Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

RAP4 (M4) PAINTBALL WEAPON SYSTEM
STANDARD OPERATING PROCEDURE

1. The purpose of this SOP is to establish the policies, procedures and safety guidelines for issue, turn in and operation of the RAP4 training system.

2. Mission: To provide organizations with the equipment to conduct force on force or other tactical training in an environment and with equipment that is as realistic as possible, while maintaining a safe and effective training scenario.

Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

TABLE OF CONTENTS

1. INTRODUCTION.

a. The RAP4 paintball weapon system allows users the opportunity to conduct realistic force on force training in multiple environments with positive confirmation of hits on target. The RAP4 closely approximates the M4 weapon system. The RAP4 shoots .43 caliber paintballs from metal shell casings and is fed from 20 round magazines. The RAP4 has a fire selector switch for safe, semi and fully automatic fire. The bolt assembly ejects the shell casings like a standard rifle. It operates from a 45gram CO2 canister concealed in the adjustable stock. Each canister allows approximately 200 shots.

b. MTC has 4 ½ complete sets of weapons and required safety equipment for issue. Each set is made of the following components: 1 wood carrying case, 4 RAP4 Rifles, 24 Magazines, 8 45gram CO2 cylinders, 4 cleaning kits, 4 bottles of weapon oil, 1 operators manual, 1 MTC RAP4 SOP, 4 V-type goggles with face mask, paintballs and alloy / plastic casings. Units can reserve RAP4 weapons system through the MTC Logistics using the Training Support Complex request form or calling the MTC Logistics Office at 708-824-6501 / 6502 / 6503.

2. PREREQUISITES.

a. Prior to being issued this equipment units must have a DA Form 1687 Delegation of Authority and an Assumption of Command memorandum on file with MTC Logistics. Additionally the individual(s) named on the DA 1687 must be certified by MTC logistics for use of the equipment. Certification is accomplished by attending a short course covering personnel safety, procedures for issue and turn-in and operations and maintenance of the equipment. This course takes approximately 30 minutes includes video and hands on training. Upon completion, the individuals attending with course will be added to a certification list, which is maintained in MTC Logistics.

b. Certification is good indefinitely.

3. RESPONSIBILITIES

a. MTC Logistics:

(1) Is responsible for periodically (at least quarterly) conducting certification courses for using units.

(2) Will issue equipment in a ready to use state, air tanks full, ammunition in the kits full and consisting of at least 2700 rounds of paintball ammunition with at least 480 of this already cased.

(3) Will ensure that necessary cleaning equipment and lubricants are issued with the equipment.

(4) Will inspect all equipment with the using unit at issue and turn-in.

b. Using Unit hand receipt holder:

(1) Will ensure that all equipment is cleaned. Weapons will be oiled, cleaned and maintained similar to any other weapon and IAW the operator's manual and this SOP provided in each case.

(2) Will ensure that whatever quantity of cased ammunition received at issue, is replaced and ready for the next unit. i.e. The unit draws 1200 rounds of cased ammunition in their RAP4 set at the time of issue. When the unit turns in the equipment, they will turn in the equipment with 1200 rounds of cased ammunition.

(3) Will complete, as needed, DA Form 2404 identifying any deficiencies with any of the equipment and provide the DA Form 2404 to MTC Logistics.

(4) Will ensure that settings on the weapons are not changed or in anyway altered. The settings for velocity and air consumption are set to provide for safe operation, maximum performance and maximum number of shots fired. Altering these settings will result in a negative impact on operation of the equipment and will likely reduce the number of shots fired. Additionally each weapon is chronographed to ensure that projectile velocity is within safe operational limits.

4. EQUIPMENT

a. Weapon specifications:

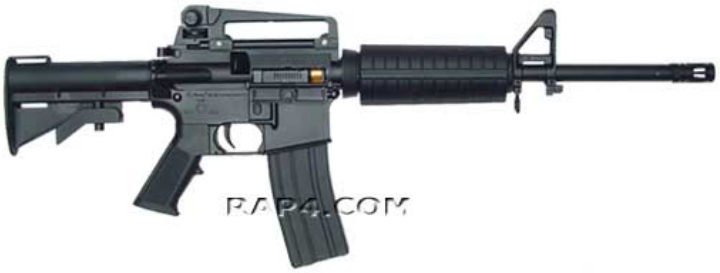


Figure 1. RAP4

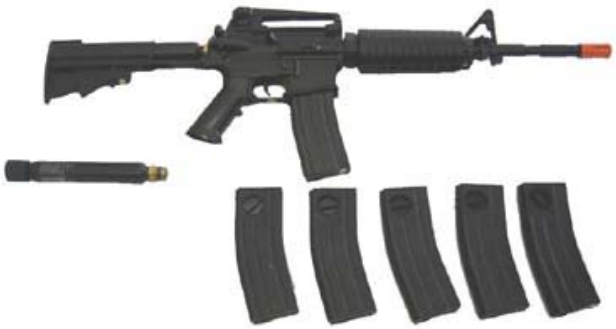


Figure 2. RAP4 with CO2 bottles and Magazines

Specification	**RAP4**
Whole length	32 inch (820 mm)
Whole weight	6.4 lb (2.9 kg)
Caliber	0.43 inch (11.3 mm)
Load of magazine	20 grains
Energy source	CO2
Tank capacity	1.4 oz (45 gm) stainless CO2 steel tank
Shot quantity	~ 50 times per 0.4 oz (11.4 gm) CO2
Coherent shooting velocity	2-8 times/sec. (adjustable)
Muzzle velocity	250 - 450 +/- 10% ft/sec (adjustable) 80 - 150 +/- 10% m/sec (adjustable)
Stir energy	1.5-2.5 J (adjustable)
Max. shot range	200 ft (60 m) (adjustable)
Efficient shot range	100 ft (30 m) straight
Paintball diameter	0.43 inch (11.1 mm)
Paintball weight	0.029 oz (0.8 gm)
Cartridge case spec	0.5 inch (12.8 mm)
Cartridge case material	aluminum alloy, biodegradable plastics

b. RAP4 sets issued from MTC as described in paragraph 1.b., and as listed in Appendix A, weigh approximately 75lbs per set. These are a two man lift, units should send an appropriate number of personnel to draw the equipment.

b. Goggles / Mask:

Figure 3. V type goggle and mask

c. Ammunition:

(1) The RAP4 does not fire standard .68 cal paintball ammunition. The RAP4 fires .43 cal paintball ammunition which comes both cased and uncased. Paintballs must be cased prior to loading in a magazine. Failure to case the paintballs will result in weapon malfunction and paintballs being broken in the magazine and the rifle.

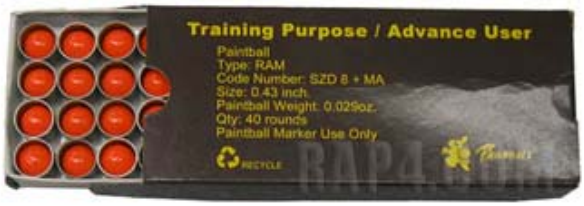


Figure 4. cased paintball ammunition.

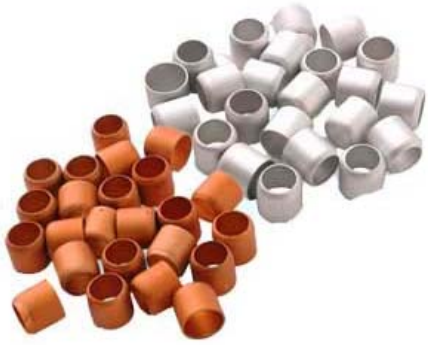


Figure 5. Alloy and plastic casings

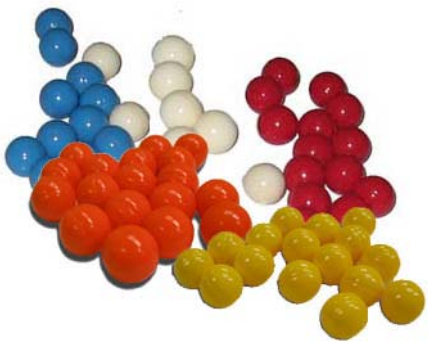


Figure 6. Uncased paintballs

(2) Using units may purchase their own supplies of ammunition for the RAP4. However in order to ensure individual safety and prevent damage to the equipment the only ammunition authorized for use in the RAP4 weapon system is .43 cal paintballs and associated casings purchased through the RAP4 manufacturer, Real Action Paintball. Units can contact Real Action Paintball at www.rap4.com or 408-727-3144.

