Ammunition Technical Assessment of Montenegro

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***Ammunition Technical Assessment of Montenegro*, SEESAC, 2007**

Acknowledgements

This report was written and compiled by Adrian Sprangemeijer (ATO Consultant) and Adrian Wilkinson (Head, SEESAC) during January and February 2007. The authors wish to thank and acknowledge the support provided by Hans Risser and the EUSAC/UNDP Team. They also wish to thank the following officials and officers of the Ministry of Defence of Montenegro for their excellent co-operation and the level of transparency shown to the team; Lieutenant General Jovan Lakčević, Chief of the General Staff; Vice Admiral Dragan Samardzic; and Colonel Dragoslav Vuksanović, Head of Logistic Department J4.

ISBN: Not Applicable (Limited Distribution)

Executive Summary

Situation overview

The Government of Montenegro has demonstrated a firm commitment to resolve their conventional ammunition problems, but lack the resources to do so. The major problems include:

- The requirement to demilitarize over 9,900 tonnes of conventional ammunition.
- The requirement to dispose of 88 tonnes of Melange Oxidiser and 41 Tonnes of Tonka-type Fuel. These are volatile, toxic and hazardous chemicals that present a major environmental risk to Kotor Bay.
- The requirement to immediately dispose of 25.8 tonnes of Napalm stored within the boundaries of Podgorica Airport.

- The requirement for physical infrastructure (storage and security) improvements, combined with demilitarization operations, to reduce the storage facilities of the Montenegro Armed Forces from 10 sub-standard facilities to 3 to NATO standards.
- The requirement for the development of an effective ammunition management system, (including physical inspection and chemical analysis capabilities). Accounting procedures are good, but security and ammunition surveillance require improvement.
- The Montenegro Armed Forces do not possess the logistic transport lift capacity to move the ammunition to demilitarization facilities or for storage re-location. Commercial transport to EU ADR standards is available, but it would be much more cost effective to improve the MAF capacity by the procurement of 6 x 8 Tonne Trucks.
- The security requirements for heavy weapons is a drain on MAF personnel resources. Immediate disposal (at virtually no cost), through the Niksic Steelworks is the recommended option. (There are 61 x Main Battle Tanks, 7 x Armoured Combat Vehicles and 84 Artillery pieces available for disposal).

Way ahead?

This report has identified that the situation can be resolved in the near to medium future (2007 - 2010) providing international donor support is provided. It is proposed that a Montenegro Demilitarization Programme (MONDEM) be developed in partnership with an appropriate Implementing Agency,[1] which should consist of the following component projects:

[1] Through NATO PfP Trust Fund, OSCE Document on Conventional Ammunition or UNDP Country Office Podgorica.

SERIAL	PROJECT	OUTPUT (S)	ESTIMATED COSTS (US$)	REMARKS
1	Disposal of Toxic Hazardous Waste	The disposal of the toxic hazardous waste that presents an environmental hazard to Kotor Bay in accordance with EU environmental legislation.[2]	650,000	▪ 88 Tonnes Melange Oxidiser ▪ 41 Tonnes TG-2 Fuel ▪ 26 Tonnes Napalm
2	Conventional Ammunition Demilitarization	The demilitarization of 9,900 tonnes of conventional ammunition and components in a safe, effective, efficient and environmentally benign manner.	4,922,000	▪ To be co-ordinated with USA OWRA bi-lateral support. ▪ Three phases. ▪ Infrastructure improvement. ▪ Equipment procurement. ▪ Transport procurement. ▪ Operating costs.
3	SALW (CA) Stockpile Management and Security	Improvements of the physical storage and security infrastructure to as close to NATO standards as possible. The development of an ammunition and propellant chemical analysis capability. Enhancement of current ammunition management systems.	788,000	▪ Infrastructure improvements at 3 Depots. ▪ Development of propellant test capacity. ▪ IT for ammunition management.
4	Recycling and Disposal of Heavy Weapons	The disposal of surplus heavy weapon systems by dismantling with the maximum recycling of materials.	100,000	▪ Costs dependent on sub-regional scrap prices. ▪ 68 x ACV. ▪ 84 x Artillery.

[2] The disposal of the Napalm at Podgorica Airport should also be considered part of this component.

Acronyms

AAM	Air-to-Air Missile
AASTP	Allied Ammunition Storage and Transport Publications (NATO)
ADF	Ammunition Demilitarization Facility
AGM	Air to Ground Missile
APB	Ammunition Process Building
APE	Ammunition Peculiar Equipment
ASS	Ammunition Storage Sites
ATA	Ammunition Technical Assessment
ATO	Ammunition Technical Officer
AUW	All Up Weight
BATNEEC	Best Available Technology Not Entailing Excessive Costs
BCPR	Bureau for Crisis Prevention and Recovery (UNDP)
BiH	Bosnia and Herzegovina
CMD	Conventional Munition Disposal
COTS	Commercial Off The Shelf
CTA	Chief Technical Advisor (SALW)
ECA	Explosion Consequence Analysis
EOD	Explosive Ordnance Disposal
ELL	Explosive Limit License
ESA	Explosive Storage Area
ESH	Explosive Storehouse
EU	European Union
EUSAC	EU SALW Control (Project)
EWI	Explosive Waste Incinerator
HCC	Hazard Compatibility Code
HD	Hazard Division (UN)
HPLC	High Performance Liquid Chromatography
IQD	Inside Quantity Distances
IRFNA	Inhibited Red Fuming Nitric Acid (Fuel)
IT	Information Technology
MAF	Montenegro Armed Forces
MANPADS	Man Portable Air Defence Systems
MFA	Ministry of Foreign Affairs
MHE	Mechanical Handling Equipment
MLRS	Multi Launch Rocket System
MoD	Ministry of Defence
MOI	Ministry of Internal Affairs
NATO	North Atlantic Treaty Organisation
NEQ	Net Explosive Quantity (Alternatively NEC (Net Explosive Content))
OBOD	Open Burning and Open Detonation
OQD	Outside Quantity Distances
OSCE	Organisation for Security and Co-operation in Europe

PCS	Pollution Control System
PES	Potential Explosion Site
PM	Project Manager
RFNA	Red Fuming Nitric Acid (RFNA)
SAA	Small Arms Ammunition
SAADS	Small Arms Ammunition Disposal System (Commercial)
SALW	Small Arms and Light Weapons
SAM	Surface to Air Missile
SEE	South Eastern Europe
SEESAC	South Eastern and Eastern Europe Clearinghouse for SALW Control
SOP	Standing (Standard) Operating Procedure
TNT	Trinitrotoluene (Trotyl)
TOR	Terms of Reference
ULC	Unit Load Container (Pallets)
UNDP	United Nations Development Programme

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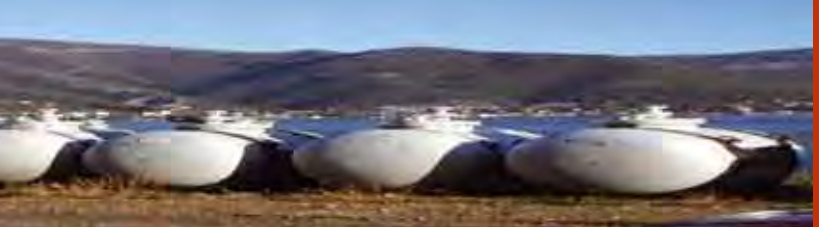


Ammunition Technical Assessment of Montenegro

1 Introduction

Following the results of the 21 May 2006 referendum, the Republic of Montenegro declared independence from the State Union of Serbia and Montenegro (SCG) on 03 June 2006. The division of the SCG State Union into two independent republics has created additional SALW and arms control challenges within Montenegro, in particular the stockpile management and demilitarization of ammunition. New primary and secondary legislation is being created, and Montenegro is in the process of formally aligning itself to current regional and international SALW related agreements. Montenegro's capacity to fulfil such obligations is under development, and they have a responsibility to move towards compliance with the following:

- EU Code of Conduct;[3]
- OSCE Document on Small Arms;[4]
- OSCE Document on Stockpiles of Conventional Ammunition;[5]
- OSCE Decision on End-User Certificates;[6]
- OSCE Decision on Brokering;[7]
- OSCE Decision on MANPADS;[8]
- Stability Pact SALW Regional Implementation Plan (Revised May 2006);
- United Nations Programme of Action;[9] and
- United Nations Firearms Protocol.[10]

Montenegro is now a member of the UN and OSCE, and is therefore already committed to a number of the above international instruments that require information exchange.

The Government of Montenegro has now begun the process of forming new, professional armed forces for the self-defence of the country in line with NATO standards. As a result of the defence reform process, the Ministry of Defence has requested international assistance to support stockpile management processes and the resultant requirement to demilitarize the significant quantities of heavy weapons systems[11] and several thousand tonnes of explosive ordnance[12] that are surplus to the future requirements of the Montenegro Armed Forces (MAF).

The Ministry of Defence[13] requested that the UNDP Office in Montenegro assist them in the evaluation of their ammunition storage capabilities and the planning of a safe, effective, efficient and environmentally benign

[3] EU Code of Conduct for Arms Export, 08 June 1998.

[4] OSCE Document on Small Arms and Light Weapons, (FSC.JOUR/314), 24 November 2000.

[5] OSCE Document on Stockpiles of Conventional Ammunition, (FSC.DOC/1/03), 19 November 2003.

[6] OSCE Decision on End-User Certificates and Verification Procedures for SALW Exports, (FSC.DEC/05/04), 17 November 2004.

[7] OSCE Decision on Principles for the Control of Brokering in SALW, (FSC.DEC/8/04), 24 November 2004.

[8] OSCE Decision on Man Portable Air Defence Systems. (FSC.DEC/07/03), 23 July 2003.

[9] United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects, (UN Document A/Conf.192/15), July 2001

[10] Protocol against the Illicit manufacturing of and Trafficking in Firearms, their Parts and Components and Ammunition, supplementing the United Nations Convention against Transnational Organized Crime, (The Firearms Protocol). Entered into Force on 03 July 2005.

[11] Armoured Fighting Vehicles (AFV) and submarines.

[12] Anti-vehicle mines, underwater sea mines, torpedoes, missiles, rockets, SAA, medium and heavy calibre ammunition and related materials.

[13] On 07 November 2006, the Government of Montenegro submitted its list of needs for defence reform to the South Eastern Europe Clearinghouse (SEEC) Initiative. In response to Montenegro's request to the SEEC Initiative, the Deputy Chief of the General Staff of Montenegro accepted the UNDP Resident Representative's proposal to provide UNDP demilitarization assistance at a meeting held in Podgorica on 27 November 2006.

demilitarization operation, (which wherever possible will use the local capacities in Montenegro to destroy the surplus equipment and ammunition in line with international best practices). UNDP Montenegro, in cooperation with SEESAC, therefore arranged for an Ammunition Technical Assessment to assess the condition of the ammunition stockpile, to ascertain the extent of demilitarization needs and capacities within Montenegro and to devise a plan to safely and efficiently destroy all materials earmarked for destruction. The detailed tasks included:

- The provision of technical advice on the further development of an appropriate and effective ammunition stockpile management system.
- The identification of the ammunition demilitarization requirements of the Government of Montenegro, and their capacity to develop and implement an effective Demilitarization Plan in accordance with international best practices.
- Ensuring close liaison with technical representatives from partner organizations and other interested stakeholders.

2 Ammunition management system

2.1 Overview

There is an ammunition management system in place that pre-dates the State Union between Serbia and Montenegro. No new management system has been developed, and the capacity within Montenegro to either implement the old system or develop and implement a new system to international best practices is very limited. The government has informally indicated its desire to move towards compliance with the principles contained within the NATO Allied Ammunition Storage and Transport (AASPT) publications, and a full translation of AASPT has been forwarded to the Ministry of Defence by UNDP.

2.2 Ammunition stockpile locations and levels

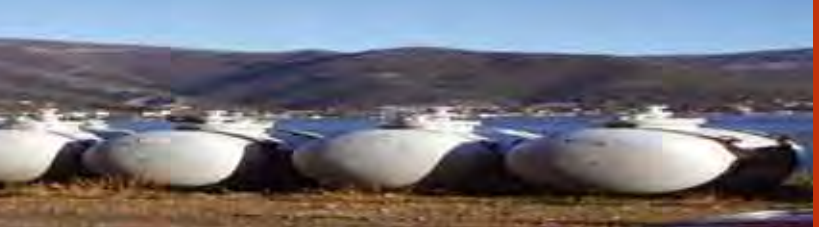
2.2.1 Ministry of Defence

The Ministry of Defence of Montenegro currently has ammunition stored in nine locations, although the aspiration is to reduce this to three locations as soon as is practicably possible. This requires the establishment of a demilitarization capability to reduce the national defence stockpile from approximately 11,700 tonnes to 2,000 tonnes.

LOCATION	FUTURE STORAGE NEEDS (TONNES)[14]	CURRENT STOCKPILE LEVEL (TONNES)	REMARKS
Brezovik	**1,450 - 1,560**	**7,000**	This is planned to be one of the remaining ammunition depots post-restructuring.
Opatovo	**0**	**700**	
Petrovići	**0**	**800**	
Pljevlja	**40 - 50**	**400**	This is planned to be one of the remaining ammunition depots post-restructuring.
Pristan	**0**	**500**	
Rogame	**0**	**500**	
Sasovići	**0**	**1,000**	
Spiljići	**0**	**50**	
Taras	**500 - 600**	**750**	This is planned to be one of the remaining ammunition depots post-restructuring.
TOTALS	**2,200**	**11,700**	

Table 1: Montenegro ammunition storage summary

[14] Figures provided by Colonel Vuksanovic, J-4 General Staff



2.2.2 Ministry of Interior

The Ministry of Interior has indicated an interest in participating in this assessment, but as their plans for the future police and border police structure are still being developed the future ammunition requirements are still uncertain. Manual accounting systems are used due to a lack of IT support, however physical security is assessed as good.

There are small quantities of ammunition stored with local police units, and relatively large quantities of small arms ammunition (mostly 7.62mm) stored at the Police Headquarters. There are also hand grenades, medium calibre mortar, 40mm and anti-tank ammunition stored on the ground floor of two buildings in the Police Headquarters in the middle of the city. This ammunition is earmarked for destruction and could be easily fitted in with the demilitarization of the ammunition of the armed forces.

It is recommended that the main police stockpile should be stored in a central location, with only minimal levels of operational small arms ammunition been held at the local police station level. The MoI should negotiate with the MOD to either; 1) store MoI with MOD ammunition at one of the three future sites; or 2) take over a small military storage site for MoI use, (Rogame being a strong possibility).

2.3 Ammunition management system of 'VJ'

The ammunition management system in use is based on the old Law on '*Protection at Work in the Production of Explosives and Propellant Powders and on Handling Explosives and Propellant Powders'*, dated 25 December 1969. The law mostly deals with protective measure in relation to the production of all kinds and types of explosive substances, fuzes, propellant charges and electric fuzes and detonators, it also deals in Chapter XVIII with '*Protection Measures for the Storage of Explosive Materials in Magazines and for their Handling*'. In a number of tables safety distances are given that are comparable with the distances given in AASTP-1.

The law has been applied using an '*Instruction for Accommodation and Handling on Munitions and Mine Explosive Means*' for the Armed Forces. This instruction was first published in 1970 and a new version was published in 2004. It is recommended that this be reviewed against NATO AASPT and any necessary revisions then made.

The current system includes; 1) periodic inspection of the ammunition; and 2) a card indexing system that is also transformed into digital data, which is present at both the unit and General Staff level. Movement of ammunition and / or explosives needs to be approved by the General Staff. Stocktaking occurs monthly at unit level and annually at the General Staff level. The quality system in place is comparable to the NATO classification system for the quality of ammunition and explosives.

3 Ammunition stockpile stability

The stability in storage and degradation, or deterioration, rates of the explosive content will influence the degree of urgency for disposal, ability to safely move ammunition, demilitarization techniques that can be used and hence the overall destruction methodology.

3.1 High Explosives

With high explosives, long-term stability is not considered to be a problem that could compromise safety, providing reasonable levels of storage are maintained. An efficient routine inspection programme will normally be sufficient to monitor the general condition of ammunition for signs of exudation of the main filling and other indications of deterioration, such as corrosion.

