BOEING

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THE **BOEING** COMPANY
SEATTLE 24 WASHINGTON

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1.0 INTRODUCTION

1.1 Scope

This Exhibit established Air Force Ballistic Missile management safety policies and identifies safety procedures, requirements, equipment and responsibilities in connection with the activation, other than construction, of Minuteman Tactical Bases. Supplements reflect the peculiarities for each geographical location.

1.2 Purpose

The purpose of this document is to provide direction to the contractors and agencies who will participate in Site activation activities, other than construction, by providing the Safety Program Plan and minimum safety requirements. This document does not provide detail procedures and shall not be used as a step-by-step procedural document.

1.3 Definition of Safety

Safety is the optimum degree of freedom from the potential or actual occurrence of undesired events which jeopardize life, health, or property. It is the responsibility of all personnel to pursue their tasks and responsibilities in such a manner that safety will be an integral part of the MINUTEMAN Weapon System Program.

2.0 PROGRAM PLAN

To be added.

3.0 GENERAL SAFETY STANDARDS

3.1 The prevention of personnel injury and property damage shall be a standard of the MINUTEMAN Weapon System Program. In executing and expediting the operations of Site Activation, accident prevention is a prime consideration of all personnel. It is the responsibility of supervisory personnel of all organizations to ensure that all personnel are safety oriented, and to ensure compliance with safety regulations, and commonly accepted safe practices. In addition, it is the responsibility of all personnel to advise the SATAF Safety Officer and/or their supervisor (or the Boeing Wing Safety Engineer) of unforseen hazards encountered, such that immediate remedial action can be taken and safety engineering analysis can be accomplished to develop appropriate and adequate corrective measures. It shall be the responsibility of the SATAF Safety Officer, supervisor, or the Boeing Wing Safety Engineer to ensure that corrective measures are instituted and completed in a timely manner when hazards are called to their attention. R R

3.2 Caution Period Operations

3.21 The primary purpose of a caution period is to limit the number of personnel exposed and minimize the attendant hazards during a particular work operation.

3.2.2 The area supervisor shall declare a caution period when any of the following operations are to be performed:

1. Missile unloading or loading.
2. Transfer and transportation of missile.
3. Emplacement or removal of the missile.
4. Installation/removal of explosive items in the LF.

5. Testing of explosive items.

6. All testing in LF or LCC when missile is emplaced.

7. Other operations that may be defined as hazardous per the Base Supplement.

3.2.3 The area supervisor shall:

1. Clear the area of all non essential personnel prior to starting a "Caution Period Operation".

2. Ensure that the applicable safety checklist is completed. (See Fig.3-1 through 3-5)

3. Ensure that warning devices have been actuated and are operable before beginning the operation.

3.3 The following requirements shall be effective for all electrical operations:

a. Whenever a person is performing work on energized electrical circuits or equipment where personal contact with potentials of 25 volts or more is possible, it is required that someone, preferably that person's supervisor, be available to periodically check on that person at intervals not exceeding 30 minutes.

b. Two competent electrical workers working together on the same pole, or fixture, or any other location, shall be required when performing work on energized electrical circuits or equipment carrying voltages over 750 volts.

3.4 For operations at a remote location, there shall be a minimum of two people required in performing such operations. When operations are being performed in a tank or pit, the operator shall be under constant surveillance of a second person.

R

3.5 Overhead handling equipment, hoists, slings, etc. shall be proof-load tested initially and periodically as outlined in Appendix C.

3.6 Illumination shall be provided in all areas per American Standards Association A11.1. Portable lighting shall be provided as required.