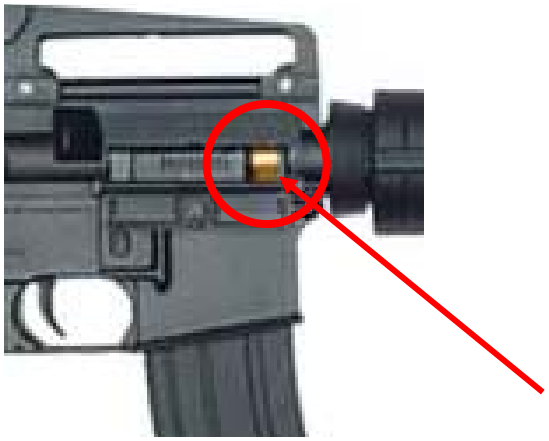
5. OPERATIONS.

a. RAP4 rifles maybe used in any tactical environment, but are best suited for close quarters battle drills, such as building clearing and MOUT type operations due to their reduced ranges. When used in an outdoor scenario units will use the biodegradable plastic casings, when available.

b. INSTALLING THE CO2 BOTTLE: In order to load the CO2 bottle into the weapon the butt stock is first removed. Locate the latch under the butt stock and near the receiver. Press this latch and pull the butt stock off the weapon. Put two drops of the provided oil onto the threads in the back of the rifle then screw the CO2 bottle into the receiver. Slide the butt stock over the CO2 bottle and reattached the butt stock. To open the CO2 valve slide the butt stock forward just like the M4, by depressing the latch under and at the rear of the butt stock and sliding the stock forward. Turn the knob at the back of the CO2 bottle 2 full turns to open the valve. Do not turn the valve more that 2 full turns as this may cause the valve to stick in the open position. Once this is complete extend the butt stock.

c. LOADING THE MAGAZINE: To load the magazine first find the dial on the side of the magazine. Turn it clock wise until it stops turning, do not force the dial. Once this is done pick up one round of cased ammunition. The casing has a flat side and a rounded side. The flat side of the casing is loaded facing the front of the magazine, in other words the flat side of the casing faces the muzzle end of the rifle. The rounded side is loaded to the back of the magazine or toward the butt end of the rifle. NOTE: Failure to properly load the magazine will result in weapon malfunction and cause paintballs to be broken in the weapon.

d. LOADING AND RELOADING THE RAP4: Ensure the weapon is on safe. After the magazine is loaded, insert the magazine into the magazine well of the rifle, just like a regular rifle. Seat the magazine firmly into the magazine well, but do not slam it. When properly seated the first round will load automatically and the casing will be visible from the ejection port. If the round is not visible due to the dust cover being closed pull the charging handle, this will open the dust cover. NOTE: Caution must be used when operating the charging handle as it does not travel the full distance as a regular rifle. Additionally pulling the charging handle to the rear does not chamber the first round, it only opens the dust cover to allow casings to be ejected.



Magazine properly locked and loaded, with casing of first round visible.

e. OPERATING THE RAP4: Once the RAP4 is loaded move the selector switch to the rate of fire desired. The weapon will function at the selected rate, either semi-automatic or fully automatic.

f. MALFUNCTION:

(1) In the event of a malfunction check the Trouble Shooting Guide in the operator's manual for solutions to the most likely causes. If the problem can not be fixed by using the directions in the trouble shooting guide, cease using the RAP4, complete a 2404 with a description of the problem and place the RAP4 back in the sleeve of the box with the 2404. DO NOT attempt to disassemble or fix the RAP4, attempts to repair the RAP4 by other than authorized personnel may result in damage to the RAP4. Repair of damage to a RAP4 as a result of unauthorized repair attempts will be charged to the individual user or unit up to and including the cost of a replacement RAP4.

(2) In the event that a paintball breaks in the barrel use the provided cleaning wire to clean the paint and residue from the barrel. The cleaning wire has two squeegees molded into it for this purpose.

(3) If a paintball breaks in a magazine cease using that magazine and return it to the box. Segregate the magazine for easy identification and point it out to MTC Staff at turn-in.

g. UNLOADING A MAGAZINE: Once a magazine is loaded, the ammunition can only be removed by releasing the tension on the magazine spring. This is done automatically when the magazine is loaded into the weapon. To release the spring manually, push on the small rectangular button on the top and rear of the magazine. Note once the button is pushed the tension on the spring is released and any ammunition in the magazine will be ejected. It is recommended that the contents of the magazine be directed into a container or bag for easy collection.