3.2 Propellants[15]

3.2.1 Chemical stability

The primary risk is that of autocatalytic decomposition of propellant, which has the potential to result in spontaneous ignition leading to mass explosions in ammunition storage areas. Such explosions will result in the requirement for long, dangerous and expensive explosive ordnance disposal (EOD) clearance operations. Only effective ammunition surveillance systems combined with an effective explosive test laboratory can quantify this risk. (Further information on propellant instability can be found at Annex A). There has been recent incident in Serbia (Paracin - October 2006), which has officially been attributed to propellant instability.

3.2.2 Propellant Master Sampler

The propellant master sampler also dates back to the State Union between Serbia and Montenegro. Due to the unsuitable climatic environment[16] that much of the ammunition has been stored in over the last ten years, combined with the current demilitarization requirements, there is a requirement for an effective national system. The main options are; 1) opening negotiations with the Republic of Serbia Ministry of Defence to assess whether Serbia continues master propellant sampling; or 2) the development of a national propellant test and analysis capacity.

The problem remains however, that the propellant master samples held in Serbia are in 'ideal storage conditions', whilst the ammunition in Montenegro is not, and has not been for some time. Therefore reliance on the Serbia master propellant samples as an indication of the condition and safety of Montenegro's propellant would increase risk. Sampling of the actual propellant in storage in Montenegro should be conducted to identify divergence with the 'master samples'.

During visits to the potential companies that could be involved in the demilitarization process it became clear that laboratory capacity is available and only needs to be improved to carry out these tests. Consideration should therefore be given as a priority to the provision of financial support to upgrade the analytical capabilities of the Montenegrin Ministry of Defence. It is proposed that a physical method of analysis for stabiliser content (HPLC[17]) and a more rapid chemical method for accelerated ageing (Bergmann-Junk Test) are used. This proposed solution will provide results at a rate needed to give a complete surveillance within two years. The estimated cost of such a system would be in the region of US$ 125,000.

3.3 Physical degradation of ammunition

This can impact on the inherent safety of safe to arm mechanisms and fuzing systems, or lead to explosive exudation. This risk again requires an effective physical examination component of the ammunition surveillance system. The Montenegrin Armed Forces appear to have a limited surveillance system in place to identify these risks.

4 Ammunition stockpile storage conditions

The physical condition of the ammunition storage areas, combined with the 'safety distances'[18] to civilian areas, will determine the achievable safe storage levels of ammunition for the future. Safe storage levels for future storage requirements can be achieved by limited infrastructure development, (within appropriate legislative

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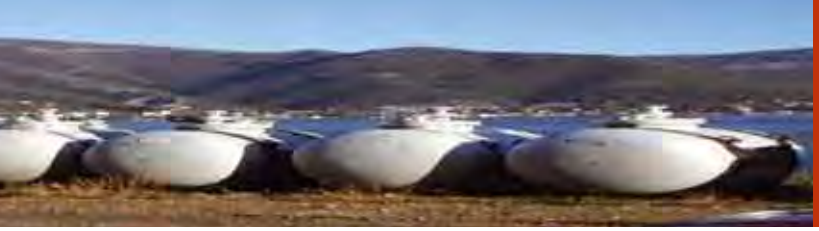
[15] S.G. Murray, Propellant Stability Analysis, Albanian Demilitarization Study, 31 March 2000.

[16] A significant quantity of ammunition has been stored in the open or in storehouses with ineffective climatic and humidity controls. The resultant diurnal cycling will have accelerated the 'aging' of the propellant, and therefore stabiliser levels may be significantly divergent from those in the 'master samples'.

[17] High Performance Liquid Chromatography.

[18] Outside Quantity Distances (OQD) being the technical term.



amendments and requirements). The following matrix summarises the current condition of the MOD ammunition storage areas, (Annexes B to J provide more detailed analysis):

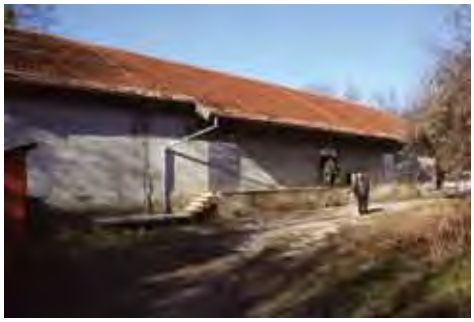
LOCATION	CONDITION OF ESH[19]	ADEQUATE IQD[20] TO NATO STANDARDS	ADEQUATE OQD[21] TO NATO STANDARDS	STORAGE LIMIT TO NATO STANDARDS (TONNES AUW)	REFERENCE
Brezovik	**FAIR**	**YES**	**YES[22]**	2,100	Annex B
Opatovo	**UNFIT**	**NO**	**NO**	0	Annex C
Petrovići	**UNFIT**	**NO**	**NO**	0	Annex D
Pljevlja	**FAIR**	**YES**	**YES**	220	Annex E
Pristan	**FAIR**	**NO**	**NO**	0	Annex D
Rogame	**FAIR**	**YES**	**YES**	0	Annex F
Sasovići	**FAIR**	**NO**	**NO**	0	Annex G
Spiljići	**FAIR**	**NO**	**NO**	0	Annex D
Taras	**FAIR**	**YES**	**YES**	1,100	Annex H
Air Force	**UNFIT**	**NO**	**NO**	0	Annex I
TOTALS				3,420	

Table 2: Summary of Montenegro ammunition storage areas

4.1 Explosives Limit Licences (ELL) to NATO standards

The NATO AASTP[23] defines internationally accepted safety distances to be followed for the safe storage of ammunition and explosives in order to reduce the risk to the general public to an acceptable level. The application of NATO AASTP principles to the selected future ammunition storage areas would produce the following estimated explosive limits:

4.1.1 Brezovic ammunition storage area



Future storage limitations were discussed with the General Staff, during which it was determined that the Explosive Store Houses (ESH) facing the civilian houses in the valley would not be used in the future. The remaining ESH can then achieve acceptable Internal Quantity Distances (IQD), with an Outside Quantity Distance (OQD) of greater than 650 metres (D13>400 metres). Therefore each of the large ESH can store 25 tonnes NEQ. The total for the complex is then 15 x 25 tonnes = 375 tonnes NEQ.

The assumption is then made for estimation purposes that the ratio between NEQ and AUW equals 6. It follows that the total AUW storage capacity for Brezovic is 6 x 375 tonnes = 2,100 tonnes. (Although the Units of Space (UOS) available is greater, the final storage figures will depend on types of ammunition).

The total storage capacity for the depot will be well within that required after restructuring of the Armed Forces.

[19] Explosive Storehouse.

[20] Inside Quantity Distances. (The safety distance between individual explosive storehouses and ammunition processing areas).

[21] Outside Quantity Distance. (The safety distance from the ammunition storage area to civilian roads and habitation).

[22] Under the assumption that the buildings facing the houses in the valley are not used.

[23] Allied Ammunition Storage and Transport Publications.

4.1.2 Tara ammunition storage area

The distances of the ESH within the Taras ammunition storage area are all at appropriate IQDs. The distance to houses is >650 metres (D13>400 metres). Therefore each of the large ESH can store 25 tonnes NEQ. The total for the complex is then 7 x 25 tonnes = 175 tonnes NEQ.

The assumption is made for calculating purposes that the ratio between NEQ and AUW equals 6. It follows that the total AUW storage capacity for Taras is 6 x 175 tonnes = 1,100 tonnes AUW. (Although the Units of Space (UOS) available is greater, the final storage figures will depend on types of ammunition).

The total storage capacity for the depot will be well within that required after restructuring of the Armed Forces.

4.1.3 Pljevlja ammunition storage area

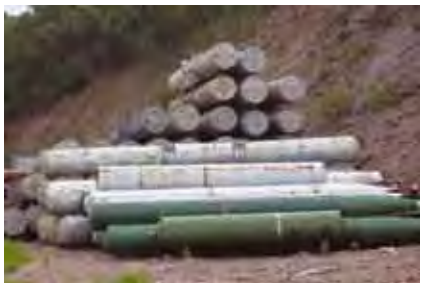
SER	ES	DISTANCE FROM PES ESH 1 (M)	QD REFERENCE	ELL LIMIT (KG)	DISTANCEFUNCTION	REMARKS
(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	ESH 2	> 80m plus traverse				No limit other than capacity per building

Table 3: Explosive Limit Licence for Pljevlja

The depot has no major restrictions that impact on explosive limits other than the maximum capacity per building, as there are no housing areas or public roads within approximately 1,000m.

4.2 Ammunition packaging

The majority of the ammunition in the storage depots is in its original packaging. Most of it is on pallets, but not all ammunition is palletised and the explosive storehouses are not conducive to the use of mechanical handling equipment, therefore all internal movements will have to be primarily manual. Aircraft bombs and some larger calibre munitions (130mm) are often stored outside as they are earmarked for demilitarization.



5 Ammunition stockpile security

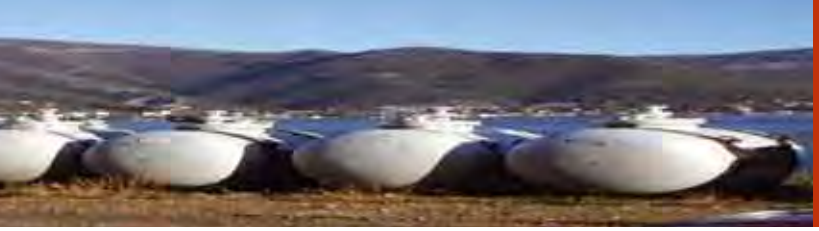
5.1 Ammunition accounting

Each storage site possessed ammunition accounts that appeared to be accurate, (for example in Brezovic a computerized print-out was provided). However, at the naval facilities at Pristan a computerized account of naval munitions was held in Excel as a personal file, which would not indicate that accurate centralized accounting was in place.

5.2 Physical security (ammunition storage areas)

Access denial systems are primitive and largely ineffective, and common problems include:

FACTOR	COMMENTS
Perimeter security	Perimeter security at storage sites is cursory and does not preclude intrusion by unauthorised personnel.



FACTOR	COMMENTS
Guard force	All sites, with the exception of Petrovici, have a permanent armed guard force that is an effective deterrent. However, often young recruits, in relatively small numbers, are used to guard these sites and it is unlikely they could effectively fend off any determined armed attack
Storehouse security	Storehouse security is cursory and ineffective: • Inappropriate padlocks. • Inactive intruder detection systems. • Insufficient internal and external lighting.

Table 4: Security overview

5.3 Physical security (demilitarization facilities)

Overall, the security situation at the possible sites for development as Ammunition Demilitarization Facilities is more satisfactory than storage sites visited in Montenegro, as these sites are already operational ammunition and/or explosive processing/manufacture facilities.

The sites have security systems comparable to those of demilitarization facilities in Western Europe. Some repairs to perimeter fencing and intruder surveillance systems may be necessary to prevent accidental access.

6 Ammunition transportation

There appears to be little routine movement of ammunition in Montenegro. At present some ammunition is moved to the storage depots that will be used in the future. The assessment team received conflicting information on security arrangements during transportation but the norm appears to include armed guards with convoys.

There is extant legislation dealing with the transport of explosive materials. This is the *Law on Foreign Trade with Weapons, Military Equipment and other Means, number SCG, br. 7/05, dated August 2005*. The assessment team was also told that vehicles to be used for the transportation of ammunition, if not military vehicles, must comply with European ADR standards. Mr Zoran Begović, Chief of the Sector for Emergency Situations and Civil Security, of the Ministry of Interior and Public Administration, told the assessment team that all transport containing ammunition and/or explosives is regulated according to European ADR Standards. Transport licences for these movements are coordinated with the Ministries of Defence, Economy and in the case of transfers the Ministry of Foreign Affairs.

The Montenegrin Army has a small number of trucks (maximum 6 tonne capacity each), which are approximately 40 years old. The estimated maximum lift capacity of the Montenegrin Army is approximately 30 tonnes per trip, which is insufficient to support the movement of ammunition to the demilitarization facilities, even if vehicle reliability could be assured.

The only two options for ammunition transportation are; 1) the use of ADR certified commercial vehicles, at a rate of approximately € 5 per kilometre; or 2) the procurement of six 8 tonne capacity vehicles to enable the Montenegrin Army to transport its own ammunition. The second option is recommended as it is cheaper,[24] more efficient, reduces administration and provides additional logistic capacity development for the MAF.

7 Ammunition demilitarization requirements and capability

7.1 Ammunition for disposal and demilitarization

The following table summarizes the demilitarization requirements of Montenegro. The full data is attached at Annex K, and is also available in Excel format:

[24] Assuming a requirement to move 6,000 tonnes of ammunition a distance of 200km (plus return empty journey of 200 km), on civilian transport (with limit of 6 tonnes, then the costs would be (6000/6)*400*5.00 = EURO 2M to hire vehicles. Purchase of new vehicles is estimated to be less than USD 0.5M.

GENERIC TYPE	QUANTITY (TONNES AUW[25])	FOR EXPORT TO US GOVT[26] (TONNES AUW)	US FUNDED DEMILITARIZATION (TONNES AUW) [27]	QUANTITY FOR DEMILITARIZATION (TONNES AUW)
Small Arms Ammunition (14.5mm and below)	**1,363.5**	**6.0**		**1357.5**
Cannon Ammunition (20mm - 40mm)	**542.1**			**542.1**
Mortar Ammunition (60mm - 120mm)	**1,199.2**			**1,199.2**
Artillery Ammunition (105mm - 155mm)	**763.1**			**763.1**
Tank Ammunition (100mm)	**421.2**			**421.2**
MLRS Rockets (128mm)	**11.8**			**11.8**
Surface to Air Missiles (Strela and RZ 13)	**198.2**		**198.2**	**0**
Infantry Ammunition (Grenades etc)	**445.3**			**445.3**
Anti-Tank Mines	**347.1**			**347.1**
Bulk Explosive	**355.8**			**355.8**
Anti-Tank Rockets and Missiles	**259.0**			**259.0**
Naval Ammunition (Mines/Depth Charges)	**804.1**			**804.1**
Naval Ammunition (Torpedoes)	**162.2**			**162.2**
Naval Ammunition (Missiles)	**1,984.1**			**1,984.1**
Naval Ammunition (Gun 76mm)	**162.4**			**162.4**
Naval Propellants (See Later)	**128.7**[28]			**Separate Contract**
Aircraft Bombs	**725.3**			**725.3**
Aircraft Fuzes	**43.2**			**43.2**
Air Force Napalm (See Later)	**25.8**[29]			**Separate Contract**
Air Force Air-Ground Missiles	**166.2**			**166.2**
Miscellaneous	**177.5**			**177.5**
TOTALS	**10,285.8**		**198.2**	**9,927.0**

Table 5: Summary of Montenegro ammunition demilitarization requirements

In order to assess potential environmental impacts and the most appropriate demilitarization techniques it is important to know what explosive substances, propellant charges, oxidizers, fuels, electrolytes and miscellaneous articles are contained in the ammunition for demilitarization. This information is at Annex L.

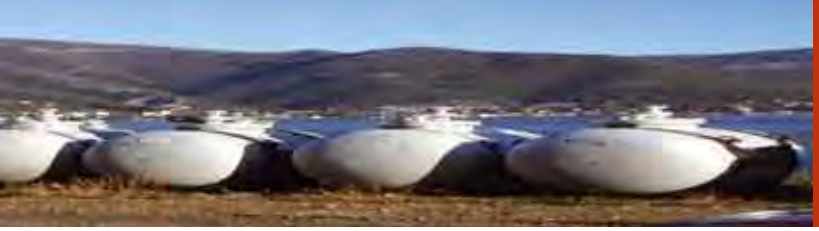
[25] All Up Weight. (The weight of the ammunition and its packaging).

[26] Information received from the US Embassy in Podgorica during the ATA suggests that the US Government may: 1) procure small arms ammunition to supply ISAF in Afghanistan; and 2) contribute towards a bi-lateral demilitarization project. The initial demilitarization list was annexed in a letter from the Minister of Defence, Mr Boro Vucinic, File no 01-87/06-1, dated 12 December 2006 to the United States Ambassador in Podgorica. The final list for US demilitarization support will be co-ordinated between the US State Department Office of Weapons Removal and Abatement (OWRA) and SEESAC. (See later).