3.7 Ambulance and Fire Department phone numbers shall be posted in all facilities.

SAFETY CHECKLIST
FOR
MISSILE UNLOADING

	FUNCTION	INITIALS
1.	Necessary safety equipment on hand, such as first aid kit, fire estinguishers, wheel chocks, grounding cables, "Explosive" and "No Smoking" signs.	_____
2.	SSCBM and BMT have been inspected within past 24 hours, DD Form 626.	_____
3.	BMT properly positioned, wheels chocked and communication link established.	_____
4.	No smoking within 100 feet of missile or aircraft.	_____
5.	Verify that there are no electrical storms within five (5) miles before starting unloading.	_____
6.	Verify that only essential personnel are present and area is cleared.	_____
7.	Driver instructed on the hazards of the missile, emergency procedures, transporting safety rules and five (5) mph speed limit.	_____
8.	Current proof load test status of hdlg. equipment.	_____
9.	Notify Area Supervisor Checklist completed.	_____

_____ _____ _____
AREA SUPERVISOR DATE TIME

Fig. 3-1

SAFETY CHECKLIST
FOR
MISSILE TRANSFER

	FUNCTION	INITIALS
1.	Only essential personnel in area.	
2.	Necessary Safety equipment on hand such as first aid kit, fire extinguishers, explosive signs and grounding cables.	
3.	Inspect T/E for condition of wheels, tires, jacks, transfer rails, electro static bonding and grounding.	
4.	Verify that there are no electrical storms within five (5) miles.	
5.	General area housekeeping satisfactory.	
6.	Current proof load test status of hdlg. equipment.	R
7.	Notify Area Supervisor Checklist completed.	R

AREA SUPERVISOR _____ DATE _____ TIME _____

Fig. 3-2

SAFETY CHECKLIST
FOR
MISSILE TRANSPORTATION

	FUNCTION	INITIALS
1.	T/E has been inspected within past 24 hours, DD Form 626.	_____
2.	No smoking within 100 feet of missile.	_____
3.	T/E inspected for condition of wheels, tires and brakes, missile restraint, safety chains, and bonding straps.	_____
4.	Driver instructed on the hazards of the missile, emergency procedures, transporting safety rules and 45 mph speed limit.	_____
5.	Driver informed of destination and layover, if required, en route.	_____
6.	Check with the Base weather station and U. S. Weather Bureau regarding weather conditions. (Wind limits are, less than 52 knots steady, or 79 knots gusty.)	_____
7.	Verify that route roadways have been currently inspected.	_____
8.	Verify ready status of area to receive missile.	_____
9.	Verify that escort vehicles are in position (fore and aft).	_____
10.	Notify Area Supervisor Checklist completed.	_____

AREA SUPERVISOR	DATE	TIME
_____	_____	_____

Fig. 3-3

SAFETY CHECKLIST
FOR
MISSILE EMPLACEMENT/REMOVAL
LAUNCH AREA

	FUNCTION	INITIALS
1.	Safety control switch locked in "safe" position.	
2.	Safety pins (six) are installed in missile.	
3.	Mechanical decoder cavity in programmer group is empty.	
4.	Umbilical cables are disconnected from distribution box.	
5.	Only connections made at LF/IB are status lines.	
6.	Launcher closure actuating and locking mechanism is electrically disconnected.	
7.	No electrical storm imminent or predicted within 5 miles.	
8.	Wind below limits (39 knots steady - 45 knots gusts).	
9.	Current proof-load test on T/E and handling equipment. per Appendix C, para. 1.7 (BSD Exh. 62-16)	
10.	Qualified personnel operating equipment.	
11.	General housekeeping satisfactory.	
12.	Fire fighting equipment in standby position.	
13.	Area cleared of non-essential personnel.	
14.	All personnel within the area of operation wearing hard hats.	
15.	Notify Area Supervisor Checklist completed.	

AREA SUPERVISOR _____ DATE _____ TIME _____

Fig. 3-4

SAFETY CHECKLIST
FOR
INSTALLING, REMOVING AND TESTING
EXPLOSIVE ITEMS

	FUNCTION	INITIALS
1.	Only essential personnel in the area.	
2.	Necessary Safety equipment on hand such as fire extinguishers and first aid kits.	
3.	Verify no electrical storms within 5 miles.	
4.	No smoking requirement enforced.	
5.	Certified explosive ordnance handlers.	
6.	Launcher - Missile Safety Checklist completed. (Fig. 5-3)	
7.	Electrical connections properly taped and tagged.	
8.	Notify Area Supervisor Checklist completed.	