6. CLEANING AND TURN-IN.

a. The RAP4 equipment sets come with a basic operator's manual and basic cleaning equipment. Soldiers will not conduct maintenance or cleaning of the RAP4 beyond what is stated in this SOP and the associated operator's manual. The internal mechanisms of the RAP4 are substanially different than the M16 or M4 rifles and great care must be taken when breaking the RAP4 down and putting it back together. Failure to strictly follow the directions may, and most likely will, result in damage to the RAP4, which will render it inoperable. The cleaning and turn-in check-list is provided in Appendix C of this SOP.

b. Ensure that exterior of the RAP4 is wiped down, grit and dirt in cracks and crevasses are brushed out.

c. Run the cleaning wire with a cleaning cloth through the eyelet down the barrel to remove any paint or residue. Continue this until the cloth comes out clean. Run a lightly oiled rag down the barrel using the cleaning wire after the barrel is clean.

d. Remove the hand guards just like a real M16 / M4 and wipe dust from hand guards and exterior of barrel.

e. Remove the two locking pins that hold the upper and lower receiver together. Caution: Unlike the M16 / M4, the RAP4 pins come all the way out and maybe easily lost if the Soldier is not paying attention. Carefully lift the upper receiver from the lower. Lightly brush any dirt, sand or grit from the inside of the RAP4. There are several small springs that can be lost in this process, soldiers must use caution and brush lightly. Reattach any springs that are dislodged. Lightly oil exposed metal parts.

f. Reassemble the RAP4. Use Caution when putting the upper and lower receivers together. The ejector arm and spring will be sticking out from the main body of the lower receiver. The ejector arm must be held in when sliding the receivers together. Failure to do this will result in the ejector arm and spring being broken.

g. Ensure that the CO2 cylinders and magazines are removed from the RAP4, wiped down and free from dirt. Ensure that O rings on the CO2 cylinders are in place and serviceable. If an o-ring is damaged leave it on the cylinder segregate it so that it is easily identified during turn-in.

h. Wipe down face masks with alcohol wipes provided.

i. Ensure all components as outlined in Appendix A of this SOP are present and in the case at end of operations and that the equipment is ready for turn-in.

7. SAFETY.

a. Units using the RAP4 and firing at stationary or pop-up targetry will ensure that all personnel wear eye protection.

b. Units using the RAP4 and conducting force on force training will ensure that all personnel are wearing a full-face mask, helmet, and gloves. Other padding and body protection, such as body armor, flak vests, layers of clothing, and athletic equipment designed to protect sensitive areas of the body, are encouraged but not required.

c. Units conducting force on force training with the RAP4 will observe a safe separation distance (stand off distance) of 6 feet, in accordance with manufacturer's instructions for the weapon system.

d. The RAP4 comes with an orange tipped muzzle. Due to the nearly exact appearance of the RAP4 to a live weapon, federal law requires the orange tipped barrel. Removal or painting over the tip is not authorized, is a violation of federal law and voids all warranty agreements. Any unit or individual attempting to turn in a RAP4 without the orange tip or with the tip painted over will be charged the full price for a replacement rifle.

e. Risk assessment is an integral part of combat readiness and will be conducted prior to commencing training with the RAP4.

f. The OIC or NCOIC responsible for conducting training involving the RAP4 will conduct a safety briefing to cover the training being conducted and in conjunction with the risk assessment. It is imperative that leaders stress with soldiers that the RAP4 weapon system is not a toy. It is a serious training device that if use improperly or without the appropriate safety equipment can result in serious injury.

REFERENCES

DA PAM 385-1
Small Unit Safety Officer / NCO Guide

DA Pam 385-63
Range Safety

DMAIL 350-11
Training, Marseilles Training Center

ILARNG, Tactical Safety Handbook, First Edition, March 2001

Real Action Paintball 4 (RAP4) Operation and Maintenance Manual

Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

APPENDIX A

RAP4 SET COMPONENTS LIST

ITEM #	NOMENCLATURE	PART NUMBER	QUANITY	COST
1	RAP 4 LE Version IV	1010-0005	4 each	$550.00 each
2	V Type Goggle / Mask	NA	4 each	$25.00 each
3	45 gram CO2 Bottle	2020-0060	8 each	$40.00 each
4	60 gram CO2 Bottle	2020-0070	4 each	$45.00 each
5	Casing Catchers	2220-2010	4 each	$25.00 each
4	20 Round Magazine	2140-0080	24 each	$37.00 each
6	RAP 4 Cleaning Kit	2070-0020	4 each	$10.00 each
7	RAP 4 Oil Bottle	2070-0100	4 each	$2.99 each
8	7.62mm ammo can .43 cal. Red Paintballs	3020-0000	1 - approx 1850 rnds	$11.95 / 200ct
9	7.62mm ammo can .43 cal Blue Paintballs	3020-0000	1 - approx 1850 rnds	$11.95 / 200ct
10	7.62 ammo can Alloy Casings	3020-0180	1 - Minimum 1200ct	$12.00 / 500ct
*11	Bio degradable Plastic Casings	3020-0170	1 - Minimum 1200ct	$10.00 / 500ct
12	Operator's Manual	NA	1 each	NA
13	RAP4 SOP	NA	1 each	NA
14	Equipment Carrying Case	NA	1 each	$50.00 each

PRICES AS OF 1 OCT 2005

* If applicable: This item issued for outdoor training scenarios only and when available.

Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

APPENDIX B

RAP4 MAJOR RESUPPLY COMPONENTS

Item #	Item	Product #	Cost Per Item
1	.43 cal Paintballs Red 8000ct	3020-0000	$150.00
2	.43 cal Paintballs Blue 8000ct	3020-0000	$150.00
3	Alloy Casings 500/bag	3020-0180	$12.00
4	Biodegradable Plastic Casing	3020-0170	$10.00
5	CO2 tank refill	NA	$10.00
6	CO2 tank O-rings 10/bag	2020-0295	$4.00
7	Marker oil	2070-0100	$2.50
8	RAP4 Care Kit (parts kit)	2070-0010	$25.00
9	RAP4 Cleaning Kit user level	2070-0020	$7.00
10	Magazines pack of 5	2140-0090	$150.00
11	60g CO2 cylinder	2020-0070	$45.00
12	45g CO2 cylinder	2020-0060	$40.00
13	Shell catcher	2220-2010	$25.00
14	V Type Goggle/Mask	NA	$25.00
15	RAP4 ejector arm & spring	4153 / 4152	$15.00

PRICES AS OF 1 OCT 2005

Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

APPENDIX C

EQUIPMENT INSPECTION CHECKLIST

Block 1.

1. UNIT:	2. DATE:	3. RAP4 SET #:
4. MTC INSPECTOR:		

Block 2.

ITEM #	TASK	GO	NO GO
1	Equipment case exterior is clean and undamaged.		
2	Equipment case interior is clean and undamaged.		
3	Weapon exteriors are clean.		
4	Weapon interior are cleaned and components have a light coat of oil		
5	CO2 cylinder port is clean and has not more than 2 drops of oil in the threads and seals.		
6	Barrel interiors have been cleaned and covered with a light coat of oil.		
7	Magazines are clean		
8	CO2 cylinders are clean		
9	Goggles / Face masks are clean and have been wiped down with alcohol wipes		
10	Cleaning kits and oil bottles are present and complete		
11	Ammunition cans are clean and functional		
12	At least 480 rounds are cased and boxed (240 blue and 240 red)		
13	Unit has turned in casings with no more than a 5% loss rate. (i.e. unit was issued 1200 casings they must turn in at least 1140 casings: 1200 x .05 = 60 lost casings. The 5% loss rate will be determined by WEIGHT. Casings weigh .019 oz. each. 1200 casings weight 22.8 oz. 22.8 oz – (1140 x .019 oz.)= 21.66 oz for turn in.		
14	All issued components are present and appropriately stored in the case		
15	2404 equipment maintenance forms are turned in for non-functional or damaged weapons or equipment		
16	Missing or damaged items are reported as needed to MTC finance for appropriate action.		

Marseilles Training Center
1700 Army Road
Marseilles, IL 61341

17 Jan 2006

APPENDIX D

Sample Risk Assessment

SAMPLE

RISK MANAGEMENT WORKSHEET

1. MSN/TASK : Force on Force MOUT Training with RAP4 **2. DTG BEGIN : 7 Sept 05** **END : 7 Sept 05** **3. DATE PREPARED: 6 Sept 05**

4. PREPARED BY: ~~CPT Someone Jones, B Co CDR~~
RANK/LAST NAME/DUTY POSITION

5. HAZARDS	6. INITIAL RISK LEVEL	7. CONTROLS	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. CONTROLS EFFECTIVE
1. Soldier injury from being shot with paintball	M	1a. All soldiers wear provided goggles and face mask, helmets, gloves and LBV. 1b. Soldiers will not engage one another when closer than 6 ft.	L	1a. NCOIC will conduct PCIs prior to conducting each iteration of training. 1b. NCOIC will cover minimum safe standoff distance in the operation safety briefing.	1a and b. NCOIC monitor overall training exercise	

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE):

(LOW) **MODERATE** **HIGH** **EXTREMELY HIGH**

10. RISK DECISION AUTHORITY:
LTC Bludandguts, BN CDR
RANK/LAST NAME/DUTY POSITION