[27] The USA State Department (Office for Weapons Removal and Abatement (OWRA)) is considering a request for demilitarization support from Montenegro, (which includes MANPADS destruction). The final USA support has yet to be determined, and will have to be co-ordinated with the other Implementation Agency (through SEESAC), to ensure synergy in terms of technology etc is achieved. This table can then be updated.

[28] Not included in total.

[29] Not included in total.



7.2 Liquid propellants

In addition to the ammunition for demilitarization there is a large quantity of Oxidiser (AK-20K) (87.6 Tonnes) and Fuel (TG-2) (41.2 Tonnes) for liquid propellant systems for P20, P21 and P22 STYX Missiles. When mixed these two chemicals create a highly volatile hypergolic reaction, and should uncontrolled mixing result due to leakage or the poor storage conditions a major deflagration event is inevitable.

These chemicals are kept in Pristan, partly in the open, and partly in buildings that have no ventilation or drainage channels. Due to the lack of appropriate storage conditions, and climatic conditions (humidity and high temperatures), the existing containers are corroded and are not hermetically sealed. The consequence is the very strong probability of uncontrolled evaporation of the chemicals into the atmosphere and the possibility of wider leakage.

7.2.1 Fuel (TG-2)

The Fuel TG-2 is a mixture of technical isomers of xylidine[30] and bi-tri-ethylamine, which is an oily liquid that easily vaporises under normal climatic conditions. The colour varies from yellow to brown and it has the characteristic scent of oily amines. The technical data is as follows:

COMPONENT / ITEM	%	SPECIFIC WEIGHT	QUANTITY (LITRES)	QUANTITY (TONNES)	UN DATA	EU DATA
Xylidine $(CH_3)C_6H_3NH_2$	**50.0**				HCC - 1.6 UN Pack Group - II	Symbol - T N
Di-ethylamine	**< 1.5**					
Tri-ethylamine	**> 48.5**					
TOTALS	**100.0**	**0.85**	**48,420**	**41.16**		

Table 6: Technical Data for Fuel TG-2

The Fuel TG-2 is kept in 30 aluminium containers with a volume of 2m3, and also in steel drums with a capacity of 200 litres. The actual storage breakdown between each is not known.

7.2.2 Oxidiser (AK-20K)

The oxidiser is the most difficult to safely deal with. The Material Safety data Sheet (MSDS) for this substance contains the following warning:

> POISON! STRONG OXIDISER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED.

The oxidiser AK-20K is an Inhibited Red Fuming Nitric Acid (IFRNA) derivative. This is assessed based on a technical report and chemical analysis for the disposal of a similar substance by UNDP Bosnia in 2005.[31] The substance in Bosnia was marked as AK-20 and was stored in identical containers.

COMPONENT	%	SPECIFIC WEIGHT	QUANTITY (LITRES)	QUANTITY (TONNES)
Nitric Acid (HNO_3)	**74.6**			
N_2O_4	**< 22.5**			
H_3PO_4 Hydrogen Fluoride (HF) Water	< 4.4			
TOTALS	**100.0**	**1.60**	**54,740**	**87.58**

Table 2: Technical Data for Oxidiser AK-20K

[30] Known locally as Ksilidin. Xylidine is also known as Dimethylaminobenzene, dimethylaniline, dimethyl-phenylamine, aminodimethyl benzene,

[31] Technical Report on Kula 2, Dr T Linnert, 12 January 2005. (Obtained from UNDP Bosnia).

It should be noted that a 'standard' IRFNA composition differs from that above, in that it would normally be expected to be:

COMPONENT / ITEM	%
Nitric Acid (HNO_3)	**82**
Nitrogen Oxide (NO_2)	**17**
Hydrogen Fluoride (HF)	**<0.7**
TOTALS	**100.0**

Table 3: Technical Data for 'standard' IRFNA

The decanting from the storage containers and subsequent dilution or neutralization of both the Fuel TG-2 and Oxidiser AK-20K is a complex process that should be conducted by an accredited chemical waste management company.

7.3 Indigenous demilitarization capability

The General Staff indicated that there were five potential sites with some form of ammunition demilitarization capability. Four of these sites are already registered with the Central Registration and Licensing Agency (Centralni Registrar) for companies working with ammunition and explosives, that set rules, regulations and limitations on the type of activities the licensed company is allowed to conduct. One company is registered for steel production and one for waste disposal.

POTENTIAL DEMILITARIZATION FACILITY	LOCATION	CENTRAL REGISTER APPROVED	SUITABLE FOR A NATIONAL DEMILITARIZATION FACILITY
AMMUNITION DEMILITARISATION OPERATIONS			
Regional Centre for Underwater Demining (RCUD)	**Biejla**	**NO**	**NO**
Booster Company	**Niksic**	**YES**	**YES (BUT)**[32]
Yugo Import Company	**Podgorica**	**YES**	**NO**
Poliex Military Facility	**Berne**	**YES**	**YES**
4th November Military Facility	**Majkovac**	**YES**	**YES**
SCRAP WASTE PROCESSING			
Zeljezara Niksic AD	**Niksic**	**YES**[33]	FFE metal scrap processing
Hemosan Company	**Bar**	**YES**[34]	Hazardous waste disposal

Table 8: Montenegro potential ammunition demilitarization sites

7.3.1 The Regional Centre for Underwater Demining (RCUD)[35] (Bielja)

The Regional Centre for Underwater Demining (Underwater EOD (UWEOD)) appears to be in an embryonic state. The purchase and support of the Biejla site and the conversion of the centre office and theory training facility is a positive start and demonstrates a strong Governmental commitment. The exact organizational position of the RCUD is complex; sponsored and chaired by the Ministry of Internal Affairs, the MOD, the Ministry of Foreign Affairs and other regional and national participants.

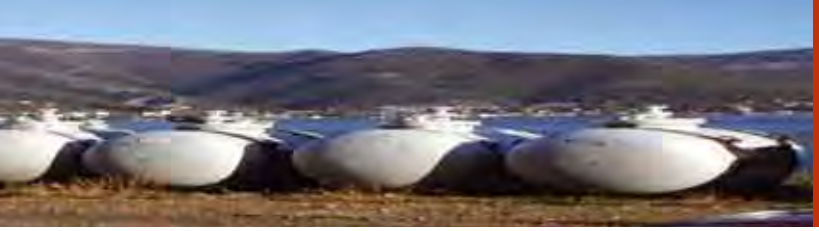
The site and local environs have considerable potential for an UWEOD training and operational facility, but not for the industrial demilitarization of ammunition and explosives. There is insufficient safe and secure storage

[32] Limited NEQ.

[33] For steel production, not for ammunition and explosives.

[34] For contaminated waste disposal.

[35] SEESAC APD 16. Technical Assessment Regional Centre for Underwater Demining (RCUD) Republic of Montenegro, (2003-09-01).



for logistic scale operations and no capability to develop the necessary ammunition processing facilities at the location due to the presence of civilian habitation in the immediate area. The potential for RCUD as a regional UWEOD Centre as a NATO PfP facility remains strong and should be further explored.

The Navy has no connection with this facility. The divers that are used to collect ammunition underwater are, according to the Navy, from a specialist Army unit. In the past ammunition from this site was transported to the Booster Company that is still awaiting destruction.

7.3.2 The Booster Company (Niksic)

The Booster Company is privately owned, although little information could be gained as to their proposed future commercial activities and relationship with government. The Booster Company has previously demilitarised anti-tank mines and sea mines, and other explosive arising from the activities of the RCUD have also been stored with the company in the past.

The Booster Company is now in the process of establishing a new facility after an explosive accident destroyed their Vir facility in 2006. The new facility is small, and is approximately 200 metres from a railway and 400 metres from a tunnel on the main road between Podgorica and Niksic.

Although Outside Quantity Distances on the open side of the facility are appropriate to protect from the effects of direct blast, the short distances to the main road and railway through the mountain means that they would be both be very susceptible to ground shock from any undesirable explosive event within the Booster facility. The shockwave would travel the short distance to the railway and the tunnel, and the damage caused would be dependent on the quantity of explosives involved in any accidental high-order detonation. The appropriate explosive licensing authority should now establish what the safe explosive limits of the Booster facility should be to protect the road and railway.

The new buildings are of an appropriate standard for ammunition storage and processing. The newly ordered equipment could not be shown to the assessment team, as it had not been delivered.

Their demolition (OBOD) area is located high up in the mountains in an abandoned Bauxite mine. There is no habitation nearby and trucks can reach the area. New storage is foreseen in a former army storage building about 10 km outside Niksic. The building needs to be renovated before it can store any explosive substances.

The overall impression is that, once operational in approximately one month's time, the Booster Company **may** be a possible candidate for demilitarization of a proportion of the ammunition. The limitations on explosive limit licences (ELL) at their Niksic facility is a major factor, which would preclude the company from having the capability to deal with any significant demilitarization requirement.

7.3.3 Yugo-Import Company (Podgorica)

The Yugo-Import Company is a semi-government operated company. It serves as an umbrella company for four different companies, of which both the Poliex and '4 November' companies are involved in ammunition and explosives related activities. Import and export activities, as well as production orders for these four companies go through Yugo-Import. As Yugo-Import is only involved in the management and administration it is not considered a demilitarization facility.

7.3.4 Poliex Company (Berane)

The Poliex Company is located in the north of the country. Poliex was established in 1982 as a part of UNIS Systems of Sarajevo, which specialised in the production of plastic explosives. Through its own research and development it managed to start the production of initiating devices for the mining industry. Poliex has experience in dealing with RDX (Hexogen), PETN and Ammonium Nitrate. The present production range is powder, plastic and emulsion explosives, together with electric and non-electric detonators.

There is a testing laboratory present which does not have the capacity to conduct Propellant Sample Analysis but if the need is there the company is willing to invest in this area. By expanding the laboratory capacity it would even be possible that they could also conduct forensic tests for the Ministry of Internal Affairs.

The total complex is fenced with lighting poles at regular intervals all around. There is fire fighting equipment and an ambulance present. Apart from the production facilities, which are all up to standard, there are 4 storage buildings of which three are being renovated to comply with NATO standards. Each building can store 50 tonnes NEQ and a total of 200 tonnes AUW. There is a demolition / testing area and a demilitarization area. The latter is used to demilitarise TNT based naval mines. These mines were provided before the new General Staff was established and are not part of the list provided by the General Staff for demilitarisation to the assessment team.

7.3.5 '4 November' Company (Mojkovac)

The '4 November' Company is a semi-government operated facility. The company is ISO 9001-2000 accredited by SGS AG. [36] The company has experience in the demilitarization of mortar and artillery fuzes, anti-personnel mine fuzes, as well as with STRELA SAM. The demolition area has a maximum explosives limit of capacity of < 50 kg TNT equivalence per individual demolition.

According to the management, the company has the capacity to deal with anti-aircraft and anti-tank rockets, all types of fuzes and all propellants. In demilitarization operations a written document is produced giving all necessary and mandatory safety and technical information, which is signed by the technical manager. An example for the demilitarization of 122mm ammunition was given. The company has no melting or steaming equipment for larger calibres.

Their major limitation is that they can only store up to one weeks production capacity, therefore efficient resupply of demilitarization stock would need to be guaranteed to ensure effective operations at this facility.

The company showed its interest in the wooden packaging that will become available during demilitarization operations. A combination with, for instance, Poliex would be an advantage as both are semi-government operated and are not able to deal with the total problem independently.

7.3.6 Zeljezara Niksic AD

The Niksic Steelwork Holding Company has been established through the transformation and division of property as a government owned enterprise, the former Niksic Steelworks, into a joint holding company of which 66% is in Australian possession. The Niksic Steelworks was founded in December 1950, and over the years it has been updated to more modern standards to handle an annual capacity of over 180,000 tonnes.

The main metallurgical facilities in operation are:

- Two 60-tonne (30 MW) electric arc furnaces with ladle furnaces, treatment plants and a continuous caster.
- Blooming mill, continuous bar-rod medium and light section mill, cold strip rolling mill.
- Peeling and drawing plants.

[36] SGS AG, 1 Place des Alpes, P.O. Box 2152, 1211 Geneva 1, Switzerland.

Modern laboratory and mill equipment for quality control are present, and the company is ISO 9001-2000 quality certified by RW (TUV) (Germany).

The Director of the company indicated that they would be willing to purchase the scrap metal produced during ammunition demilitarization operations, provided that is was verified as 'Free From Explosives'. The indicative prices quoted to the General Staff are shown below, although these will change with market price fluctuations and should be regarded as indicative only at this stage:

NIKSIC STEELWORKS CATEGORY	TYPE OF SCRAP	APPROXIMATE RECOVERY VALUE (US$/TONNE)	REMARKS
Category 1A	**Steel (> 10 mm)**	240	
Category 1B	**Steel (> 10 mm)**	215	If company ships and cuts.
Category 2A	**Steel (6 - 10mm)**	200	
Category 2B	**Steel (< 6 mm)**	TBC	

Table 9: Potential scrap recovery value (per tonne) from ammunition demilitarization

The Niksic Steelworks has in the past been involved in the demilitarization of T-55 tanks. The General Staff have a requirement for the disposal of the following heavy weapons. Further details of the Heavy Weapons Demilitarization and Disposal options for Montenegro are contained in a separate document.

7.3.1 The Hemosan Company

The Hemosan Company is located in Bar and is a private enterprise. It is certified to deal with contaminated waste and the environmental remediation of contaminated areas. According to its General Manager it is capable of dealing with the oxidizers and electrolytes from the torpedoes, and therefore could support the national demilitarization capability. The financial regulations of any implementation agency would of course require that the Hemosan Company participated in a competitive tender process.

7.3.2 External bi-lateral capacity and involvement

The US State Department Office of Weapons Removal and Abatement (OWRA) has agreed to support the demilitarization of ammunition in Montenegro as a bi-lateral project, contracted to a US Company. An initial list[37] of possible ammunition for US demilitarization support was developed, but in order to ensure synergy, and maintain economies of scale for certain ammunition types, this list is currently being amended as the result of OWRA and SEESAC discussions.

In addition, it is likely that 250,000 rounds of 7.62mm ammunition will be transferred to the ISAF in Afghanistan under the auspices of a US brokered transfer. This proposed transfer has minimal impact on the proposed demilitarization plan.

8 Ammunition demilitarization plan

8.1 Principles

- Demilitarization operations should take place in Montenegro using indigenous capacity wherever possible. (The economies of scale support this principle in financial terms, and there is insufficient demilitarization capacity in the sub-region to accept this work in the short to medium term anyway).
- The Best Available Technology Not Exceeding Excessive Cost (BATNEEC) principle will be applied.

[37] Confirmatory letter from the Minister of Defence, Mr Boro Vucinic, File no 01-87/06-1, dated 12 December 2006 to the United States Ambassador in Podgorica.

- Demilitarization operations will be environmentally benign, and comply with EU or national standards, (as appropriate). Where possible (within the limitations of BATNEEC) the highest standards will be applied.
- Maximum financial and recycling benefit should be extracted from materials recovered during the demilitarization process. Recovered explosives to be used for commercial use only.

8.2 Technologies and demilitarization processes

There are a wide variety of technology options available throughout the world. This assessment does not aim to include a full evaluation of the advantages and disadvantages of all available technologies. It does, however, propose to use those technologies with a proven track record that are available Commercially Off The Shelf (COTS). The assessment team consider that Montenegro is not an appropriate environment to take a 'technical risk' in the development of new technology in parallel with trying to achieve significant production rates in the short term.

Ammunition, explosive, propellant and pyrotechnic materials fall into three basic treatment categories as illustrated in the table below. The first category is material that is easy and relatively inexpensive to treat. Simple technologies exist and are proven and relatively inexpensive. The second category is material that is more difficult or risky to treat and more expensive to design for. In the second category, multiple technologies might be required, and more handling and manipulation of the items prior to final disposal increases the risk and the costs. The third category is material that requires new development or technically challenging approaches to treat and, thus, becomes very expensive and risky. Although materials in the third category of 'difficult and very expensive' are usually only a small percentage of the workload, they have the potential to absorb a disproportionate fraction of technical and financial resources.

