BY THE ORDER OF
THE BASE COMMANDER

GRANDFORKS INSTRUCTION 91-203

1 SEPTEMBER 1999

Safety

SIMULATORS AND SMOKE PRODUCTION MUNITIONS FOR EXERCISES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: 319 ARW/SEW
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Certified by: 319 ARW/CC
(Lt. Col. Edward H. Jarret,)
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This instruction implements AFPD 91-2, *Safety Programs*, and applies to all personnel involved in the handling, operation, and disposition of smoke grenades and ground burst simulators on Grand Forks AFB. It also applies to members of visiting agencies involved in the operation of these devices at any exercise location.

1. Responsibility. It is the responsibility of each exercise evaluator to ensure compliance with this instruction.

2. References.

2.1. AFM 91-201, *Explosives Safety Standards*

2.2. T.O. 11A-1-42, *General Instructions for Disposal of Conventional Munitions*

2.3. T.O. 11A-1-46, *Fire Fighting Guidance, Transportation, and Storage*

2.4. T.O. 11A10-27-7, *Storage and Maintenance Procedures for Simulators, Battlefield Effects*

2.5. AFM 24-309, *Vehicle Operations*

3. Explosive Limits: The maximum amount of explosives carried in any vehicle will not exceed a one-day supply for the exercise. Excess explosives will remain stored within the munitions storage area (MSA) or in any area outside the MSA licensed IAW AFM 91-201.

4. Personnel limits: Personnel limits will not exceed those established by the crew chief of the explosives operation. Personnel exposure will be kept to the absolute minimum, and non-essential personnel will be vacated to at least 125 feet and upwind from munitions.

5. Operational Risk Assessment - Use of Training Munitions: The 319 ARW/IGX Exercise Team Chief will prepare a risk assessment (See **Attachment 1** for sample) and a list detailing the National Stock Number, Hazard Class/Division (HC/D), and net explosive weights (NEW) of explosives authorized for use in the exercise. The list will include the times and exact locations where the explosive simulators will be used. The explosives list, along with the risk assessment will be included in the master exercise plan and approved by the wing commander, prior to any simulators being utilized on Grand Forks AFB. Exception: training provided by Explosive Ordnance Disposal (EOD).

6. Safety Requirements:

6.1. In addition to the following requirements, the safety requirements of AFMAN 91-201 will be strictly adhered to while transporting, storing, or using munitions simulators.

6.1.1. Always wear eye protection when working with explosive simulators and other munitions.

6.1.2. A long sleeved shirt will be worn when using munitions simulators.

6.1.3. Wear protective gloves when handling explosive simulators and other munitions.

6.1.4. Hearing protection will be worn when using ground burst simulators.

6.1.5. Smoking will not be allowed within 50 feet of explosives.

6.1.6. Vehicles carrying explosives will not be refueled. Refueling will take place prior to the loading of explosives.

6.1.7. Personnel will not take explosives-loaded vehicles into highly populated areas or areas of public gathering.

6.1.8. Personnel will set the parking brake while loading/unloading explosives unless there is a possibility the parking brake will freeze. If parking brakes cannot be set, use chocks

6.1.9. Explosives-loaded vehicles will **never** be left unattended.

6.1.10. Explosives will be properly secured to the vehicle, ensuring stability during transportation (see **Attachment 3**).

6.1.11. Explosives-loaded vehicles will be properly placarded IAW AFM 91-201.

6.1.11.1. Use Department of Transportation (DOT) placards for transporting explosives or chemicals. Signs are based on the hazard class/division of the explosives. TO 11A-1-46, *Fire Fighting Guidance, Transportation and Storage Management Data,* gives HC/D for each Air Force stocklisted munitions item.

6.1.11.2. One appropriate placard will be displayed on each side, the back, and the front of vehicles transporting explosives.