AREA SUPERVISOR _____ DATE _____ TIME _____

Fig. 3-5

3.8 Evacuation routes and shelter areas shall be posted in all facilities.

3.9 The Boeing Company shall establish, train, and maintain a fire brigade for LF, LCF and off-base DA operations. Brigade members shall primarily participate in fire prevention activity; assure good housekeeping in their areas; render alarm when fire breaks out; and, attempt to extinguish or control fire at its point of origin pending arrival of a regular fire fighting crew. Members of the brigade shall render whatever assistance is requested of them by the regular fire crew after it is at the scene of the fire.

3.10 One Safety Surveillant shall be appointed for each Launch Facility, Launch Control Facility and Dispatch area. Each Safety Surveillant shall have the following responsibilities:

1. Perform a daily safety check.
2. Notify the area supervisor, SAMF Safety Officer and/or the Boeing Wing Safety Engineer immediately of all safety items that require expedited action. (Submit Missile Hazard Reports per AFR 5[illegible]-9 as appropriate.)
3. Know the emergency procedures of his area of operations.
4. Know the name and the location of qualified, first aid personnel in the area and members of the fire brigade.

3.11 Vehicles shall be equipped with a minimum of two front seat belts, and fire extinguishers in accordance with Fig. D-1, app. d. In inclement weather, personnel shall check out and place in vehicle a survival kit. All vehicles used for transportation to launchers and LCC's shall have 2-way radios.

3.12 The conditions and circumstances under which many of the Site Activation operations will be performed requires that sanitation be a prime

consideration for the protection of the health of personnel. Water supply at the remote facilities shall be regularly sampled for bacteriological content. Food service areas, equipment, and personnel shall be inspected regularly for adequate sanitation standards. Restrooms, locker rooms, kitchens, and dispensaries shall be maintained to the highest standards through the use of combination detergent-disinfectant products. Waste disposal shall be accomplished by methods approved by the local Health Department. Constant controls shall be maintained for insect, rodents, and nuisance bird control. The Boeing Wing Safety Engineer shall use the avaliable facilities of local and State Health Departments for water analysis, food service surveys, waste disposal methods, and approved sanitation standards. R

3.13 Whenever personnel are at a LF or LCF there shall be communications avaliable at that facility to the Dispatch Area. R

3.14 Each LF and each LCF shall be provided with a log book. All personnel entering the facility shall enter date, time and signature and again when leaving the facility. The area supervisor shall make such entries for work crews. Safety Checklists shall become an integral part of the log. R

3.15 All the personnel performing operations where there is the hazard of flying fragments, shall wear safety glasses. All personnel who normally wear corrective lens glasses shall wear safety glasses for all operations. R

4.0 WEAPON SYSTEM SUPPORT SAFETY STANDARDS

4.1 Interface Surveillance

4.1.1 Boeing Interface Surveillance engineers shall generally be performing operations during the construction phase. During this phase of Site Activation, the safety requirements shall be as set forth in Em 385-1-1, General Safety Requirements, Corps of Engineers.

4.2 Equipment Assembly & Checkout, and Hardware Assembly in the CSA and SMSB

4.2.1 The safety requirements to apply to these operations are similar to those covered by section 6.0. In addition, safety requirements applying to the handling and testing of explosive items are covered in paragraph 4.2.2.

4.2.2 Testing of Explosive Devices

The following shall be tested in the special explosive testing facility; (1) gas generator, (2) squib and jumper cable assembly, and (3) rotary actuator cartridge. Conductive floors or mats and conductive footwear shall not be required. Handling and testing of these devices shall be done by certified explosive ordnance handlers only!