CATEGORY	DESCRIPTION	GENERIC AMMUNITON TYPE
1	Simple Inexpensive (Minimal processing required)	▪ SAA up to 14.5 mm ▪ Fuzes, Igniters and Detonators (No Boosters) ▪ Bulk Gun Propellant ▪ Bulk Explosives (Non TNT Based) ▪ Some Landmines
2A	Difficult More Expensive (Pre-processing before Incineration)	▪ Grenades ▪ Fuzes, Igniters and Detonators (With Boosters) ▪ Detonating Cord and Linear Charges. ▪ Cannon ammunition (20mm - 40mm)
2B	Difficult More Expensive (TNT Recovery)	▪ Projectiles > 60mm (TNT based fill) ▪ Sea Mines (TNT Fill) ▪ A/C Bombs (TNT Fill)
3	Most Difficult Expensive	▪ Liquid Energetics ▪ Flares ▪ Projectiles (Non TNT Fill) ▪ Rocket Motors ▪ Torpedoes

Table 10: Demilitarization classification of generic ammunition types

Past international experience shows that in a phased programme it is best to develop a track record with the simple items to establish in the minds of potential donors that the project can be a success; these are also often those items most desired by organised crime and warring factions. More difficult items can then be added with less risk that unsuccessful tests will hurt the project. Conversely, if difficult items are unsuccessfully attempted early, the results must be explained before the project will be deemed successful.

8.3 Ammunition demilitarization plan (Phases)

The lowest risk approach to developing and operating the desired disposal facility is to implement the project by logical phases, which are proposed as follows:

8.3.1 Phase 1

In keeping with the 'simple items first' philosophy, it is proposed that the first phase should involve the destruction of technically simple items, which conveniently also addresses the need to destroy ammunition types that are attractive to criminals, terrorists and warring factions. Phase 1 covers:

- The procurement and installation of a transportable explosive waste incinerator (EWI).[38] It is proposed that this be operated by the '4th November' Company, where it will be used to destroy small arms ammunition and small explosive components recovered during disassembly operations. This location is suitable for ammunition demilitarization with low explosive contents, as their storage capability precludes the storage of commercially viable quantities of medium to large calibre munitions.
- The procurement and installation of a propellant test capability, to identify that propellant that may be at risk of autocatalytic decomposition.
- Open burning operations to destroy' at risk' propellant (if necessary). Alternatively this propellant may be fed into the EWI, dependent on quantity identified.
- Infrastructure improvements to the three future ammunition storage areas to move them to as close to NATO standards as possible.
- Procurement of transport for the MAF to enable the safe and efficient movement of ammunition for demilitarization.
- The physical destruction of small arms ammunition, detonators, fuzes and propellant.

8.3.2 Phase 2

- The procurement and installation of equipment in the Poliex Company to support reverse assembly, pull apart or remote cutting, to breakdown cannon, medium and large calibre ammunition prior to TNT recovery.
- The procurement and installation of equipment in the Poliex Company to support the autoclave (melt out) process to recover TNT from munitions.
- The procurement and installation of a flash furnace, (with integrated pollution control system), in the Poliex Company. This is required to destroy explosive residues remaining after melt out before scrap metal from munitions can be sold for scrap.
- The physical destruction of mortar, tank and artillery ammunition (60mm - 155mm) by reverse assembly and melt out.
- The physical destruction of detonators, fuzes and propellant recovered during reverse assembly. These will require packing and then moving to '4 November' Company for destruction in the EWI.

8.3.3 Phase 3[39]

- The demilitarization of large naval ammunition at the Poliex Company. Disassembly may be possible, but it is likely that hydro-abrasive cutting may be required to safely gain access to the TNT filled ammunition prior to melt out.
- A major problem with a significant quantity of the naval ammunition[40] is that is the explosive fillings contain TAH-76 explosive (TNT/RDX/Aluminium), which it is not possible to melt out. Hydro abrasive cutting is a possible solution.

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[38] Similar to the Small Arms Ammunition Destruction System (SAADS) that was installed in Bosnia in 2006 and is now operational. This has 70% of the capabilities of the larger systems available at 25% of the costs. The quantity of ammunition for incineration does not really justify the costs if a larger system anyway.

[39] Phase 3 could operate concurrently to Phase 2 dependent on donor response.

[40] Sea Mine AIM-82, Sea Mine GMI-100 Rockan. Total AUW of 255 tonnes.

8.4 Demilitarization plan summary

DEMIL CLASS	TECHNOLOGY	LOCATION	GENERIC AMMUNITION TYPES	QUANTITY (TONNES)				REMARKS
				ARMY	NAVY	AIR FORCE	TOTAL	
PHASE 1 (2007)								
1	EWI (SAADS)	'4 November' Company	Small Arms Ammunition (<14.5mm), Pyrotechnics, Fuzes	1,363.5 0	0 0	0 43.3	1,406.8	
1	Open Burning	TBC	Propellant	190.8	43.8	47.7	282.3	
3	*Commercial hazardous waste disposal contract*	*Commercial Tender*	*Missile Fuels and Oxidisers* *Torpedo Electrolytes*	0 0	128.7 45.1	0 0	173.8	
PHASE 2 (2008)								
1	EWI (SAADS)	'4 November' Company	Boosters, Pyrotechnics, Fuzes, Smoke Compounds,	0	0	43.2	43.2	Plus arisings from other ammunition
2A	Shearing and Punching	Poliex Company	Grenades[41] 20mm - 40mm Cannon	445.3 0	0 0	0 542.1	987.4	
2A	Reverse Assembly	Poliex Company	60mm - 155mm Smoke Munitions	282.3	0	0	282.3	
2A	Reverse Assembly	Poliex Company	Anti Tank / Air Ground / Naval Rockets and Missiles	259.0	48.2	118.1	425.3	
2A	Reverse Assembly[42] THEN	Poliex Company	60mm - 155mm HE Munitions, Anti-Tank Mines	2101.4 347.1	0 0	162.4 0	2610.9	
2B	Melt Out (TNT)							
PHASE 3 (2009)								
3	Hydro-Abrasive Cutting THEN	Poliex Company	Sea Mines Limpet Mines	0 0	474.0 25.6	0 0	1188.7	
2B	Melt Out		Depth Charges Torpedo Warheads[43] STYX Missiles[44] AC Bombs	0 0 0 0	48.3 16.5 67.8 0	0 0 0 546.0		
3	Hydro-Abrasive Cutting THEN	Poliex Company	Sea Mines	0	255.9	0	255.9	AIM-83, GMI-100 ROKAN
3	Hydro Flush Out							
3	Disassembly	'4 November' Company	BL 755 CBU	0	0	179.0	179.0	

Table 11: Summary of Montenegro ammunition demilitarization plan

[41] Then processed through EWI.

[42] Includes bandsaw for larger munitions.

[43] After reverse assembly of torpedoes.

[44] After reverse assembly of missiles.

It is also important to note that each of these phases build on the previous one. The preparation processes fielded in Phase 2 require that an incinerator be installed in Phase 1. For example, fuzes, primers and boosters from munitions disassembled for TNT melt-out will be processed in the EWI. Further, many parts of munitions that originally start in the Phase 3 category will probably be moved to the second category as their nature, and configurations are better known. Some parts of these items will naturally fit in another category as the item is disassembled. For example, rocket motor fuzes might revert to Phase 1 incineration, and torpedo warheads might be moved to TNT recovery in Phase 2.

8.5 Demilitarization scrap processing

The demilitarization process will result in large quantities of scrap material that will require processing, although a significant proportion of this could be sold, which would make a contribution to the operating costs of demilitarization. It is not yet possible to estimate this in more detail.

8.6 Indicative demilitarization budget

An indicative budget for demilitarization operations has been developed, which is available as a separate EXCEL spreadsheet (on request). It is summarised in this matrix:

PHASE	ESTIMATED COSTS (US$)	TONNES (AUW)	COST($) PER TONNE (AUW)	REMARKS
Phase 1 (2007/8)	1,562,000	1,862.3		
Phase 2 (2008/9)	2,295,000	4,349.1		
Phase 3 (2009/10)	1,065,000	1,623.6		
TOTAL	4,922,000	7,835.0	496[45]	The total tonnage (AUW) is 9,927. The discrepancy of 2,092 tonnes from this figure reflects the weight of the non-explosive miscellaneous items, and the torpedo and STYX missile bodies, which can go straight to scrap after disassembly/checking.

Table 13: Indicative budget

Separate project proposals and budgets have also been developed for; 1) SALW (Conventional Ammunition) Stockpile Management and Security; 2) Disposal of Hazardous Chemicals; and 3) Disposal of Heavy Weapons. These will be made available by SEESAC to the selected implementation agency on request.

8.7 Environmental considerations

The assessment has examined the type of demilitarization and scrap processing equipment necessary to operate an ammunition demilitarization and scrap processing facility. The environmental compliance of each type of equipment has been considered in accordance with European Union (EU) environmental legislation.

Other factors may need to be considered when identifying the impact on the local environment of the development of the recommended facilities for ammunition demilitarization production operations. It is therefore recommended that environmental impact statements be developed during the project implementation phase to show that environmentally benign processes are taking place. These can then support the wider SALW Awareness campaign.

8.7.1 Open Burning and Open Detonation (OBOD)

This practice of ammunition destruction can be problematic. Local populations residing in close proximity to open detonation destruction sites in particular often complain and protest destruction activities. Local residents cite two problems: first the loud noise and earth tremors that occur when destruction activities take place, and second, the increasing concentration of heavy metals that may accumulate close to areas where destruction takes place, which pose a hazard to both human and animal health. Further information on the environmental

[45] Cost derived from Total AUW to include costs of processing missile and torpedo bodies etc.

consequences of OBOD may be found in *SALW ammunition destruction - environmental releases from open burning (OB) and open detonation (OD) events, SEESAC, 2004*.

The proposed demilitarization plan for Montenegro keeps the use of OBOD to the minimum level necessary based on wider safety constraints; it will only be used for MANPAD destruction and large-scale propellant burning (if necessary for safety in storage reasons).

8.7.2 European Union (EU) Environmental Legislation

There is a wide range of EU environmental legislation on the statute books of all EU members, which are all based on EU Directives from Brussels, to which the Government of Montenegro should aspire to comply with, in order to satisfy the requirements of international donors for financial assistance. The one most applicable to demilitarization operations is the directive that lays down emission levels and rates.[46] All demilitarization equipment manufacturers are aware of this legislation in detail and can indicate to what level their products comply with this legislation.

It is therefore recommended that EU environmental legislation relating to emission levels be used as the basis for any Invitations To Tender (ITT) submitted, as this is the most stringent legislation in the region.

9 Conclusions and recommendations

9.1 Ammunition Storage Areas

Before BREZOVIK and TARAS can be utilised for future ammunition storage in accordance with NATO standards appropriate Explosive Limit Licenses (ELL) should be formally developed after the necessary infrastructure improvements.

The depots at BREZOVIK and TARAS are potentially fit to serve as central storage areas for the Montenegrin Army. The depot in PLIEVLJA is potentially fit to store the ammunition for the two battalions.

The roads in both the Brezovik and Taras compounds need to be repaired and covered with asphalt or a suitable layer.

9.2 Ammunition management

A propellant testing and analysis facility needs to be established or an agreement needs to be reached with the Republic of Serbia to conduct these tests for Montenegro.

9.3 Ammunition movement

Provide the Montenegro Armed Forces with a transport capacity for ammunition and explosives, as the renting of ADR certified civilian vehicles for transport is an expensive option and provides no long-term logistic capacity development.

9.4 Demilitarization (Ammunition)

The establishment of an Ammunition Demilitarization Facility in Montenegro is the only practical, safe and financially viable alternative for the medium term (2008>), with incineration technology providing an initial solution (2007) to the short term destruction of small arms ammunition, and propellant with chemical stability problems.

[46] EU Directive 2000/76/EC of 04 December 2000 on Incineration of Waste.

The demilitarization project should be carried out by an implementation agency with previous experience of the development, planning and conduct of demilitarization operations.

Maximum use should be made of locally available knowledge, infrastructure and personnel.

The indigenous capacity is limited to the POLIEX, '4 NOVEMBER' and BOOSTER companies which are licensed and could be involved in the demilitarization activities, but their capabilities need to be improved to cope with the challenge. Niksic Steelworks is capable of handling the resultant scrap processing.

The Hemosan Company may have the capacity to deal with the oxidisers, electrolytes and any contaminated waste, although should participate in a competitive tendering process.

Fixed price contracts should be negotiated with the proposed facilities for the demilitarization of the ammunition, although the necessary initial infrastructure and equipment requirements should be provided by the implementing agency. The production demilitarization contracts should cover receipt, storage, internal movement, demilitarization processes, the processing of by-products such as explosives and metals, and the disposal of all scrap materials. Negotiated prices for demilitarization will take full account of the assistance given to the contractors in the provision of equipment.

Annex A - Information on Propellant Instability

In March 2000 Dr Stephen Murray from the Royal Military College of Science, at Cranfield University in the UK, conducted an analysis of the potential for propellant instability during storage in Albania. There, storage conditions exist that are very similar to those currently found in Montenegro and his report described the following hazards associated with propellants in storage:

Propellants may be either Single Base containing only nitrocellulose as the energetic component or Double Base containing both nitrocellulose and nitroglycerine as energetic components. Even if the propellant is kept in ideal storage conditions these components will begin to decompose over time to form oxides of nitrogen, mainly dinitrogen tetroxide. If these oxides of nitrogen are not removed from the propellant as they are formed they will catalyse further decomposition. This is an example of auto catalytic decomposition since the impurity being formed accelerates the chemistry creating more of the same impurity, which, therefore, causes further decomposition and so on. One factor that can increase the rate of chemical reaction is temperature. Thus any increase above 20^{0}C will have an adverse effect on the storage life of propellant.

This autocatalytic decomposition of propellants is a serious safety issue, as it is known to lead to spontaneous ignition (see below). To prevent this occurrence, chemical additives are introduced into the propellant formulation and are known as stabilisers. They do not stop the slow decomposition of the nitrocellulose and nitroglycerine but rather prevent the accelerated chemical decomposition by removing the oxides of nitrogen, which would cause it to happen. Thus, the stabiliser reacts chemically with these oxides removing them from the system. Of course, to do this, the stabiliser will slowly be consumed.

Thus, the reduction in stabiliser content will lead to a point where it becomes insufficient to guarantee safety and this should be a measure of the storage life of that propellant. Both chemical analysis and instrumental methods can be employed to measure the stabiliser content, the latter being a more recent advance in propellant analysis.

Two chemicals are used routinely as stabilisers; one is diphenylamine (DPA) used in Single Base propellants from the early years to the present time. Chemically it behaves as a base reacting with the initial decomposition products of nitrocellulose, initially to form nitrosodiphenylamine, which is then converted into various nitro-derivatives of diphenylamine. This stabiliser is too basic to be used if nitroglycerine is present and therefore is not used in Double Base propellants. Instead the stabiliser of choice is diphenyldiethylurea also known as carbamite or ethyl centralite. This acts as a weak base reacting with the decomposition products again to form nitro- and nitroso-derivatives. The overall chemistry of the action of stabilisers is extremely complex but the end result is to keep the propellant chemically stable.

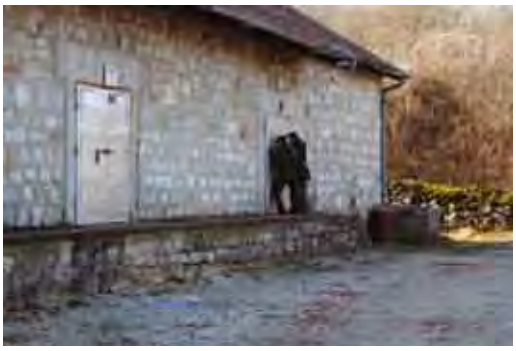
Dr Murray also conducted a survey[47], which recorded more than 30 ammunition accidents worldwide that were attributed to spontaneous propellant ignition. This has subsequently been updated by SEESAC, who routinely provide a list of undesirable explosive events in ammunition storage areas. There are many causes listed, but propellant instability is a cause of statistical significance, with the last event due to this phenomena been in Serbia in October 2006 (the Paracin Ammunition Depot Explosion). Dr Murray concluded, '*It is imperative that all propellant in magazines must be included in a surveillance programme*'.

[47] Ibid, page 28

Annex B - Assessment of the Brezovic Ammunition Storage Area

Introduction

Brezovic is an ammunition storage depot of 700,000 m^2 located approximately 90 km from Podgorica. The ammunition storage buildings within the explosives area were built by the Yugoslavian Army in the 1950s and 1970s and consist of 21 stone buildings in three different sizes of which 17 will be used to store ammunition in future.



