X	X	X	X	X	X	X	X			X ⁵⁾	X

LEGEND: X = Mixing permitted

Storage Structures

- Open storage
- Open storage (barricaded)
- Aboveground
- Aboveground (barricaded)
- Barricaded modules
- Earth-covered magazines (ECM)
- Tunnel



Basic Quantity Distance Principles

- **Inter-magazine**
 - Prevent simultaneous propagation
 - HD 1.1 and 1.2 (fragments & blast)
 - HD 1.3 (thermal)
- **Inhabited Building Distance**
 - Protect unrelated people (public)
 - Fragments and debris
 - Overpressure



Key Control

- **Key custodian**
- **Inventories**
 - Opening
 - Closing
 - Periodic
- **Lost or Unsecured Key**
 - Procedures
- **Key register**



Inventory Procedures

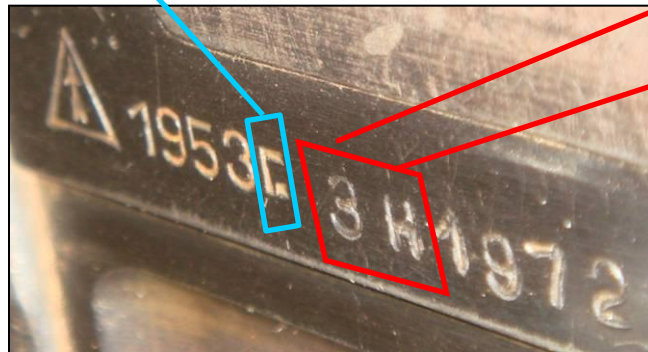
- **Serial Number**

- Inventories
- Issuing
- Receiving

- **Transliterate**

Cyrillic	Latin	Cyrillic	Latin	Cyrillic	Latin	Cyrillic	Latin
А	A	З	Z	О	O	Х	Kh
Б	B	И	I	П	P	Ц	Ts
В	V	Ы	Y	Р	R	Ч	Ch
Г	G	К	K	С	S	Ш	Sh
Д	D	Л	L	Т	T	Щ	Shch
Е	Ye	М	M	У	U	Э	Eh
Ж	Zh	Н	N	Ф	F	Я	Ya
						Ю	Yu

Г. means "year"