4.3 Operation & Maintenance (O&M) and Equipment Assembly - Launch Complex

4.3.1 General

4.3.1.1 Operations in the Launch Complex will consist of many and varied activities involving personnel of many different skills and experience. The configuration of the facilities and the weather that may be encountered increase the hazards of the operations. The underground closed nature of the facilities introduces possible hazards in oxygen deficiency, toxic gases, and combustible gases. The handling of equipment for installation involved the usual hazards associated with material handling. However, these hazards of possible personnel injury

and property damage are accentuated by the handling methods required to be used.

4.3.2 Requirements

1. All personnel entering the Launch Complex shall be familiar with area safety regulations, and shall comply with all such regulations.
2. No visitors shall be allowed in the Launch Complex (Launch Facility or the Launch Control Facility) without approval of the Boeing Base Manager or the SATAF Commander, or their delegate. Visitors shall be escorted at all times, shall be instructed in area safety regulations by their escort, and shall comply with all such regulations.
3. Personnel limits shall be (maximum):
   Launcher (below ground level) - 14 persons.
   LCC (below ground level) - 14 persons.
4. Hard caps shall be worn at all times by all personnel, with chin strap in place, when in a construction area or below the surface in the Launcher, Launch Support Facility, or Launch Control Center.
5. Each LF and LCF shall be supplied with a first aid cabinet. Each LCF shall be supplied with basket wire litters, blankets, and self-contained breathing apparatus. Gas detection devices shall be located at the dispatch center of each squadron. (See Section 10.0)
6. Maximum vehicle speed limit shall be 5 mph in the LF and LCF areas. The transporter erector shall have right of way over all vehicles except fire and ambulance. Personal vehicles shall not be allowed in the immediate area.
7. When personnel are below the surface in the Launcher, LSF, or LCC,

performing hazardous operations such as explosive ordnance handling, high voltage work, etc., at least one person shall remain on the surface.

8. All electrical equipment and tools shall be grounded.

9. All hoisting and handling equipment shall be proof-load tested per Appendix C, shall not be subjected to loads greater than their rated capacity, and shall be equipped with safety hooks.

10. All lifting and lowering in material handling operations shall be directed by only one person at any one time.

11. In providing temporary heating in the facilities, only U. L. approved electric heaters shall be utilized.

12. All work areas shall be maintained in a clean and orderly condition.

13. All personnel shall be instructed in the proper procedures in ascending and descending vertical ladders. Personnel shall have both hands free for grasping ladder. Tools, documents, etc. shall be handled by rope or pouch.

14. At all times when personnel are in the launcher or LCC, a minimum of 100 cfm of fresh air shall be supplied to the facility. This requirement can be met by operation of the environmental control system. However, in the launcher the personnel access hatch must be open. When the environmental control system cannot be utilized, portable blowers shall be provided to satisfy this requirement. The only exception to this requirement is in the launcher when the launch tube opening is not closed or covered.

15. Flammable or toxic liquids (solvents, paints, etc.) shall not be used without notification and approval of the area supervisor. Such materials shall not be used in closed areas without positive ventilation (portable blowers or the environmental control system.)

When not in use, such materials shall be kept in closed containers in storage areas above the ground level. Cleaning solvents shall be non-flammable.

16. All assigned personnel shall be instructed in the use of fire extinguishing equipment.

17. Tests for atmospheric contamination shall be conducted per paragraph 4.3.3.B.1.

18. A general alarm system (may consist of klaxon horn, portable air horn, whistle, etc.) audible to all areas of the facility shall be maintained. A plan specifying the alarm signals, and the action to be taken, shall be included in the base supplement to this document. A signal shall be established for evacuating the facility at the conclusion of the work day. The area supervisor shall ensure complete evacuation before closing of the access hatch.

19. All welding equipment used in and around the facilities shall be equipped with one 2 1/2 gallon water pump. R

20. Electrical connections of electronic equipment cabinents shall not be made upon installation, but deferred to proper sequence in functional testing.