General remarks

The floors of the buildings are clean and free of dust and rubbish. Some of the buildings are accessible for forklifts. There is no electricity or light in the buildings. Signs are posted indicating explosive and fire hazards. Most ammunition is stored on pallets, but some stocks are more than 2 metres high due to a lack of capacity. Lightning protection is in place at all buildings. The doors are made of wood, covered with an aluminium cover plate and are not up to NATO standard.

Apart from the buildings there are some open storage areas located on the compound, which contain large quantities of FAB 100 and FAB 250 bombs and 130 mm ammunition.

Many of the buildings carry large quantities of HD 1.1 and HD 1.2, mostly comprising of artillery and mortar ammunitions. One building is used to store ammunition containing White Phosphorous. The majority of the ammunition is of Yugoslav and Russian origin and dates from the last 25 years. The ammunition stored in the open, mostly aircraft bombs, is suffering considerable deterioration. Almost all of the ammunition is in its original packaging.

Good attention is given to the basic rules of storing ammunition and accounting. There are stack-cards in each building. Special attention is given to the storage of ammunition containing WP, fuzes and detonators. The rules governing the mixing of Compatibility Groups are applied.

Location

The ammunition storage area is located on the side of a hill. Some of the headwalls do not have any traverse or other protective arrangements. Some of these buildings face a number of scattered family houses in the valley at a distance of approximately 100 metres and more.

To allow the depot to reach its full potential to store the permitted NEQ in HD 1.1 and HD 1.2 remedial action needs to be taken.

The vegetation around the buildings should be cleared to obtain a more open area around the buildings.

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Type A	**35.4**	**12.4**	**3.75**	**1,646**	16	
Type B	**35.5**	**13.3**	**4.00**	**1,887**	2	Unfit for storage due to construction
Type C	**4.4**	**4.3**	**3.72**	**70**	3	Only detonators and fuzes
TOTALS				**3,603**	21	

All buildings are in a reasonable state of repair. Due to misplaced or broken roof tiles most Type A buildings are leaking at some places.

Type B buildings, constructed in 1974, cannot stand heavy snowfall due to a weak roof construction, which has already resulted in the collapse of one building and the need for support measures in the other buildings. The roofing of is made of Ethernite, which probably contains asbestos.

Type C buildings are only used for the storage of fuzes and detonators.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a 3,400-metre double perimeter fence with a separation of approximately 2 metres between the fences. Both fences are complete, but insufficiently high and robust. There are no dogs operated between the fences.	▪ Repair and refurbish perimeter fence.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	▪ Install lighting system within the explosives area. ▪ Install Intruder detection Systems (IDS) or alarms on the ESH. ▪ Replace current locks with high security locks.
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security. Control of access to the storage area is good through official entry points.	▪ Repair and refurbish perimeter fence.

Summary

As BREZOVIC is one of the proposed depots to be used in the future, it has the potential to be a safe and effective ammunition storage site however with a reduced number of buildings to store ammunition. The buildings of Type B are unfit due to the roof construction and the buildings facing the housing area should also be discarded for ammunition storage.

The current standard of safety in storage is adequate.

Annex C - Assessment of the Opatovo Ammunition Storage Area

Introduction

Opatovo is an ammunition storage depot located approximately 5 km from the town of Tivat. Opatovo was originally an ammunition factory established by Austria during the 1st World War. After the Austrians left it became a Navy base for maintenance activities. Since then the property belonged to the Navy. Recently the ***Arsenal Company*** that also occupies the compound was sold to Mr. Peter Monk, a Canadian of Hungarian origin. The exact legal status could not be verified as conflicting answers were given. The assumption is made that the property, and thus the responsibility lies with the Armed Forces.

General remarks

The complex is now used by 3 different entities. ***Mornaricko Technicki Remonit Zavod, Savo Kovacevic***, also known as ***Arsenal*** or ***MTRZ***, officially occupies 15 buildings. ***Arsenal*** was an ammunition factory that produced grenades, rockets, sea mines, etc. It also had a capacity to fill ammunition with cast TNT. This equipment was only used for approximately 6 months and is still present. The company stopped production in 1991 but everything is still there and does not belong to the Montenegrin Armed Forces. In the ***Arsenal*** buildings there are still many explosive articles, (numbers, types and quantities unknown). In buildings 19 and 20 primary explosives are still stored, although the condition is also unknown.

TOC is a Technical Experimental Centre (Testing Centre) and occupies 3 buildings, which contain electronic equipment. The company has a testing area on ***Cap Prevlaka***, which is now Croatian territory. Since the 1991 conflict there has been no activity.

The Navy occupies the rest of the buildings. Buildings 68, 71, 72, 73 and 74 are large Igloo-type buildings, partly built in the mountainside. They all contain large numbers of sea mines, missile warheads, torpedo charges and depth charges. Buildings 13, 24 and 26 contain large quantities of HD 1.1 ammunition but are not really designed as storage buildings.

Buildings 11 and 12 belonged to the former Military Department of Tivat but are now Navy. Buildings 10 and 62 belonged to ***Arsenal*** but are now Navy. Building 82 contains furniture.

In the 1990s ammunition was brought to this storage area from the surrounding countries and most of the ammunition is still there.

The floors of the buildings are not clean or free of dust and rubbish. Some of the buildings are accessible for forklifts. There is electricity or light in some of the buildings. Signs are posted indicating explosive and fire hazards. Most ammunition of HD 1.1 is stored on pallets or wooden poles. The majority of this ammunition is of Yugoslav and Russian origin and dates from the last 25 years. Almost all of this ammunition is in its original packaging. Lightning protection is in place at all buildings. The rules governing the mixing of Compatibility Groups are applied.

The doors are not up to NATO standard.

Large quantities of sea mines are ‘stored’ under ‘field conditions’, although much of the area is completely overgrown, and therefore a significant fire risk. Some of these mines (AIM–M70) were taken by the Booster Company for dismantling, but they were returned as it was not commercially viable for Booster.

Location

The ammunition storage area is located on a hill. The complex, which is vast, is completely run-down. Roads are in bad repair, buildings are neglected and the location is overgrown with trees and scrub. In many places all kinds of debris can be found, some being ammunition components that have been dismantled.

There is a main road next to the complex, civilian houses next door and high voltage power lines run over the complex.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a perimeter fence at some parts of the complex, stone walls at other parts. The fences and walls are complete, but insufficiently high and robust.	▪ Nil as planned for closure.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is little lighting within the ammunition storage area. There is no CCTV.	
Guard Force	The guard force is barely adequate (2 persons) to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security.	

Summary

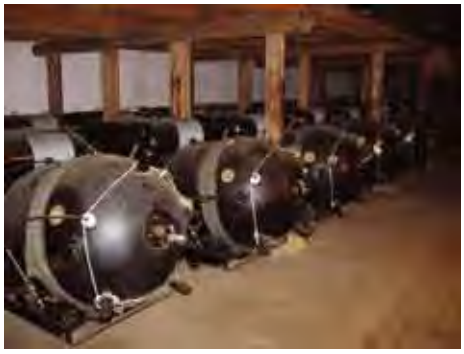
Although initially suitable to store and / or produce ammunition, it is now totally unsuitable as an ammunition storage area without significant capital investments. Due to the presence of trees and scrub there is a significant fire risk, which would directly involve ammunition. Fire fighting equipment is in short supply and cannot cope with a large fire. Last year there was a fire that came close to the ammunition storage buildings but was extinguished just in time.

As Opatovo is one of the depots that will not be used in the future, no further recommendations are made, other than that **the undergrowth should be controlled as an urgent fire prevention measure until the ammunition is removed from the facility**.

The current standard of safety in storage is totally inadequate.

Annex D - Assessment of the Kotor Bay Ammunition Storage Areas

Introduction

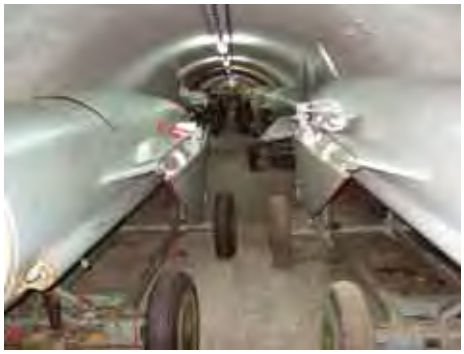


The KOTOR Bay ammunition storage area consists of the ***Petrivici*** depot located in the same area as the ***Pristan*** depot and the ***Spiljici*** depot. The ammunition storage buildings within the explosives area were built by the Yugoslavian Army in the late 1940s. The ammunition buildings are only divided by general storage buildings and workshops.

Petrovici stores Army ammunition. Spiljici and Pristan store Naval ammunition, however there is no clear distinction between the parts of the compound. Only Spiljici is separated and can only be reached by ship.

Petrovici (see D-1) consists of 3 Igloo type buildings and 2 stone buildings in four different sizes of which none will be used to store ammunition in future. Pristan (see D-2) and Spiljici (see D-3) consist of vast underground tunnel complexes.

General remarks



The floors of the buildings and tunnels are reasonably clean and free of dust and rubbish. Some of the buildings and all of the tunnels are accessible for forklifts. There is no electricity or light in the buildings but there is electricity and light in the tunnels. Signs are posted indicating explosive and fire hazards. Most ammunition is stored on pallets. Lightning protection is in place at all buildings and tunnels.

The doors are made of metal, of which some are rusted through, others are made of wood but none are up to NATO standard.

The buildings carry large quantities of HD 1.1 and HD 1.2, mostly comprising of artillery and mortar ammunitions. The majority of the ammunition is of Yugoslav and Russian origin and dates from the last 25 years. The tunnels carry large quantities of torpedoes, rockets and naval mines. Many containers carrying oxidizers are stored in the open at the waterfront.

Some attention is given to the basic rules of storing ammunition and accounting. The buildings are overloaded, (to 125% capacity). There are stack-cards in each building. Special attention is given to the storage of ammunition containing WP, fuzes and detonators, however the building is next to the main ammunition storage building. The rules governing the mixing of Compatibility Groups are applied.

Location

The ammunition storage area is located on the side of a hill. None of the headwalls have any traverse or other protective arrangements. The back of the buildings is built onto the mountain side, which will reflect the shockwave in case of a detonation. In front of the Igloos is a fjord-type of water inlet. On the opposite side of the fjord is a housing area at approximately 800 m. During the tourist season many boats will be within the danger area of the compound.

The vegetation around the buildings should be cleared to obtain a more open area around the buildings. There is also a lot of other waste material around that should not be there, (wood, tyres, metal parts, etc).

D-1 Petrovici

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Type DSH-36	36.0	**12.0**	**2.6**	**1,101**	**222**	2
Type M-30	25.4	**7.9**	**4.0**	**796**	**125**	1
Type M-40	**34.5**	**11.6**	**3.8**	**1,500**	**2**	1
Type M-8	**5.3**	**5.6**	**3.7**	**103**	**57**	1
TOTALS				**3,502**	**406**	

All buildings are in a poor to reasonable state of repair.

World War 2 Ammunition

In the Petrovici area is also a site where WW II ammunition is buried, left behind by German and Italian troops. The storage area is, according to local information, approximately 190 metres deep inside the mountain. When leaving in 1944 the German / Italian forces detonated charges to block the entrance, and as a result part of the mountain collapsed. The entrance also used to be mined although there is no evidence that this is still the case. There is no additional information available on the possible contents of this storage bunker.

Attempts in 1944 and 1945 to re-open the entrance failed due to a lack of resources. Given the fact that the ammunition has been buried for over 60 years the situation must be considered as very dangerous. On top of the mountain are a number of family houses, which, combined with the Naval offices, workshops and other storage areas would be in immediate danger.

Action to re-open the entrance, followed by a probably complex EOD operation is urgently needed. Montenegro however does not have a sufficiently trained EOD capacity to deal with this problem. Additional training and support would therefore be needed.

D-2 Pristan

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Tunnels	3,000	**±4.0**	**±2.2**	**26,400**		This is a vast complex of tunnels and side tunnels
TOTALS				**26,400**		

All buildings are in a good state of repair.

D-3 Spiljici

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Tunnels	3,000	**±4.0**	**±2.2**	**26,400**		This is a vast complex of tunnels and side tunnels
TOTALS				**26,400**		

All buildings are in a good state of repair.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a perimeter fence. The fence is complete, but insufficiently high and robust. At the side of the waterfront there is no fence at all.	▪ Nil as depot planned for closure.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security. Control of access to the storage area through official entry points is good.	

Summary

As Petrovici, Pristan and Spiljici are depots that will not be used in the future, no further recommendations are made.

The current standard of safety in storage is just adequate, within the caveats above.

Annex E - Assessment of the Pljevlja Ammunition Storage Area

Introduction

Pljevlja is an ammunition storage depot located approximately 40 km east of the border with Bosnia and 18 km south of the border with Serbia. The ammunition storage buildings within the explosives area were built in the 1970s and consist of 2 stone buildings of the same size, which will be used to store ammunition in future.

General remarks

The floors of the buildings are clean and free of dust and rubbish. Both buildings are accessible for forklifts. There is no electricity or light in the buildings. Signs are posted indicating explosive and fire hazards. Most ammunition is stored on pallets, but some stocks are more than 2 metres high due to a lack of capacity. Lightning protection is in place at all buildings.

The doors are made of metal connected to the grounding system but are not up to NATO standard.

Both buildings carry large quantities of HD 1.1 and HD 1.2, mostly comprising of artillery and mortar ammunitions. Almost all the ammunition is in its original packaging.

Good attention is given to the basic rules of storing ammunition and accounting. There are stack-cards in each building. The rules governing the mixing of Compatibility Groups are applied.

Location

The ammunition storage area is located on the side of a hill within a military area. There is no housing present. The nearest guardhouse is at >400 m.

The depot can reach its full potential to store the permitted NEQ in HD 1.1 and HD 1.2 after some remedial action is to be taken.

The road to the storage area is in bad condition. The road within the storage area is reasonably good.

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Type B	**24.6**	**9.1**	**4.0**	**200**	**2**	NEQ 40 tonnes TNT
TOTALS				**200**	**2**	

All buildings are in a reasonable state of repair.

Type B buildings, constructed in 1974, are of the same construction as the buildings in Brezovik. The roofing of the buildings is made of Ethernite, which probably contains asbestos.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a single perimeter fence but insufficiently high and robust.	▪ Repair and refurbish perimeter fence. ▪ Repair access road.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	▪ Install lighting system within the explosives area. ▪ Install Intruder detection Systems (IDS) or alarms on the ESH. ▪ Replace current locks with high security locks.
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security.	▪ Repair and refurbish perimeter fence.

Summary

As Pljevlja is one of the proposed depots to be used in the future, it has the potential to be a safe and effective ammunition storage site.

The current standard of safety in storage is adequate.

Annex F - Assessment of the Rogame Ammunition Storage Area

Introduction

Rogame is an ammunition storage depot located approximately 10 km from Podgorica. The ammunition storage buildings within the explosives area were built by the Yugoslavian Army in the 1950s and 1970s and consist of 9 buildings in six different sizes of which none will be used to store ammunition in future. (Unless the MoI choose to utilise the facility).

General remarks

The floors of the buildings are clean and free of dust and rubbish. None of the buildings are accessible for forklifts. There is no electricity or light in the buildings. Signs are posted indicating explosive and fire hazards. Most ammunition is stored on pallets, but some stocks are more than 2 metres high due to a lack of capacity. Lightning protection is in place at all buildings.

The doors are made of wood, covered with an aluminium cover plate and are not up to NATO standard.

Many of the buildings carry large quantities of HD 1.1 and HD 1.2, mostly comprising of artillery and mortar ammunitions. One building is used to store ammunition containing chemical munitions (smoke, light, etc. for the Military Police. The majority of the ammunition is of Yugoslav and Russian origin and dates from the last 25 years. Almost all of the ammunition is in its original packaging.

Good attention is given to the basic rules of storing ammunition and accounting. There are stack-cards in each building. Special attention is given to the storage of ammunition containing fuzes and detonators. The rules governing the mixing of Compatibility Groups are applied.

Location

The ammunition storage area is located in a valley surrounded by hills. Some of the headwalls do not have any traverse or other protective arrangements.