Serial: 1953 ZN1972



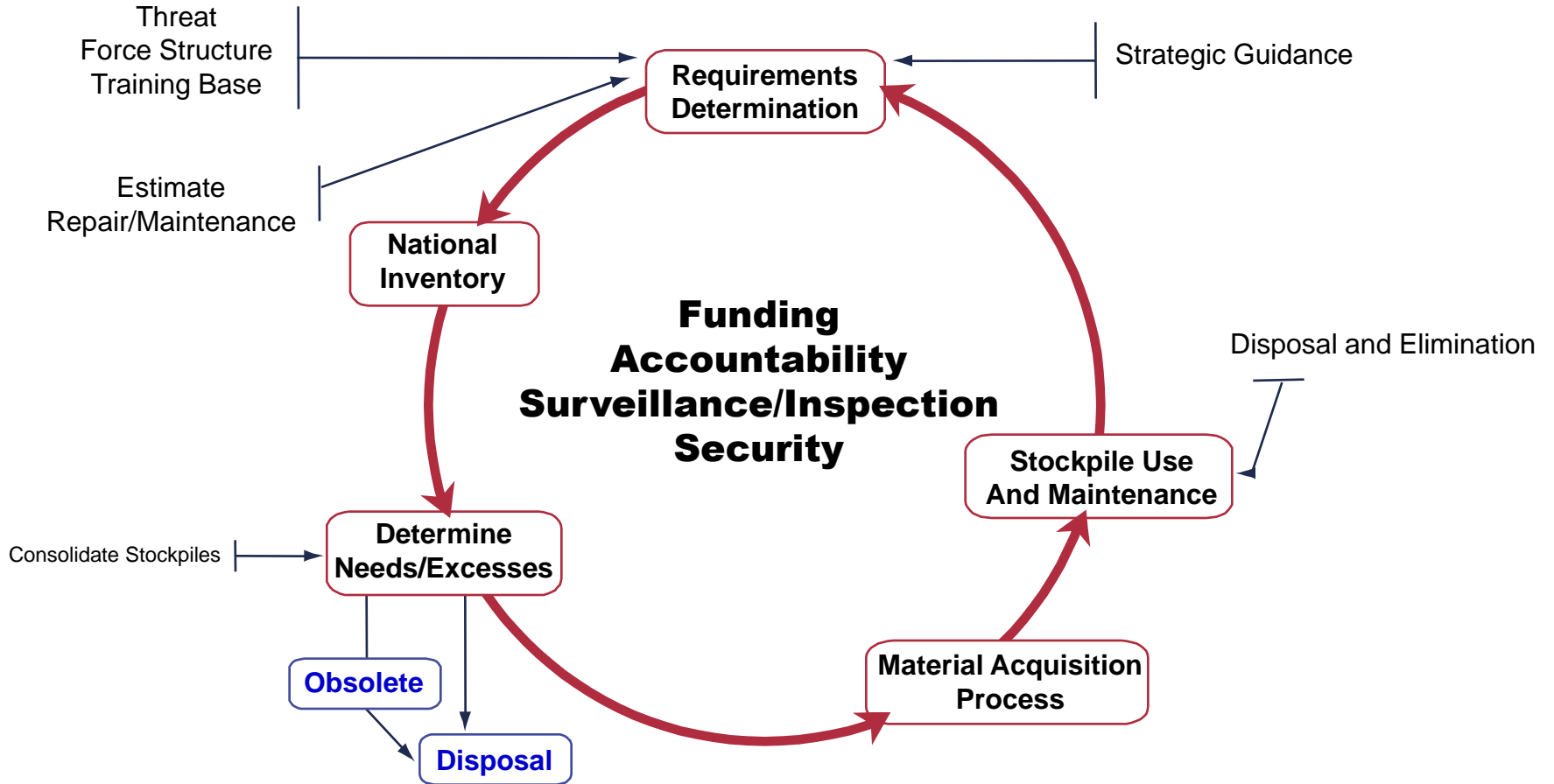
Serial: 1953 FR3091

Inventory Procedures

- **Compatibility**
- **Lot # segregation**
- **Original container**
- **Dunnage**
- **Security**
- **Stability**
- **Inventory cards**
- **Light (Partial) boxes**



Life Cycle Management



Obsolete?