21. All personnel handling chromate solution, battery electrolyte, or solvents shall wear face shield, gloves, and apron. R

4.3.3 Emergency Procedures

A. Fire R

1. In case of fire, personnel in immediate area of the fire shall notify local or host base fire department. They then shall use fire extinguishers and attempt to extinguish the fire until the fire brigade assumes control. All other personnel, except members of the fire brigade, shall evacuate the facility. R

2. The fire brigade shall attempt to control and extinguish the fire if possible. When below ground level the fire brigade shall wear self-contained breathing apparatus. Where local or host base fire departments are avaliable and respond, the fire brigade shall render whatever assistance is requested by the regular fire fighting crew.

3. The SATAF Safety Officer, the Boeing Squadron Safety Engineer and the Boeing Base Security Chief shall be notified as soon as possible.

4. Re-entry of the facility after a fire shall not be attempted until (a) the area supervisor has given approval, and (b) the procedure outlined in B.6. below has been exercised.

B. Atmospheric Contamination

1. Under normal operating conditions when the environmental control and other systems are functioning properly, significant concentrations of toxic or explosive gases should not be present in the LCC, Launcher, or LSF. In the event of fire or failure of the environmental control, an exygen deficiency, or excessive concentrations of carbon monoxide, or combustible gases may be encountered.

2. At sea level, an atmosphere is considered to be oxygen deficient when the oxygen concentration falls below 17% by volume. However, the critical oxygen concentration varies with the elevation. To determine the critical concentration for a particular facility, establish the elevation at that facility and, utilizing figure 4-1, determine the applicable critical concentration of oxygen. The resulting value shall be used as the minimum oxygen concentration for that facility. Oxygen concentrations below this value shall be considered oxygen deficient, and personnel shall not be allowed to enter such areas until the oxygen concentration is equal to or greater than the critical concentration. The Boeing Wing Safety

Engineer shall determine the critical concentrations for each facility and identify them in the base supplement to this document.

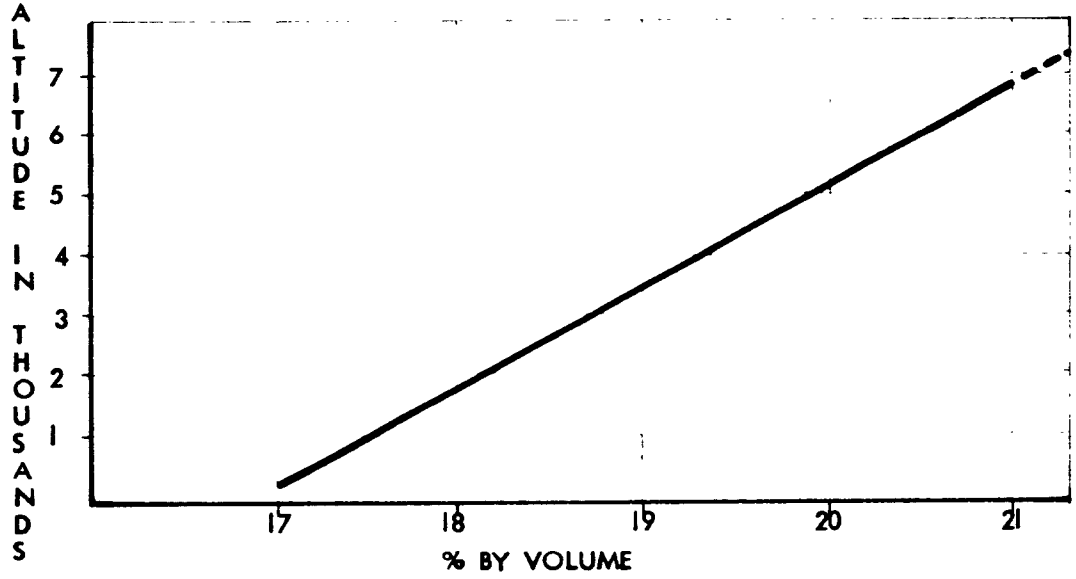
3. Carbon monoxide concentrations shall be less than 100 parts per million (ppm) and combustible gas concentrations less than 5% of the Lower Explosive Limit (LEL) before allowing personnel to enter the facility without self-contained breathing apparatus. If a combustible gas is present in excess of 25% of the LEL, entry shall not be made under any conditions until the area has been ventilated, and test results indicate the concentration to be less than 25% of the LEL. Entry with self-contained breathing apparatus may be made at concentrations between 5% and 25% of the LEL to repair the environmental control or conduct exploratory operations.