6.1.12. All explosive-loaded vehicles will be equipped with a minimum of two 2A:10BC-fire extinguishers.

6.1.13. Explosives will never be carried in the passenger compartment of a vehicle.

6.1.14. Whenever an explosive-loaded vehicle is parked on an incline one of the non-steering wheels will be chocked.

6.1.15. A water fire extinguisher should be carried in areas where grass fires may be set by the use of munitions simulators.

7. Training:

7.1. Only personnel properly trained by Explosive Ordnance Disposal (EOD) are authorized to prepare and activate simulators and smoke producing devices. EOD is the only agency authorized to administer this training.

7.2. Personnel requiring training will submit an AF Form 2426, *Training Request and Completion*, to EOD, which will be used as proof of training upon completion of the course. **Note: The 319th Air Refueling Wing has no EOD personnel. All EOD support comes from Minot AFB.**

7.3. Training is required prior to handling munitions and annually thereafter. Once a person is trained, they will take proof of training to 319 ARW Weapons Safety, where they will be issued AF Form 483, *Certificate of Competency*, listing the items they are trained to function.

7.4. In addition to the training provided by EOD all personnel whose duties require them to transport explosives require explosive safety transportation training which is provided by their unit weapons safety representative. This training must also be documented in the individual's AF Form 623 or tracked locally by computer.

7.5. Any outside organization arriving at Grand Forks AFB will show proof of munitions simulator training to the 319 ARW Safety Office prior to handling or transporting any explosives.

8. Use of Devices:

8.1. Only US Air Force stock listed devices are authorized for use.

8.2. Ground burst simulators present a blast hazard and smoke producing simulators present a possible toxic gas and fire hazard. Exercise caution around people, facilities and equipment. Free the area of combustible material within a 10-foot radius. Ensure the immediate area downwind is free of personnel. Maintain the following minimum distances:

8.2.1. 50 feet: Above ground magazines of block, brick, or concrete construction and from earth covered igloos. Hardened facilities, including hardened aircraft shelters.

8.2.2. 100 feet: Facilities without a facing window. Bulk petroleum, oil, and lubricant storage. Non-explosives-loaded aircraft in the open.

8.2.3. 125 feet: Person, vehicle, or building with a facing window.

8.2.4. 200 feet: Explosives-loaded aircraft, explosives operating locations, holding areas, open storage areas, or butler-type storage facilities.

8.3. Explosives will only be transported in government-***owned*** vehicles. Under no circumstances will explosives be carried in privately owned or rental vehicles of any type.

9. Notifications.

9.1. Notification of the use of simulators will be made to the following agencies:

9.1.1. 319th Security Forces Squadron.

9.1.2. 319th Medical Group.

9.1.3. 319th Fire Department.

9.1.4. 319th Public Affairs.

9.1.5. 319th Base Operations.

9.1.6. Air Traffic Control Tower. (Personnel using explosive devices on the airfield will maintain two-way radio contact with the control tower.)

9.1.7. 319th Command Post.

9.1.8. EOD. (Ensure EOD support is available.)

9.1.9. 319th Weapons Safety Office.

10. Emergency Procedures.

10.1. In the event of a fire take the following actions:

10.1.1. Immediately withdraw personnel to a safe distance.

Minimum Withdrawal Distances (in feet) for Explosives Involved in Fire.	
Hazard Class/Division	Minimum Distance
1.4	300
1.3	600
1.2(All)	2500

10.1.2. Sound the alarm and notify the fire department and EOD by the quickest means possible.

10.1.3. Provide the fire department with the following information:

10.1.3.1. Location.

10.1.3.2. Nature/type munitions involved.

10.1.3.3. Extent (large or small fire) and if munitions are involved.

10.1.3.4. Evacuate non-essential personnel from the area.

10.2. Fire fighting procedures:

10.2.1. If the fire has not involved the explosive items, remove the explosives from the area and if possible, fight the fire.