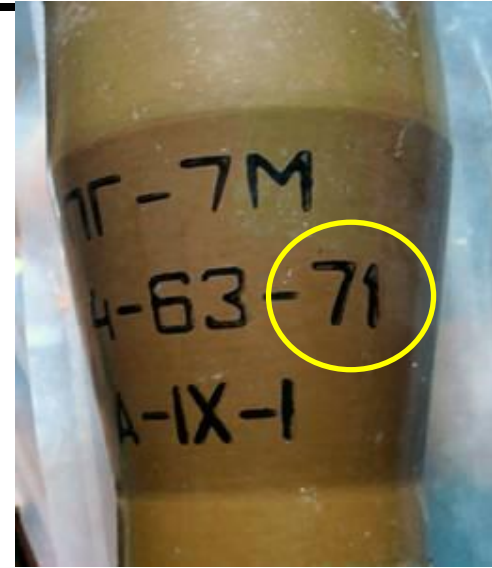
Explosive Hazardous Waste



Mortar
Supplemental
Charges, mfg.
1966-1968



RPG-7 Rocket,
mfg. 1971

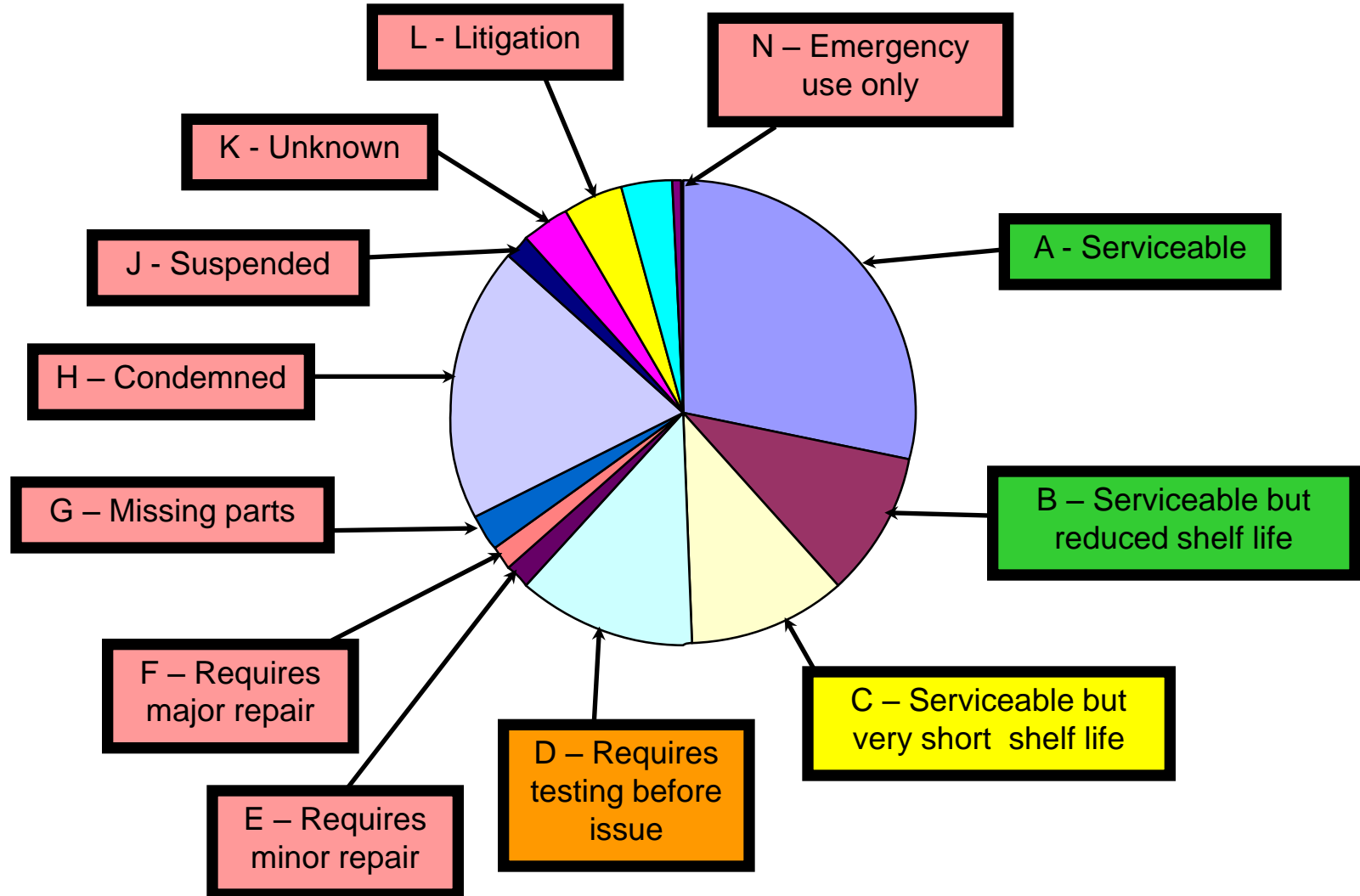


40mm Bofors, mfg.
1944-1955

S-5 and S-8 Air-to-
Surface Rockets,
mfg. 1984



Surveillance



Surveillance



Open containers
degrade quickly

Normal

Swelling indicates
decomposing
propellant or
explosives

Safety



Mass Explosion



Fragmentation



Mass Fire



Moderate Fire



Safety

- **Compatibility Group**
- **Compatibility Chart**
- **Explosive limits**
- **General Safety**

Substance or article so packed or designed that any hazardous effects arising from accidental functioning are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response efforts in the immediate vicinity of the package



Safety

- **International Best Practices (IBP)**
- **Smoking**
- **Eating and Drinking**
- **EMR and Static**
- **Standing Operating Procedures (SOP)**
- **On-site personnel**



Safety / Identification

- **Common IBP safety standards and characteristics**
 - Separate ammunition from weapons and POL
 - Distinctive markings help to ID and sort ammunition
 - Do not rely on the color coding for primary identification. Country vs. country is different



Safety / Identification

- **Common IBP safety standards and characteristics (cont.)**
 - Use special care in the handling and disposal of deteriorated explosives, related materials, or munitions whose stability is questionable.
 - Disperse explosives and related hazardous materials which are awaiting disposal in small quantities at a safe distance, and protect them against accidental ignition or explosion from fragments or fire.

References

- NATO Allied Ammunition Storage and Transportation Publication (AASTP-1) Manual of NATO Safety Principles for the storage of military ammunition and explosives, May 2006. Parts I and II
- OSCE Best Practice Guide on the Destruction of Conventional Ammunition, June 2008
- STANAG 2389 MC EOD (EDITION 2) (RATIFICATION DRAFT 1) – Minimum Standards of Proficiency for Trained Explosive Ordnance Disposal Personnel ref:
- STANAG 2389 Military Agency for Standardization / Minimum Standards for Trained Explosive Ordnance Disposal personnel, 14 Dec 87
- CEN Workshop Agreement for EOD Competency Standards for Humanitarian Mine Action — Part 1: General requirements CEN Workshop 13 N 31, Date: 2005-10-18
- CEN Workshop Agreement for EOD Competency Standards for Humanitarian Mine Action — Part 3: Competency for EOD level 1
- CEN Workshop Agreement for EOD Competency Standards for Humanitarian Mine Action — Part 4: Competency for EOD level 2
- UNITED NATIONS (UN).ST/SG/AC.10/1 - Recommendations on the Transport of Dangerous Goods.DoD 6055.9-STD, DoD Ammunition and Safety Standards

Conclusion



Questions

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