4. Instruments for detection of oxygen deficiency, combustible gases, and carbon monoxide are identified in section 10.0. Two sets of these instruments shall be provided per squadron. The Boeing Wing Safety Engineer shall ensure that personnel required to use these instruments are trained in their use.

5. Caution shall be exercised whenever entry or re-entry of a facility is attempted. Upon opening the personnel access hatch, personnel shall note presence or absence of smoke or unusual odors. The facility atmosphere shall be tested before entering or re-entering the facility if: (a) fire in the facility has occurred regardless of whether the environmental control system is or is not operating (test for oxygen deficiency, carbon monoxide, and combustible gases), or (b) unusual odors are detected (test for oxygen deficiency and combustible gases). In the event conditions described in (a) or (b) are encountered, the area supervisor shall contact the Dispatch Center. The Dispatch Center shall send instruments and personnel

Fig. 4-1

MINIMUM SAFE OXYGEN LIMITS



NOTE - At elevations above 7,000 feet the oxygen concentration will be less than the prescribed "safe level". This means that some individuals will experience "light headedness" when performing manual labor. (minimum safe concentration is 20.8% by volume.)

qualified in their use to the site for evaluation of the facility atmosphere.

6. The testing shall proceed in the following manner (Launcher):

(a) The atmosphere at the access hatch shall be tested and at 10-foot increments by lowering the 20-foot probe. Tests shall be made with one, two, or three instruments as noted above, with the test for oxygen deficiency conducted first. If testing in the personnel access results in (1) values of oxygen concentration greater than the critical concentration for the particular facility, (2) combustible gas concentration less than 5% of the LEL, and (3) carbon monoxide concentration less than 100 ppm, the testing shall be extended throughout the Equipment Room first level, the Equipment Room lower level, and extended to the bottom of the launch tube.

(b) If all test results are favorable, operations may begin. If the environmental control is off or not operating, portable blowers shall be utilized to provide 100 cfm of make-up air while personnel are in the facility.

(c) If test results at any time indicate an oxygen deficiency, no personnel shall be allowed to enter or if operations are in pregress, the facility shall be evacuated. The facility shall be purged with fresh air either naturally by opening the launcher closure, or with portable blowers, until test results are within the tolerances given above.

(d) A similar procedure shall be employed in testing at the LCC.

4.3.2 Equipment Assembly, Launch Facility

The following requirements apply to operations at the Launch Facility:

1. At all times when personnel are at the LF, the personnel barriers around the launcher opening (if open), launcher access, and LSF access shall be in place. In addition, the aluminum grate at the access to the lower equipment room level shall also be in place.
2. Installation of the Access Portable Ladder lower attach points shall be accomplished by a man standing on the fixed ladder, wearing a safety belt secured to the ladder attach lugs or other anchor point on the surface.
3. The Personnel Access Hatch shall be restrained in the open position to prevent inadvertent closing.
4. Personnel working inside the Launcher opening barrier shall wear safety belts secured by lanyards to fixed attach points.
5. There shall be one 15-pound carbon dioxide fire extinguisher adjacent to entrance to both Equipment Room levels. In addition, one 2-1/2 gallon water pump shall be located on the first level, adjacent to the entrance, and 55 gallon water tanks with two buckets shall be located at grade level.
6. Communications facilities shall be maintained between the Launcher Equipment Room and the surface or LSF.
7. Caution Period operations shall be performed per section 3.0.
8. All handling equipment and safety instrumentation shall have current calibration and/or proof-load test tags.
9. Operation of the work cage shall be considered a hazardous operation with the following requirements:

   (a) The work cage and hoist shall be proof-load tested at 200% (1200 lbs.) of rated capacity (600 lbs.) at 180-day intervals. (The 1200 lb and 600 lb. values include the weight of the work cage itself.)

The test shall be performed with the cable extended to its limit in service.

(b) The work cage shall be functionally tested once each month.

(c) Limit switches shall be tested weekly.

(d) The work cage working parts, load members, and wire rope shall be inspected daily. The wire rope shall be examined throughout its entire length every 90 days and immediately following proof-load testing. Wire rope with deformation, two or more broken wires in one strand, or evident corrosion, shall be replaced.

(e) Only two personnel shall ride or work in the work cage at one time. Personnel plus parts and tools shall not exceed 450 lbs. (rated capacity).

(f) Personnel shall wear safety belts secured to load bars at all times when in the work cage.

(g) Personnel barrier shall be installed on launch tube access door at all times when door is open.

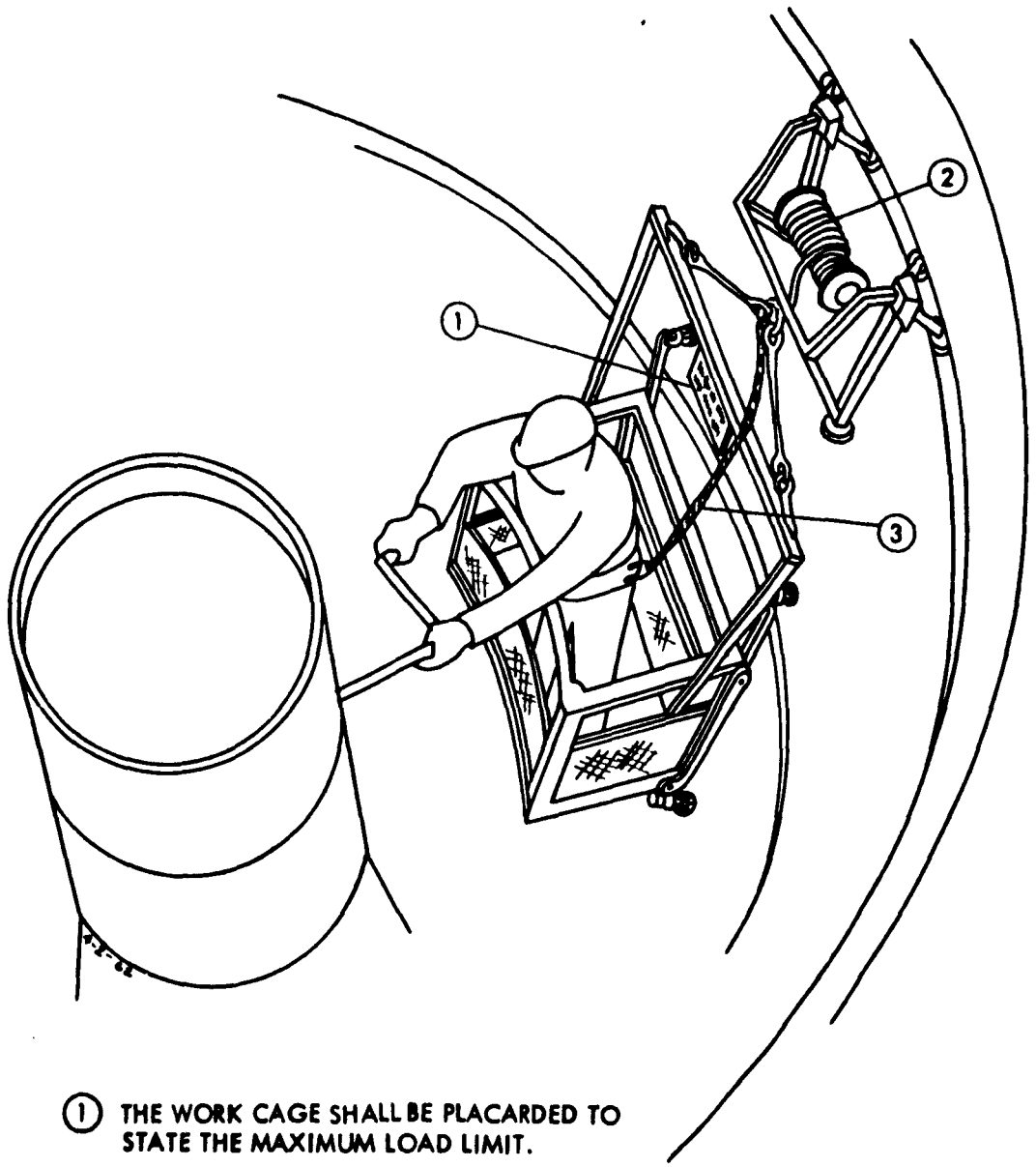
(h) When personnel are using the work cage at least one person shall be in the Equipment Room.