10.2.2. If the fire involves the explosive items, do not attempt to fight the fire.

10.3. In the event of an emergency on the airfield the control tower will activate the crash phone.

10.4. Ground accidents:

10.4.1. Give first aid.

10.4.2. Call ambulance if needed or transport victim(s).

10.4.3. Call security forces control center.

10.4.4. Call the fire department.

10.4.5. Call the wing safety office.

10.4.6. Call EOD (if needed).

11. Disposal and Handling.

11.1. Only trained EOD personnel will handle any dud smoke grenades or simulators. A dud is described as a munitions item that fails to perform all of its functions. If there is no whistle or report, the simulator must be considered to be a dud. In the event of a dud simulator, notify EOD immediately. Note the time of malfunction and evacuate personnel 200 feet from the simulator. DO NOT allow anyone to approach the simulator. Brief EOD personnel of the time of malfunction. After the appropriate wait period, EOD personnel will safely remove the dud.

11.2. Unused explosive devices will be turned in to the supply point custodian.

11.3. Residue from the expended grenades and simulators will be policed up. These items will be placed in metal containers and turned into the supply point custodian. The supply point custodian will turn the residue over to the MSA for proper certification and disposal.

12. Safety Inspections.

12.1. The 319 ARW/SEW will conduct annual and spot explosive safety inspections during local exercises. Follow-up inspections will be conducted when the results of the initial inspection show a discrepancy requiring corrective action. A suspense file will be established on all open inspection discrepancies.

12.2. All inspections will be documented using AMC Form 480, **Safety Inspection Report**, and AMC Form 481, **Safety Inspection Report (Continuation)**. Report will be sent to unit within 14 days after inspection. Open action items will be followed-up at least every 30 days.

VERN M. FINDLEY II, Colonel, USAF
Commander

Attachment 1

SAMPLE LEVEL ONE (TIME –CRITICAL) RISK ASSESSMENT

MEMORANDUM FOR ALL EXERCISING UNITS

FROM: 319 ARW/SEW

SUBJECT: Operational Risk Assessment - Use of Training Munitions

1. The employment of training munitions to increase realism will be integral parts of exercise Crisis Look 99-XX. This risk assessment, encompassing the proposed use of the training munitions is submitted in accordance with AFPAM 91-214.

   a. Hazard Identification:

      (1) All hazard class 1.2 munitions have an associated blast/projection hazard. No mass detonation hazard exists.

      (2) All hazard class 1.3 munitions have an associated fire hazard and minor blast/projection hazard. No mass explosive hazard exists.

      (3) All hazard class 1.4 munitions have an associated minor blast hazard. No appreciable projection hazard exists. Additionally, ground burst simulators pose a noise hazard if utilized in enclosed spaces.

   b. Risk Assessment:

      (1) Hazard Exposure. The primary risk of exposure to associated hazards will be to the exercise evaluation team members transporting/handling/activating the munitions. Secondary hazards could be faced by unprotected personnel downwind of smoke-generating devices and in close proximity to noise-producing/projection-producing devices.

      (2) Hazard Severity. Our assessment of hazard severity is based on worst-case scenarios.

         (a) The hazard severity for smoke producing, noise producing, and blast/projection-producing munitions is rated as CRITICAL. These items are fully capable of causing severe injury to personnel through improper use or unintentional activation.

         (b) The hazard severity for fire-producing munitions is rated as CATASTROPHIC due to the abundance of combustible materials in the training area and the speed at which fire is capable of spreading. An out-of-control fire is capable of causing personnel death, loss of equipment, or widespread environmental damage.

         (c) The hazard severity for the possible introduction of live small arms ammunition into the exercise area is rated as CATASTROPHIC. This hazard could cause personnel death.

      (3) Hazard Probability.

         (a) The hazard probability for smoke producing, noise producing, and blast/projection-producing munitions is rated as SELDOM. The probability of an occurrence of the severity indicated in paragraph 1b(2)(a) is “unlikely, but could occur in the life of the system. ”

         (b) The hazard probability for fire-producing munitions is rated as OCCASIONAL. The probability of an occurrence of the severity indicated in paragraph 1b(2)(b) is “will occur in the life of the system.”