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
TYPE	**12.0**	**10.8**	**5.4**	**699**	3	
TYPE	**34.7**	**12.1**	**2.9**	**1,191**	2	
TYPE	**12.9**	**6.6**	**2.6**	**221**	1	
TYPE	**25.4**	**8.0**	**4.0**	**812**	1	
TYPE	**12.1**	**7.3**	**3.5**	**309**	1	
TYPE	**5.3**	**5.3**	**3.7**	**103**	1	
TOTALS				**3,337**	9	

All buildings are in a reasonable state of repair.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS[48]
Perimeter Fence	There is a double perimeter fence with a separation of approximately 2 metres between the fences. Both fences are complete, but insufficiently high and robust. There are no dogs operated between the fences.	▪ Repair and refurbish perimeter fence.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	▪ Install lighting system within the explosives area. ▪ Install Intruder detection Systems (IDS) or alarms on the ESH. ▪ Replace current locks with high security locks.
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security. Control of access to the storage area is good through official entry points.	▪ Repair and refurbish perimeter fence.

Summary

As Rogame is one of the depots that will not be used by the Military in the future, no recommendations are made.

In case the Ministry of Interior needs a separate storage area for police ammunitions Rogame could be used as it is close to the capital and has the capacity and infrastructure to do so. In this case modifications to the buildings should be made to comply with NATO Standards.

The current standard of safety in storage is adequate.

[48] Only if MoI choose to adopt the facility.

Annex G - Assessment of the Sasovici Ammunition Storage Area

Introduction

Sasovici is an ammunition storage depot located approximately 10 km from Novi Herzog. The ammunition storage buildings within the explosives area were built by the Yugoslavian Army in the late 1940s and early 1950s and consist of 13 buildings in different sizes of which none will be used to store ammunition in future.

7 buildings are of the Igloo type (DSH-30 and DSH-17)

General remarks

The floors of the buildings are clean and free of dust and rubbish, but are broken. None of the buildings is accessible for forklifts. There is no electricity or light in the buildings. Signs are posted indicating explosive and fire hazards. Most ammunition is stored on wooden poles on the floor, none is palletised. Lightning protection is in place at all buildings.

The doors are made of metal, locked and sealed with a lead seal but are not up to NATO standard.

Many of the buildings carry large quantities of HD 1.1 and HD 1.2, mostly comprising of artillery and mortar ammunitions. One building has ammunition for naval guns. One building is used to store ammunition containing smoke, lachrymatory agents, etc. The majority of the ammunition is of Yugoslav and Russian origin and dates from the last 25 years. Almost all of the ammunition is in its original packaging.

Good attention is given to the basic rules of storing ammunition and accounting. There are stack-cards in each building. Special attention is given to the storage of ammunition containing smoke, fuzes and detonators. The rules governing the mixing of Compatibility Groups are applied.

Location

The ammunition storage area is located on the side of a hill. None of the headwalls have any traverse or other protective arrangements. Some of these buildings face a number of scattered family houses in the valley at a distance of approximately 400 metres and more.

There is a high-tension power line approximately 60 metres from the first ammunition storage building.

The depot has an area where empty boxes, cartridge casings, etc. are stored.

There is a pond for fire fighting purposes close to the Igloos.

The vegetation around the buildings is cleared to obtain an open area around the buildings.

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Type DSH-17	**18.0**	**12.0**	**2.6**	**561**	**6**	
Type DSH-30	**36.0**	**12.0**	**2.6**	**1,123**	**1**	
Type M-30	**25.4**	**7.9**	**4.0**	**802**	**1**	
Type M-5	**4.7**	**4.5**	**3.6**	**76**	**1**	
Type M-20	**25.4**	**8.0**	**3.8**	**772**	**1**	
Type -1-	**3.4**	**2.3**	**2.1**	**16**	**1**	
Type -2-	**3.4**	**1.3**	**2.1**	**9**	**1**	
TOTALS				**3,361**	**13**	

All buildings are in a reasonable state of repair.

The Type 1 building is used for the storage of fuzes and detonators.

The Type 2 building is used to store small quantities of ammunition in bad condition that has been sorted out in the first Igloo type building from ammunition returned from Units.

Security

Security can be summarised as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a perimeter fence, but insufficiently high and robust. There are no dogs operated between the fences.	▪ Nil as planned for closure.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security. Control of access to the storage area is good through official entry points.	

Summary

As Sasovici is one of the depots that will not be used in the future, no recommendations are made. The grounds of the depot look well maintained, the road is in bad condition. The current standard of safety in storage is adequate.

Annex H - Assessment of the Taras Ammunition Storage Area

Introduction

Taras is an ammunition storage depot located approximately 30 km from Podgorica. The ammunition storage buildings within the explosives area were built by the Yugoslavian Army in the 1950s and 1970s and consist of 13 stone buildings of which 8 will be used in the future.

General remarks

The floors of the buildings are clean and free of dust and rubbish. Some of the buildings are accessible for forklifts. There is no electricity or light in the buildings. Signs are posted indicating explosive- and fire hazards. Most ammunition is stored on pallets, some stocks are more than 2 metres high due to a lack of capacity. Lightning protection is in place at all buildings.

The doors are made of metal and connected to the grounding system.

The road is in poor condition and needs to be improved.

Apart from the buildings there are no open storage areas located on the compound.

Near some of the buildings empty pallets were stored.

Buildings

BUILDING TYPE	LENGTH (M)	WIDTH (M)	HEIGHT (M)	UNITS OF SPACE PER ESH (M^3)	NUMBER OF ESH	REMARKS
Type D	**19.2**	**12.0**	**5.4**	**1,244**	4	
Type B	**36.0**	**13.5**	**3.9**	**1,895**	1	
Type F	**25.7**	**8.3**	**3.2**	**682**	1	
	23.6	**8.2**	**4.2**	**812**	1	
	5.0	**4.0**	**2.5**	**50**	1	Only detonators and fuzes
TOTALS				**4,684**	8	

All buildings are in a reasonable state of repair. The buildings of Type D are 'Igloo' type buildings with an earth cover.

The roofing of Type B buildings is of Ethernite, which probably contains asbestos. They are of the same construction as the buildings Type B in Brezovic but due to a lesser amount of snow in winter they are safe to use and need no extra support.

The Type F building is only used for the storage of fuzes and detonators.

The quality of the doors in the depot is poor and they need either to be repaired or replaced.

Security

Security can be summarized as follows:

ITEM	SITUATION	RECOMMENDATIONS
Perimeter Fence	There is a perimeter fence, but insufficiently high and robust.	▪ Repair and refurbish perimeter fence.
Electronic Security	There are no alarms on the ESHs or the perimeter. There is no lighting within the ammunition storage area. There is no CCTV.	▪ Install lighting system within the explosives area. ▪ Install Intruder detection Systems (IDS) or alarms on the ESH. ▪ Replace current locks with high security locks. ▪ Repair or replace doors on Type E Buildings.
Guard Force	The guard force is adequate to secure the area, in the absence of any electronic security measures. Any reduction in the guard force would severely compromise security. Control of access to the storage area is good through official entry points.	▪ Repair and refurbish perimeter fence.

Location

The ammunition storage area is located on the side of a hill.

To allow the depot to reach its full potential to store the permitted NEQ in HD 1.1 and HD 1.2 remedial action needs to be taken.

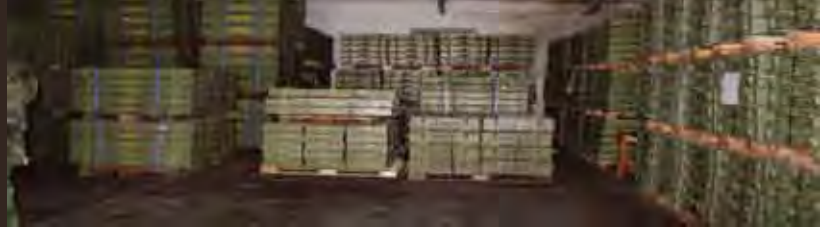
The vegetation around the buildings should be cleared to obtain a more open area around the buildings.

Summary

Taras is one of the proposed depots to be used in the future, it has the potential to be a safe and effective ammunition storage site.

The current standard of safety in storage is adequate.

Good attention is given to the basic rules of storing ammunition and accounting. There are stack-cards in each building. Special attention is given to the storage of ammunition containing fuzes and detonators. The rules governing the mixing of Compatibility Groups are applied.



Annex I - Assessment of the Air Force Ammunition Storage Area

Introduction

The Air Force ammunition storage area is located < 500 metres from the airport at Podgorica. There is one pre-fabricated ammunition storage building within the explosives area. Primary explosives, fuzes, etc are stored in 3 containers. Large quantities of bombs are stored in the open. None of the storage space will be used in the future.

General remarks

The floors of the building is clean and free of dust and rubbish. The building is accessible for forklifts. There is no electricity or light in the building or containers. Signs are posted indicating explosive- and fire hazards. Most ammunition is stored on pallets. Lightning protection is in place at the building and the containers. There is a road running < 100 metres from the open storage and the storehouse.

Due to the airfield and the road, the place is totally unsuited for the storage of ammunition in the quantities currently there.

Note

There are 25.8 tonnes of napalm for munitions located in this facility. They should be destroyed as a priority.

Annex J - Montenegro Ammunition Demilitarization Statistics

SER		AMMUNITION TYPE	QUANTITY (ROUNDS)	NEQ (KG) (PER ROUND)	AUW (KG) (PER ROUND)	TOTAL (NEQ) (KG)	TOTAL (AUW) (KG)	TOTAL (NEQ) (TONNES)	USA EXPORT QUANTITY (ROUNDS)	USA EXPORT QUANTITY (TONNES AUW)	PROPOSED USA DEMILITARIZATION QUANTITY (ROUNDS)	PROPOSED USA DEMILITARIZATION (TONNES AUW)	DEMILITARIZATION TOTAL (ROUNDS)	DEMILITARIZATION TOTAL (AUW) (TONNES)	REMARKS
(A)		(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
SURFACE TO AIR MISSILES (Including MANPADS) / STRELA															
1	MANPAD	SAM-7 / STRELA 9M31M	5	0.370	29.500	1.85	147.50	0.00		0.00	5	0.15	0	0.00	
2		SAM-7 / STRELA 9M32M	1,601	0.370	29.500	592.37	47,229.50	0.59		0.00	1,601	47.23	0	0.00	
3	Naval	SA-N-4 GECKO / SAM RZ 13	60	25.000	2,516.660	1,500.00	150,999.60	1.50		0.00	60	151.00	0	0.00	
ANTI-TANK WEAPONS /															
1		Anti-Tank Guided Weapon AT2 SAGGER / PO raketa "MALJUTKA"	2,089	0.500	30.000	1,044.50	62,670.00	1.04		0.00		0.00	2,089	62.67	
2		64mm BRB M80 / BRB 64mm M80 ZOLJA	14,251	0.420	6.750	5,985.42	96,194.25	5.99		0.00		0.00	14,251	96.19	
3		82 mm ATk Projectile for BsT (M60) / Metak 82 mm za BsT	4,525	0.620	11.000	2,805.50	49,775.00	2.81		0.00		0.00	4,525	49.77	
4		90 mm ATk Rocket M79 / Raketa 90 mm M79 OSA	5,969	0.750	8.430	4,476.75	50,318.67	4.48		0.00		0.00	5,969	50.32	
ARTILLERY / TANK AMMUNITION															
1	Artillery	105 mm HE Shell, TFG and TMP / Metak 105 mm, TFG i TMP	4,753	2.177	27.500	10,347.28	130,707.50	10.35		0.00		0.00	4,753	130.71	
2		105 mm HE Shell, POZ / Metak 105 mm, POZ	786	2.200	23.000	1,729.20	18,078.00	1.73		0.00		0.00	786	18.08	
3		105 mm Projectile, Smoke / Metak 105 mm, dimno	962	0.118	27.500	113.52	26,455.00	0.11		0.00		0.00	962	26.45	
4		105 mm Projectile, Smoke / Metak 105 mm, dimno	2,453	0.118	27.500	289.45	67,457.50	0.29		0.00		0.00	2,453	67.46	
5		105 mm Projectile, Illum / Metak 105 mm, osvetlj.	369	0.118	27.500	43.54	10,147.50	0.04		0.00		0.00	369	10.15	
6		130 mm HE Shell, TFG and TMP pb/p / Metak 130 mm, TFG i TMP pb/p	1,729	5.500	85.000	9,509.50	146,965.00	9.51		0.00		0.00	1,729	146.97	
7		130 mm HE Shell, TFG and TMP sb/p / Metak 130 mm, TFG i TMP sb/p	3,011	5.500	78.000	16,560.50	234,858.00	16.56		0.00		0.00	3,011	234.86	
8		130 mm HE Shell, POZ / Metak 130 mm, POZ	725	1.100	85.000	797.50	61,625.00	0.80		0.00		0.00	725	61.63	
9		130 mm Projectile, Illum / Metak 130 mm, osv. pb/p	275	0.186	68.500	51.15	18,837.50	0.05		0.00		0.00	275	18.84	
10		130 mm Projectile, Illump / Metak 130 mm, osv. sb/p	445	0.186	68.500	82.77	30,482.50	0.08		0.00		0.00	445	30.48	
11		155 mm projectile, smoke incend. / Metak 155 mm, dimno z.	89	0.186	75.000	16.55	6,675.00	0.02		0.00		0.00	89	6.68	
12		155 mm Projectile, Illum / Metak 155 mm, osv. z.	144	0.186	75.000	26.78	10,800.00	0.03		0.00		0.00	144	10.80	
1	MLRS	128 mm Rocket MLRS / Raketa 128 mm OGANJ	182	4.500	65.000	819.00	11,830.00	0.82		0.00		0.00	182	11.83	
1	Tank	100 mm HE Shell KOZ for T-12 / Metak 100 mm KOZ za T-12	3,116	0.840	38.500	2,617.44	119,966.00	2.62		0.00		0.00	3,116	119.97	
2		100 mm HE Shell POZ for T-12 / Metak 100 mm POZ za T-12	1,916	0.840	40.000	1,609.44	76,640.00	1.61		0.00		0.00	1,916	76.64	
3		100 mm HE Shell TFG for T-55 / Metak 100 mm TFG za T-55	2,163	1.460	42.000	3,157.98	90,846.00	3.16		0.00		0.00	2,163	90.85	
4		100 mm HE Shell KOZ for T-55 / Metak 100 mm KOZ za T-55	2,098	0.995	35.500	2,087.51	74,479.00	2.09		0.00		0.00	2,098	74.48	