(c) The hazard probability for the introduction of live small arms ammunition into the exercise area is rated as SELDOM. The probability of an occurrence of the severity indicated in paragraph 1b(2)(c) is "unlikely, but could occur in the life of the system".

(4) Complete Risk Assessment. The following overall risk assessment ratings are based on the Risk Assessment Index contained in Figure 9 of AFPAM 91-214. ***This risk assessment is based on raw data and reflects the risks prior to application of control measures.***

(a) The overall risk of severe injury to personnel resulting from the use of smoke-producing, noise-producing, and blast/projection-producing munitions is MEDIUM.

(b) The overall risk of death to personnel, loss of equipment, or widespread environmental damage resulting from the use of fire-producing munitions is HIGH.

(c) The overall risk of death to personnel resulting from the introduction of live small arms ammunition into the exercise area is HIGH.

c. Analyze Control Measures:

(1) Identify Control Measures:

(a) Munitions will be transported/handled/activated only by EET members who have been trained in the use of the specific munitions to be expended in accordance with AFMAN 91-201 and this instruction.

(b) Security Force EET members will inspect all weapons prior to entry into exercise areas to ensure that no player has live small arms ammunition introduced. Blank adapters will be affixed to all weapons, and weapons will not be fired at personnel, vehicles, or buildings with a facing window when within 20 feet.

(c) Munitions will only be expended in sandbag "blast pits" that have been verified free of combustible materials and splinter materials (wood, nails, stones, etc.). Under no circumstances are munitions (other than small arms blanks) to be expended within 100 feet of buildings without a facing window; 125 feet of personnel or vehicles; or within 200 feet of buildings with a facing window; bulk petroleum, oil, and lubricant storage areas; or munitions holding/storage areas.

(d) All personnel handling explosive or heat producing training munitions will wear leather work gloves. All personnel expending noise-producing training munitions will wear hearing protection.

(e) Protective masks will be immediately available (at hand) to all personnel expending smoke-producing munitions. EET members will wear masks when entering exercise smoke. Smoke grenades shall not be expended upwind of personnel without proper protection.

(f) Smoking is not permitted within 50 feet of any munitions storage or handling location.

(g) Proper fire-fighting equipment must be present when munitions are expended and within 50 feet of munitions storage areas.

(h) Smoke-producing munitions will be permitted to cool for 10-15 minutes following their expenditure.

(i) In the event of munitions malfunction EET members will secure the site and contact the EOD personnel to perform render-safe operations. The camp Commander will be immediately notified.

(2) Determine Control Effects:

(a) The control measures indicated for smoke-producing, noise producing, and blast/projection-producing munitions will reduce the hazard severity/probability from CRITICAL/SELDOM to NEGLIGIBLE/UNLIKELY.

(b) The control measures indicated for fire-producing munitions would reduce the hazard severity/probability from CATASTROPHIC/OCCASIONAL to NEGLIGIBLE/SELDOM (the "seldom" probability allows for the increased fire threat if extremely dry environmental conditions are present.)

(c) The control measures indicated for introduction of live small arms ammunition into the exercise area will reduce the hazard severity/probability from CATASTROPHIC/SELDOM to NEGLIGIBLE/UNLIKELY.

(d) Prioritize Control Measures (certain control measures are common to more than one hazard):

1 Since fire is perceived as the greatest threat, the control measures associated with controller training and fire/burn hazard control are given top priority (items 1c(1)(a), (c), (d), (f), (g), and (h)). Through history, these munitions have consistently demonstrated the highest probability of hazard occurrence and, once a fire is started, has the greatest severity potential.

2 Smoke-producing, noise-producing, and blast/projection-producing munitions are evaluated as the secondary threat, and the control measures associated with controller training, blast hazards, and inhalation hazards are applicable (items 1c(1)(a), (c), (d), and (e)). This category received a higher priority than small arms ammunition due to a much higher probability of occurrence.