SER		AMMUNITION TYPE	QUANTITY (ROUNDS)	NEQ (KG) (PER ROUND)	AUW (KG) (PER ROUND)	TOTAL (NEQ) (KG)	TOTAL (AUW) (KG)	TOTAL (NEQ) (TONNES)	USA EXPORT QUANTITY (ROUNDS)	USA EXPORT QUANTITY (TONNES AUW)	PROPOSED USA DEMILITARIZATION QUANTITY (ROUNDS)	PROPOSED USA DEMILITARIZATION (TONNES AUW)	DEMILITARIZATION TOTAL (ROUNDS)	DEMILITARIZATION TOTAL (AUW) (TONNES)	REMARKS
(A)		(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
5		100 mm HE Shell POZ for T-55 / Metak 100 mm POZ za T-55	1,379	0.065	43.000	89.64	59,297.00	0.09		0.00		0.00	1,379	59.30	
SMALL ARMS AMMUNITION (<14.5mm)															
1		7.62 mm Round	33,922,834	0.001	0.024	33,922.83	814,148.02	33.92	250,000	6.00		0.00	33,672,834	808.15	
2		7.62mm Round M84 (all types) / Metak 7,62mm za M84 (sve vrste)	5,253,762	0.001	0.028	5,253.76	147,105.34	5.25		0.00		0.00	5,253,762	147.11	
3		7.62 mm Round for Browning / Metak 7,62 mm za Browning	68,464	0.001	0.025	68.46	1,711.60	0.07		0.00		0.00	68,464	1.71	
4		7.9 mm Round (all types) / Metak 7,9 (sve vrste)	2,105,252	0.001	0.032	2,105.25	67,368.06	2.11		0.00		0.00	2,105,252	67.37	
5		12.7 mm Round for Browning / Metak 12,7 mm za Browning	1,511,066	0.002	0.170	3,022.13	256,881.22	3.02		0.00		0.00	1,511,066	256.88	
6		12.7 mm Round for DSKM / Metak 12,7 mm za DSKM	405,711	0.002	0.160	811.42	64,913.76	0.81		0.00		0.00	405,711	64.91	
7		14.5 mm Round / Metak 14,5 mm	40,749	0.003	0.280	122.25	11,409.72	0.12		0.00		0.00	40,749	11.41	
MORTAR AMMUNITION															
1		60 mm Mortar Bomb HE / Mina 60 mm, trenutna	46,761	0.210	2.330	9,819.81	108,953.13	9.82		0.00		0.00	46,761	108.95	
2		82 mm Mortar Bomb HE / Mina 82 mm, trenutna	123,364	0.636	5.600	78,459.50	690,838.40	78.46		0.00		0.00	123,364	690.84	
3		82 mm Mortar Bomb Smoke / Mina 82 mm, dimna	7,610	0.021	5.600	159.81	42,616.00	0.16		0.00		0.00	7,610	42.62	
4		120 mm Mortar Bomb HE / Mina 120 mm, LTF	17,463	2.526	16.500	44,111.54	288,139.50	44.11		0.00		0.00	17,463	288.14	
5		120 mm Mortar Bomb Smoke / Mina 120 mm, dimna	3,406	0.274	19.000	933.24	64,714.00	0.93		0.00		0.00	3,406	64.71	
6		120 mm Mortar Bomb Illum / Mina 120 mm, osvetlj.	226	0.274	17.500	61.92	3,955.00	0.06		0.00		0.00	226	3.96	
INFANTRY AMMUNITION															
1		Hand Grenade M75 / Bomba ručna M75	111,782	0.037	0.750	4,135.93	83,836.50	4.14		0.00		0.00	111,782	83.84	
2		Hand Grenade M50P3 and M52P3 / Bomba ručna M50P3 i M52P3	125,377	0.100	0.750	12,537.70	94,032.75	12.54		0.00		0.00	125,377	94.03	
3		Launched Grenade for HG M57 / Mina za RB M57	21,096	0.900	5.750	18,986.40	121,302.00	18.99		0.00		0.00	21,096	121.30	
4		Rifle Grenade (HEAT) TK / Mina TK	21,604	0.235	1.170	5,076.94	25,276.68	5.08		0.00		0.00	21,604	25.28	
5		Rifle Grenade (AP) TT / Mina TT	45,244	0.070	0.750	3,167.08	33,933.00	3.17		0.00		0.00	45,244	33.93	
6		Rifle Grenade (Smoke) TD / Mina TD	14,696	0.600	0.750	8,817.60	11,022.00	8.82		0.00		0.00	14,696	11.02	
7		Rifle Grenade (Illum) TO / Mina TO	20,307	0.600	0.750	12,184.20	15,230.25	12.18		0.00		0.00	20,307	15.23	
8		Grenade M79 BRK / PO bomba BRK M79	32,255	0.300	1.880	9,676.50	60,639.40	9.68		0.00		0.00	32,255	60.64	
ANTI-TANK MINES AND BULK EXPLOSIVES															
1		TMA-3 Anti-Tank Mine (ATM)	14,556	7.200	9.430	104,803.20	137,263.08	104.80		0.00		0.00	14,556	137.26	
2		TMA-4 ATM	10,488	5.500	8.000	57,684.00	83,904.00	57.68		0.00		0.00	10,488	83.90	
3		TMA-5 ATM	19,079	5.700	6.600	108,750.30	125,921.40	108.75		0.00		0.00	19,079	125.92	
4		Plastic Explosive PEP-500 / Eksploziv plastični PEP-500	23,831	1.000	1.000	23,831.00	23,831.00	23.83		0.00		0.00	23,831	23.83	
5		Explosive TNT / Eksploziv TNT	332,000	1.000	1.000	332,000.00	332,000.00	332.00		0.00		0.00	332,000	332.00	
NAVAL AMMUNITION, MINES AND TORPEDOES															
1		Sea Mine (Acoustic) SAM M80	120	242.000	1,000.000	29,040.00	120,000.00	29.04		0.00		0.00	120	120.00	FUZED
2		Sea Mine (Analogue Inductive) AIM M70	100	725.000	1,100.000	72,500.00	110,000.00	72.50		0.00		0.00	100	110.00	FUZED
3		Sea Mine (Analogue Inductive) AIM M82	297	490.000	797.000	145,530.00	236,709.00	145.53		0.00		0.00	297	236.71	FUZED / RDX
4		Sea Mine (Anchored Acoustic) SAG - 2b	240	115.000	600.000	27,600.00	144,000.00	27.60		0.00		0.00	240	144.00	FUZED

SER		AMMUNITION TYPE	QUANTITY (ROUNDS)	NEQ (KG) (PER ROUND)	AUW (KG) (PER ROUND)	TOTAL (NEQ) (KG)	TOTAL (AUW) (KG)	TOTAL (NEQ) (TONNES)	USA EXPORT QUANTITY (ROUNDS)	USA EXPORT QUANTITY (TONNES AUW)	PROPOSED USA DEMILITARIZATION QUANTITY (ROUNDS)	PROPOSED USA DEMILITARIZATION (TONNES AUW)	DEMILITARIZATION TOTAL (ROUNDS)	DEMILITARIZATION TOTAL (AUW) (TONNES)	REMARKS
(A)		(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
5		Sea Mine (Anchored Acoustic) SAGA M74/1	100	250.000	1,000.000	25,000.00	100,000.00	25.00		0.00		0.00	100	100.00	FUZED
6		Sea Mine GMI 100 "ROKAN"	100	104.000	192.000	10,400.00	19,200.00	10.40		0.00		0.00	100	19.20	FUZED / RDX
7		Depth Charge RDB-60	100	23.500	133.000	2,350.00	13,300.00	2.35		0.00		0.00	100	13.30	TNT
8		Depth Charge PDRB M65	12,000	0.471	1.650	5,652.00	19,800.00	5.65		0.00		0.00	12,000	19.80	TNT
9		Depth Charge MDB M73	324	30.000	47.000	9,720.00	15,228.00	9.72		0.00		0.00	324	15.23	TNT
10		Limpet Mine MP M71	547	3.000	14.500	1,641.00	7,931.50	1.64		0.00		0.00	547	7.93	TNT
11		Limpet Mine (Deep Sea) DPM M66	354	27.000	50.000	9,558.00	17,700.00	9.56		0.00		0.00	354	17.70	TNT
12		Torpedo SET 53	20	92.000	1,460.000	1,840.00	29,200.00	1.84		0.00		0.00	20	29.20	
13		Torpedo 53 VA	70	210.000	1,900.000	14,700.00	133,000.00	14.70		0.00		0.00	70	133.00	
14		Oxidizer AK-20K (LITRES)	54,740	1.600	1.600	87,584.00	87,584.00	87.58		0.00		0.00	0	0.00	Included as ZERO as seperate project required.
15		Fuel TG2 (LITRES)	48,420	0.850	0.850	41,157.00	41,157.00	41.16		0.00		0.00	0	0.00	
1	SSM STYX	Rocket PBR P-20 not fueled (375 kg TAG and 225 kg Propellant)	63	600.000	23,625.000	37,800.00	1,488,375.00	37.80		0.00		0.00	63	1,488.38	
2		Rocket PBR P-21 not fueled (375 kg TAG and 225 kg Propellant)	31	600.000	11,625.000	18,600.00	360,375.00	18.60		0.00		0.00	31	360.38	
3		Rocket PBR P-22 not fueled (375 kg TAG and 225 kg Propellant)	19	600.000	7,125.000	11,400.00	135,375.00	11.40		0.00		0.00	19	135.38	
1	Gun	76.2 mm (ship) GUN AK 726	12,787	0.400	12.700	5,114.80	162,394.90	5.11		0.00		0.00	12,787	162.39	
AIR AMMUNITION															
1	A/C Bombs	BL-755 Cluster Bomb Unit (CBU)	353	147.000	507.000	51,891.00	178,971.00	51.89		0.00	353	178.97	0	0.00	
2		Bomb SAB-100	252	45.000	141.000	11,340.00	35,532.00	11.34		0.00		0.00	252	35.53	
3		Bomb M80, FAB-100 / Bomba M80, FAB-100	863	39.000	116.666	33,657.00	100,682.76	33.66		0.00		0.00	863	100.68	
4		Bomb M79, FAB-250 / Bomba M79, FAB-250	1,196	105.000	223.000	125,580.00	266,708.00	125.58		0.00		0.00	1,196	266.71	
5		Bomb M91, FAB-275 Aerosol / M91 FAB - 275	52	120.000	309.000	6,240.00	16,068.00	6.24		0.00		0.00	52	16.07	Liquid Explosive
6		Bomb FOTAB-100-50P	97	39.000	70.000	3,783.00	6,790.00	3.78		0.00		0.00	97	6.79	
7		Bomb DURANDAL / Bomba DURANDAL	110	15.000	460.000	1,650.00	50,600.00	1.65		0.00		0.00	110	50.60	
8		Bomb OFAB-250-270 M58 / Bomba OFAB-250-270 M58	49	97.000	330.000	4,753.00	16,170.00	4.75		0.00		0.00	49	16.17	
9		Bomb OFAB-250-270 M79 / Bomba OFAB-250-270 M79	52	97.000	330.000	5,044.00	17,160.00	5.04		0.00		0.00	52	17.16	
10		Bomb K-2-90 / Bomb K-2-90	200	44.000	153.000	8,800.00	30,600.00	8.80		0.00		0.00	200	30.60	
11		Bomb PRAB-250J / Bomba PRAB-250J	18	80.000	331.000	1,440.00	5,958.00	1.44		0.00		0.00	18	5.96	
1	AGM	57 mm Rocket, TFG / Raketa 57 mm, TFG	2,213	0.285	5.580	630.70	12,348.54	0.63		0.00		0.00	2,213	12.35	
2		57 mm Rocket, HEAT / Raketa 57 mm, kumulativna	2,564	0.297	5.580	760.23	14,307.12	0.76		0.00		0.00	2,564	14.31	
3		57 mm Rocket, TFG Guided / Raketa 57 mm, TFG navodjena	1,703	0.285	5.580	485.35	9,502.74	0.49		0.00		0.00	1,703	9.50	
4		57mm Rocket HEAT, Guided / Raketa 57mm kumulativna, navodjena	5,191	0.297	5.580	1,541.73	28,965.78	1.54		0.00		0.00	5,191	28.97	
5		57 mm TG M 75	2,569	1.373	2.200	3,527.24	5,651.80	3.53		0.00		0.00	2,569	5.65	
6		57 mm VF (ship)	1,796	1.373	2.200	2,465.91	3,951.20	2.47		0.00		0.00	1,796	3.95	
7		57 mm NF (ship)	909	1.373	2.200	1,248.06	1,999.80	1.25		0.00		0.00	909	2.00	
8		57 mm TKL PROBS (Ship)	1,656	1.475	2.700	2,442.60	4,471.20	2.44		0.00		0.00	1,656	4.47	
7		Missile AGM-65B MAVERICK / Raketa AGM-65B, MAVERIK	43	15.000	400.000	645.00	17,200.00	0.65		0.00		0.00	43	17.20	
8		128 mm Rocket Illuminating SVITAC (ship)	1,606	2.400	30.000	3,854.40	48,180.00	3.85		0.00		0.00	1,606	48.18	

SER		AMMUNITION TYPE	QUANTITY (ROUNDS)	NEQ (KG) (PER ROUND)	AUW (KG) (PER ROUND)	TOTAL (NEQ) (KG)	TOTAL (AUW) (KG)	TOTAL (NEQ) (TONNES)	USA EXPORT QUANTITY (ROUNDS)	USA EXPORT QUANTITY (TONNES AUW)	PROPOSED USA DEMILITARIZATION QUANTITY (ROUNDS)	PROPOSED USA DEMILITARIZATION (TONNES AUW)	DEMILITARIZATION TOTAL (ROUNDS)	DEMILITARIZATION TOTAL (AUW) (TONNES)	REMARKS
(A)		(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
9		128 mm Rocket (AG) M80 "MUNJA" / VZ - 128 mm M80 "MUNJA"	307	2.400	64.000	736.80	19,648.00	0.74		0.00		0.00	307	19.65	
1	Cannon	20 mm Cannon Round TZG and TZOG for HISPANO / Metak 20mm TZG i TZOG za HISPANO	418,598	0.003	0.340	1,046.50	142,323.32	1.05		0.00		0.00	418,598	142.32	
2		20 mm Cannon Round PZ for HISPANO / Metak 20 mm PZ za HISPANO	181,245	0.037	0.340	6,706.06	61,623.30	6.71		0.00		0.00	181,245	61.62	
3		23 mm Cannon Round, TGF M78 / Metak 23 mm, TGF M78	21,000	0.037	0.450	777.00	9,450.00	0.78		0.00		0.00	21,000	9.45	
4		30 mm Cannon Round TOG for AA canon M53/59 / Metak 30mm TOG za PA top M53/59	53,233	0.037	1.570	1,943.00	83,575.81	1.94		0.00		0.00	53,233	83.58	
5		30 mm Cannon Round PZO for AA canon M53/59 / Metak 30mm PZO za PA top M53/59	96,855	0.037	1.570	3,583.63	152,062.35	3.58		0.00		0.00	96,855	152.06	
6		40 mm Cannon Round, NF M75 / Metak 40 mm, NF M75	2,055	0.350	3.700	719.25	7,603.50	0.72		0.00		0.00	2,055	7.60	
7		40 mm Cannon Round, VF M75 / Metak 40 mm, VF M75	2,959	0.350	3.700	1,035.65	10,948.30	1.04		0.00		0.00	2,959	10.95	
8		40 mm Cannon Round, Bofors	9,608	0.350	3.700	3,362.80	35,549.60	3.36		0.00		0.00	9,608	35.55	
9		40 mm Cannon Round, TOG / Metak 40 mm, TOG	10,298	0.350	3.700	3,604.30	38,102.60	3.60		0.00		0.00	10,298	38.10	
10		40 mm Cannon Round, POZ M75 for L70 and D70 / Metak 40 mm, VF M75	227	0.350	3.700	79.45	839.90	0.08		0.00		0.00	227	0.84	
1	Fuzes	Fuze, AUFK-M91 / Upaljač, AUFK-M91	5,484	0.005	3.500	27.42	19,194.00	0.03		0.00		0.00	5,484	19.19	
2		Fuze, AUN M67 / Upaljač, AUN M67	2,516	0.005	1.960	12.58	4,931.36	0.01		0.00		0.00	2,516	4.93	
3		Fuze, AVU -ET / Upaljač. AVU - ET	2,135	0.005	2.000	10.68	4,270.00	0.01		0.00		0.00	2,135	4.27	
4		Fuze TM-24 A / Upaljač TM-24 A	180	0.005	1.230	0.90	221.40	0.00		0.00		0.00	180	0.22	
5		Fuze TM-24 B / Upaljač TM-24 B	200	0.005	1.320	1.00	264.00	0.00		0.00		0.00	200	0.26	
6		Fuze, UTI -1 / Upaljač, UTI -1	1,978	0.005	0.580	9.89	1,147.24	0.01		0.00		0.00	1,978	1.15	
7		Fuze, UTI -2 / Upaljač, UTI -2	5,078	0.005	0.400	25.39	2,031.20	0.03		0.00		0.00	5,078	2.03	
8		Fuze, UTI -2 P1 / Upaljač, UTI-2 P1	84	0.005	0.453	0.42	38.05	0.00		0.00		0.00	84	0.04	
9		Fuze, V-5M / Upaljač, V-5M	2,593	0.005	0.600	12.97	1,555.80	0.01		0.00		0.00	2,593	1.56	
10		Fuze, V-5K / Upaljač V-5K	2,585	0.005	0.343	12.93	886.66	0.01		0.00		0.00	2,585	0.89	
11		Safety Match, Z-2 / Zapaljivač Z-2	3,063	0.010	2.750	30.63	8,423.25	0.03		0.00		0.00	3,063	8.42	
1	Pyrotechnics	Explosive Mechanism MDV-4 / Piromehanizam MDV-4	657	0.001	0.375	0.66	246.38	0.00		0.00		0.00	657	0.25	
1	Napalm	Napalm (In Containers as Liquid)	1	25,835.000	25,835.000	25,835.00	25,835.00	25.84		0.00		0.00	1	25.84	
1	Miscellaneous	Decoy, IC / Mamac, IC	15,870	0.001	0.170	15.87	2,697.90	0.02		0.00		0.00	15,870	2.70	
2		Decoy, IC - 1 / Mamac, IC - 1	400	0.001	0.410	0.40	164.00	0.00		0.00		0.00	400	0.16	
3		Decoy, PA - 1 / Mamac, PA - 1	900	0.001	0.275	0.90	247.50	0.00		0.00		0.00	900	0.25	
4		Guided Missile Launcher LAU-117A / Lanser LAU-117A	7	0.000	61.400	0.00	429.80	0.00		0.00		0.00	7	0.43	
5		Retarding Device AB, FAB-250 / Uređaj za kočenje, AB, FAB-250	64	0.000	31.250	0.00	2,000.00	0.00		0.00		0.00	64	2.00	
6		Stabilizer for FAB-250 / Stabilizator za FAB-250	1,032	0.000	166.666	0.00	171,999.31	0.00		0.00		0.00	1,032	172.00	
												0.00	0		
TOTALS			**45,246,054**			**1,732,717**	**10,035,905**	**1,733**	**250,000**	**6**	**2,019**	**377**	**44,981,248**	**9,611**	