3 Hazards associated with the introduction of live small arms ammunition are evaluated as a tertiary threat, and items associated with controller training and ammunition control are applicable (items 1c(1)(a) and (b)). This category, although having a high severity potential, was rated third due to it's low probability of occurrence.

d. Make Control Decisions: All control measures will be implemented and strictly enforced by EET members. The measures stated will significantly reduce associated hazards and should not cause a negative impact on deployment operations.

(1) Select Risk Controls: Since all risk control measures will be implemented, selection is not required.

(2) Make Risk Decision: Based on the implementation of the stated control measures, it is our opinion that the benefits of the operation far exceed the reduced level of risk involved. The only exception would be in the event of extremely dry environmental conditions at the exercise site. Should these conditions occur, the Camp Commander and Exercise Team Chief will reassess the risk of utilizing fire-producing munitions.

e. Implement Risk Controls:

(1) Risk controls will be included in the lesson plan for munitions training and in the exercise rules of engagement.

(2) The accountable person will be the commander of the exercising unit.

f. Supervise and Review: Control measures will be monitored and reviewed on a daily basis. Any problems noted will be immediately brought to the attention of the accountable officer and camp commander for resolution. Where sufficient changes cannot be made to resolve the problem, the operation will be terminated.

2. If you have any questions, or require any clarification, regarding this assessment my point of contact is MSgt Thomas, Ext. 7-3370.

Attachment 2

SAMPLE RISK MANAGEMENT CONTROL PRIORITIES LIST

PRIORITY	CONTROL MEASURE
1	Exercise controller munitions training.
2	Inspect weapons for live ammo prior to entering exercise area.
3	Use sandbag "blast pits" after verifying free of combustible/splinter materials.
4	Use of leather work gloves and hearing protection by EET members.
5	Smoking not permitted within 50 feet of munitions.
6	Fire extinguishers available at munitions use/storage areas.
7	Smoke grenades allowed to cool for 10-15 minutes after use.
8	Protective masks worn if entering smoke. Smoke not used upwind of unprotected personnel.

NOTE: THE INSPECTION OF WEAPONS HAS BEEN ELEVATED TO PRIORITY 2 ON THIS LIST DUE TO THE SEQUENCE OF EXERCISE EVENTS. ALTHOUGH THE INTRODUCTION OF LIVE AMMO INTO THE EXERCISE AREA IS UNLIKELY, WEAPONS MUST BE CHECKED PRIOR TO EXERCISE INITIATION IN ORDER FOR THE CONTROL TO BE EFFECTIVE.

Attachment 3

PYROTECHNIC USER GUIDE

The purpose of this guide is to aid trained personnel in the safe handling, employment, and operation of various pyrotechnic devices. This guide does not replace Technical Orders or Air Force Regulations. Always refer to the applicable publication or contact EOD if you have any questions about pyrotechnic devices. See 319 OG OI 91-1 for additional instructions for ground illumination signals and marine smoke markers (MK 13).

SAFETY & DISTANCES IAW AFMAN 91-201

-**10** ft Free of combustibles

-**25** ft NO SMOKING

-**50** ft Explosive laden vehicles, hardened facilities, A/C shelters, and magazines

-**100** ft Facility without facing window, POL storage, and A/C in open

-**125** ft personnel and vehicles

-**200** ft A/C with explosives, explosive holding or operating areas, facilities with facing window

-GBSs present a blast/frag hazard

-**DO NOT** put wet GBSs in a closed container

-When using smoke grenades, ensure personnel will not be in heavy smoke concentrations

-Treat all unfired pyrotechnics with the same respect as a loaded firearm

- All signals present an initiation hazard

- All signals present a vertical/downrange hazard

MISFIRE PROCEDURES

-Note initiating time, dampness may delay firing

-Call EOD, Ops, Fire Dept, or Command Post and advise of incident (if applicable, IG representative)