Annex K - Estimate of explosives, propellants and hazardous materials

EXPLOSIVE AND PROPELLANT TYPE	ARMY		NAVY		AIR FORCE		TOTAL QUANTITY (TONNES)	REMARKS
	GENERIC AMMUNITION TYPES	QUANTITY[49] (TONNES)	GENERIC AMMUNITION TYPES	QUANTITY (TONNES)	GENERIC AMMUNITION TYPES	QUANTITY (TONNES)		
EXPLOSIVES								
BARUT Rocket Motor			RGB 60, RZ 13 P-20, P-21, P-22	39.32	BRZ 128mm KUM, BRZ 128mm TFG, Rocket BR-2-57mm, Rocket BR-1-57mm, BR 20-57mm,	18.97	58.29	
Plastic Explosive	Hand Grenade M75 PEP-500	22.72					22.72	
Hexatonal (RDX/TNT/AL/ Wax) (40/40/15/5)			GMI-100 Rockan	10.40			10.40	
RDX (Hexogen)	ATK Mines HE Shell 100mm+	6.03	Initiating Charges	0.71	Rocket BR-257mm, Rocket BR-1-57mm RocketbS-5K, Rocket S-5M, MALJUTKA,	6,647.70	6,654.44	
RDX/Aluminium (80/20)	30mm TOG	1.53					1.53	
TAH 76			AIM M82, SET 53, 53 VA, P-20, P-21, P-22	205.50			205.50	
Tetryl	82mm, 105mm, 120mm, 155mm HE Shell	1.2		0.50			1.70	
TNT/RDX (40/60)	ATK Mines Hand Grenade M79	11.01			Rocket AGM-65 128mm KUM,	0.80	11.81	
TNT/RDX (50/50)	Mines ATK Rockets	26.04			BL 755, OFAB 250M78, OFAB 250M58,K-2-90	33.59	59.63	

[49] This is an estimated quantity based on the ammunition for disposal statistics provided by the Montenegrin General Staff.

EXPLOSIVE AND PROPELLANT TYPE	ARMY		NAVY		AIR FORCE		TOTAL QUANTITY (TONNES)	REMARKS
	GENERIC AMMUNITION TYPES	QUANTITY[49] (TONNES)	GENERIC AMMUNITION TYPES	QUANTITY (TONNES)	GENERIC AMMUNITION TYPES	QUANTITY (TONNES)		
TNT (Pressed)	Hand Grenades 20mm Cannon	375.71	RGB 60, PDRB-M65, MDB M73, MP M71, DPM M66	41.53	23mm TFG, PZZ, PZOZ	6.3	423.54	
TNT (Cast)	ATK Mines Mortar HE HE Shell 100mm+	597.71	SAM 80, AIM M70, SAG-2B, SAGA M74, Torpedoes	169.54	Rocket BRZ-128mm TFG, FAB 100, FAB 250, DURANDAL, PRAB-250 J,	163.07	930.32	
PROPELLANTS								
Black Powder	Various	0.18	Torpedoes	0.03				
DGB	Various	14.76						
HC Smoke	Various	2.65						
NCB	Various	188.97						
NGB	Various	25.49						
White Phosphorous	Various	47.82						
Napalm					–	**25.835**		
ELECTROLYTES, LIQUID PROPELLANTS AND OXIDISERS								
Electrolytes			SET 53, 53 AV, P 831, P 916	45.14			45.14	29,487 Litres
Liquid Rocket Fuel [50]			TG 02	41.16			41.16	48,424 Litres
Oxidisers [51]			AK 20K	87.58			87.58	54,738 Litres

Table 10: Explosives, propellants and fuels for destruction

[50] The composition is: KSILIDINA Isomer 50% ± 2%, di – tri ethylamine 50% ± 2%, with a maximum amount of 1.5% of di-ethylamine. Specific weight: 0.845 ± 0.010 gr / cm^3

[51] The composition is: 73.1% HNO_3 , 17.5 – 22.5% N_2O_4 , the other percentages are water, phosphoric acid, Fluorine-hydrogen and mechanical additions. Specific weight 1.576 – 1.603 gr / cm^3

Annex L - Organizations and Individuals Consulted

ORGANIZATION	INDIVIDUAL	APPOINTMENT	TEL	E MAIL
INTERNATIONAL				
EU CAFAO	Phil Johnson	**Senior IBM Advisor**	+381 63 634273	Phil.johnson@octas.com
Norwegian Embassy	Lieutenant Colonel Terje Haaverstad	**Defence Attaché**	+381 11 367 0404	teha@mfa.no
SEESAC	Adrian Wilkinson	**Head**	+381 63 217350	adrian.wilkinson@undp.org
UNDP Podgorica	Hans Risser	**SALW Project Manager / EUSAC CTA**	+381 63 344857	hans.risser@undp.org
UK Embassy	Colonel Simon Vandeleur	**Defence Attaché**	+381 11 306 1009	simon.vandeleur@fco.gov.uk
US Embassy	Dr Alan J Carlson	**Political and Economic Counsellor**	+382 81 225417	Carlsonaj2@state.gov
US DTRA	Lieutenant Colonel Jeffrey Predmore	**Chief Counter Proliferation Branch**	+1 703 767 2731	Jeffrey.predmore@dtra.mil
NATIONAL				
GOVERNMENT				
General Staff	Lieutenant General Jovan Lakčević	**Chief of General Staff**	+382 81 483602	
General Staff	Vice Admiral Dragan Samardzic	**Deputy Chief of General Staff**	+382 81 483 215	
General Staff	Colonel Dragislav Vuksanović	**Head of Logistics Department (J-4)**	+382 81 224146	logistika@vcg.cg.yu
General Staff	Lieutenant Colonel Popović	**Logistic Officer**	+382 69 027440	
General Staff	Lieutenant Colonel Vukadin Tomasović	**Ammunition Officer**	+382 81 483203	
General Staff	Lieutenant Colonel Dragutin Nikcevic	**Ammunition Officer**	+382 81 483523	
Navy Staff	Captain Rajko Bulatović	**Chief of Navy**	+382 88 640101	
Navy Staff	Captain Branislav Keković	**Deputy Chief of Navy**	+382 88 640213	
Navy Staff	Colonel Sead Cvrk	**Chief of Navy Logistics Department**	+382 88 640245	
Navy Staff	Colonel Živko Krunić	**Commander of 367 Logistic Brigade**	+382 88 640213	
Navy Staff	Commander Dragoslav Pumpalović	**Chief of Navy Department for Operational Planning**	+382 88 640199	
Navy Staff	Commander (Retired) Stevan Ćuk	**Technical Specialist**		
Navy Staff	Lieutenant Colonel Jozef Kovac	**Technical Specialist**	+381 69 276637	kovacj@cg.yu
Navy Staff	Major Nebojša Luković	**Logistics Officer**	+382 88 840417	
Ministry of Interior	Zoran Begović	**Chief Sector Emergency Situations and Civil Security**	+381 81 247132	Mup.emergency@cg.yu
Ministry of Interior	Radovan Ljumović	**Planning, Development, Analysis and Information Issues**	+381 67 284304	dihr.mup@cg.yu

ORGANIZATION	INDIVIDUAL	APPOINTMENT	TEL	E MAIL
COMMERCIAL AND NGO				
Booster Company	Aleksandar Boxovic	**Director**	+382 83 731201	booster@cg.yu
Hemosan Company	Zoran Nikitivic	**General Manager**	+381 67 314218	hemosan@cg.yu
Poliex Company	Slavko Vujisic	**Director**	+381 87 241634	
Yugo Import Montenegro	Zoran Damjanovic	**Executive Director**	+381 81 242400	
Zeljezara Niksic AD	Zujovic Radisav	**Director**	+381 83 202203	rzujovic@znk.cg.yu
'4th November' Company	Vitomir Medojevic	**Technical Director**	+381 84 471983	Krusik-4nov@og.yu
	Danila Saikic	**Executive Director**	+381 84 472984	Krusik-4nov@og.yu

Annex M – Definitions

The definitions used in this assessment are in accordance with the definitions contained in RMDS/G 02.10 (Guideline) Edition 4, 20 July 2006 – Glossary of SALW terms and abbreviations.

M.1.1
accident
an undesired event, which results in **harm**

Note: Modified from definition in OHSAS 18001:1999,

M.1.2
ammunition
See **munition**

M.1.3
deflagration
the conversion of **explosives** into gaseous products by chemical reactions at or near the surface of the explosive (cf **detonation**).

M.1.4
demilitarisation
the complete range of processes that render weapons, ammunition, mines and explosives unfit for their originally intended purpose. [52]

Demilitarisation not only involves the final destruction process, but also includes all of the other transport, storage, accounting and pre-processing operations that are equally as critical to achieving the final result.

M.1.5
destruction
the process of final conversion of weapons, ammunition, mines and explosives into an inert state that can no longer function as designed.

M.1.6
detonator
a device containing a sensitive **explosive** intended to produce a **detonation** wave. [AAP-6]

M.1.7
detonation
the rapid conversion of **explosives** into gaseous products by means of a shock wave passing through the explosive (c.f. **deflagration).** Typically, the velocity of such a shock wave is more than two orders of magnitude higher than a fast **deflagration**).

M.1.8
diurnal cycling
the exposure of ammunition and explosives to the temperature changes induced by day, night and change of season.

M.1.9
disposal site
an area authorised for the destruction of ammunition and explosives by detonation and burning.

M.1.10
explosives
a substance or mixture of substances, which, under external influences, is capable of rapidly releasing energy in the form of gases and heat. [AAP-6].

[52] IMAS 11.10.

M.1.11
explosive materials
components or ancillary items, which contain some **explosives**, or behave in an explosive manner, such as **detonators** and **primers**.

M.1.12

explosive ordnance

all munitions containing **explosives**, nuclear fission or fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms **ammunition**; all **mines**, torpedoes and depth charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature. [AAP-6]

M.1.13

Explosive Ordnance Disposal (EOD)

the detection, identification, evaluation, render safe, recovery and final disposal of unexploded explosive ordnance. It may also include the rendering-safe and/or disposal of such explosive ordnance, which have become hazardous by damage or deterioration, when the disposal of such explosive ordnance is beyond the capabilities of those personnel normally assigned the responsibility for routine disposal. [53]

The presence of ammunition and explosives during SALW Control operations will inevitably require some degree of EOD response. The level of this response will be dictated by the condition of the ammunition, its level of deterioration and the way that it is handled by the local community.

M.1.14

fuze

a device, which initiates an **explosive** train. [AAP-6]

M.1.15

lachrymatory ammunition

lachrymatory ammunition contains chemical compounds that are designed to incapacitate by causing short-term tears or inflammation of the eyes.

M.1.16

magazine

any building, structure or container approved for the storage of explosive materials.

M.1.17

munition

a complete device charged with **explosives**, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material for use in military operations, including **demolitions**. [AAP-6].

Note: In common usage, 'munitions' (plural) can be military weapons, ammunition and equipment.

M.1.18

NATO

(North Atlantic Treaty Organisation)

[53] UN Guidelines for Stockpile Destruction, June 2000.

M.1.19

primer

a self-contained **munition** which is fitted into a cartridge case or firing mechanism and provides the means of igniting the propellant charge.

M.1.20

safe

the absence of risk. Normally the term **tolerable risk** is more appropriate and accurate.

M.1.21

Safe to Move

a technical assessment, by an appropriately qualified technician or technical officer, of the physical condition and stability of ammunition and explosives prior to any proposed move.

> *Note: Should the ammunition and explosives fail a 'Safe to Move' inspection, then they must be destroyed in situ, or as close as is practically possible, by a qualified EOD team acting under the advice and control of the qualified technician or technical officer who conducted the initial Safe to Move inspection.*

M.1.22

safety

the reduction of risk to a tolerable level. [ISO Guide 51:1999(E)]

degree of freedom from unacceptable **risk**. [ISO Guide 51: 1999(E)]

M.1.23

Small Arms and Light Weapons (SALW)

all lethal conventional munitions that can be carried by an individual combatant or a light vehicle, that also do not require a substantial logistic and maintenance capability.

> *Note: There are a variety of definitions for SALW circulating and international consensus on a 'correct' definition has yet to be agreed. For the purposes of RMDS/G the above definition will be used.*

M.1.24

standard

a standard is a documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose.

> *Note: RMDS/G aim to improve safety and efficiency in SALW Control by promoting the preferred procedures and practices at both headquarters and field level. To be effective, the standards should be definable, measurable, achievable and verifiable.*

M.1.25

standing operating procedures (SOPs)

standard operating procedures

instructions, which define the preferred or currently established method of conducting an operational task or activity.

> *Note: Their purpose is to promote recognisable and measurable degrees of discipline, uniformity, consistency and commonality within an organization, with the aim of improving operational effectiveness and safety. SOPs should reflect local requirements and circumstances.*

M.1.26

stockpile

in the context of SALW, the term refers to ..... a large accumulated stock of **weapons** and **EO**.

M.1.27

stockpile destruction

the physical activities and destructive procedures leading to a reduction of the national **stockpile**.

M.1.28

stockpile management

those procedures and activities regarding SALW safety and security in accounting, storage, transportation and handling.

M.1.29

tolerable risk

risk, which is accepted in a given context based on the current values of society. [ISO Guide 51: 1999 (E)]

M.1.30

Unexploded Ordnance (UXO)

explosive ordnance which has been primed, fuzed, armed or otherwise prepared for action, and which has been dropped, fired, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel or material and remains unexploded either by malfunction or design or for any other cause. [54]

[54] NATO Definition.

Annex N - Bibliography

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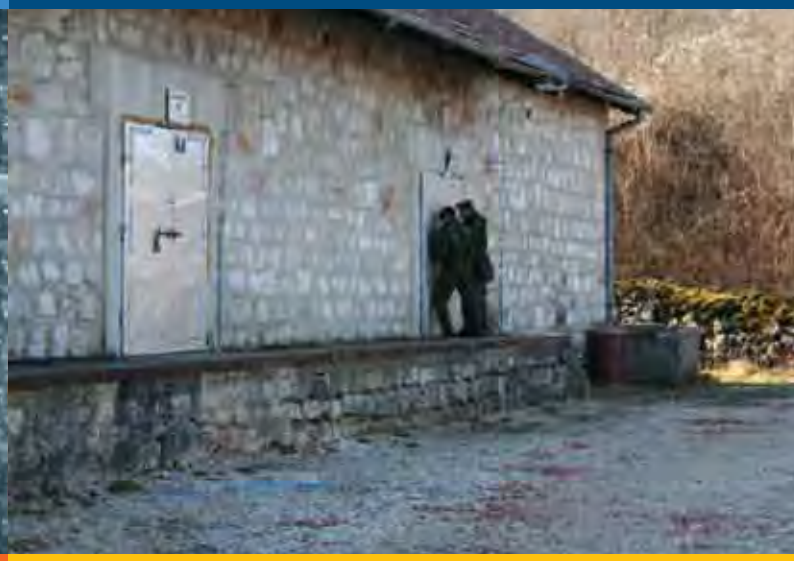

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