-**DO NOT TOUCH**

-Keep personnel away

-Stay in area to direct EOD

EMERGENCY ACTIONS

In the event of an accident:

-Notify Ambulance, Fire Dept., Command Post and tell them what happened

-Give First Aid if needed

-Control any fires, if possible

NOTES

-Expect the unexpected

- Beware of items rolling or landing at unintended locations

- If in doubt or unsure of any aspect of use or safety procedures, contact EOD unit

TRANSPORTATION

Government Vehicles

-Secure in a container in truck bed

-Secure container with tie downs

-Vehicle must be placarded

-Must have 2 ea., 2A:10BC fire extinguishers

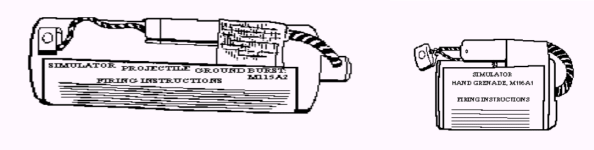
-**DO NOT** store pyrotechnics in cab

NEVER TRANSPORT IN POV

Personnel

-**DO NOT** carry in pockets

-**DO NOT** carry more than two without placing in a container



GROUND BURST SIMULATORS M-115/M-116

Inspect simulator. ***Don't use if any items listed below exist***:

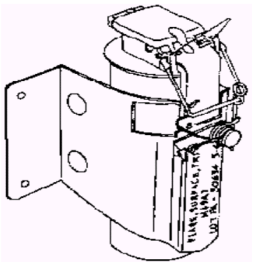
- Evidence of moisture
- Safety clip missing
- Case dented or bulging

****WARNING****

When Initiating Wear Leather Gloves

Operating

- Grasp simulator in throwing hand
- Remove safety clip and extend cap to free cord
- Jerk sharply on cord and **IMMEDIATELY** throw GBS in a safe direction
- After throwing, note time and walk away



FLARE, SURFACE TRIP

M-49A1*Inspect flare (Don't use if any exist)*
-Safety clip missing or installed improperly

-Punctured or cracked flare body

-Trip wire or nails missing

Operation

-Determine method of operation and set up

-Secure trip wire to stationary device

-Attach and secure other tripwire end to trip wire hole in trigger

-Insert flare into bracket

-Insure flare spoon is held back by trigger tongue

-While holding spoon remove safety clip

-Release spoon carefully and walk away not tripping over trip wire

-Make note of where flare is positioned on map for possible disassembly

SIGNAL, GROUND ILLUMINATION

M-127A1

Inspect Flare (Don't use if any exist)
-Case damage

-Firing cap missing

-Primer impinged

-Loose cork sealing

****Obtain 2000 ft Vertical Clearance**

Prior To Initiation**

Operation
-Reverse firing cap to primer end up to red line

-Point flare in a downrange direction

-Strike firing cap on ground with head turned away

-If flare doesn't fire, point in safe direction, slide firing cap 1/2 inch from red line and attempt initiation again

-If flare still doesn't fire attempt prior procedure once more

-Remove firing cap and isolate flare from personnel

SMOKE GRENADE

M-8/M-18

Inspect grenade. ***Don't use if any below exist***:

-Safety pin missing or improperly spread

-Loose fuze or not sealed properly

-Damaged, dented body, or corroded body

Operating

-Hold in throwing hand

-Hold spoon securely and remove safety pin

-Throw, walk away, wait until burning stops

-Let it cool and ensure contents are consumed

-Put residue at collection location

MARINE SMOKE/ILLUM
MARKER MK 13

Inspect signal (Don't use if any exist)

-Note excessive rust

-Excessive dents or case deformation

-Pull rings on both ends

Operation

-Determine end to be ignited

-Grasp opposite end of signal

-Pull the pull ring and set on the ground

-**REMEMBER** the opposite end needs initiating or it's still a live round