(i) The work cage shall always be placed on the access platform for access and egress to the work cage.

10. The opening between the upper level Equipment Room floor and the launch tube shall be covered with a protective cover (ACO 640).

11. When heavy equipment is hoisted or lowered in the launch tube, the launch tube shall be evacuated, the work cage removed, and the launch tube access door closed.

12. Work in the launch tube shall be accomplished from scaffolding whenever possible.



1. THE WORK CAGE SHALL BE PLACARDED TO STATE THE MAXIMUM LOAD LIMIT.
2. A VISUAL INSPECTION OF THE CABLE & OTHER COMPONENTS OF THE WORK CAGE SHALL BE MADE BY THE OPERATOR PRIOR TO USE.
3. A SAFETY BELT & LANYARD SHALL BE WORN AT ALL TIMES WHEN USING THE WORK CAGE.

ELEVATOR WORK CAGE SAFETY REQUIREMENTS Fig. 4-2

To be used by Safety Surveillant and maintained in the Facility Log Book. Inspection will be conducted at the beginning of each work day.

DAILY SAFETY CHECKLIST

LAUNCH AREA

Launcher No._____

Week of_____

ITEM INSPECTED	M	T	W	T	F	S	S
Housekeeping							
Fire extinguishers available and inspected (Seals intact)							
No flammable liquids stored in launcher							
Proper warning devices displayed							
Personnel barriers in place							
Personnel limits observed							
First aid kit available (seal intact)							
Launcher atmosphere ok for personnel entry							
Communication between launcher and surface established							
Personnel in launcher wearing hard hats							
Safety surveillant initials							
Area supervisor initials							

Fig. 4-3

13. Personnel shall remain clear of personnel access when equipment is being lowered.

14. Complete the launch area checklist daily (Fig. 4-3).

15. The launch tube access door safety barrier shall be in place whenever the door is open.

16. The personnel access hatch shall not be closed when personnel are below the surface, except for particular test requirements, and then only for duration of the tests. If at any time the lid and personnel access hatch are closed, and the environmental control system is not operating, a maximum of three people shall remain in the launcher not more than two hours. This time period shall not apply if portable blowers supplying 100 cfm of fresh air are utilized. If environmental control is operating, the personnel limit shall be 3 people for the duration of the test.

4.3.3 Equipment Assembly, Launch Control Facility

The following requirements shall apply to operations at this facility:

1. Communication facilities shall be maintained between the LCC and the Support Building.

2. Rigid guard rails shall be installed along both sides of the floor plate leading to the LCC capsule.

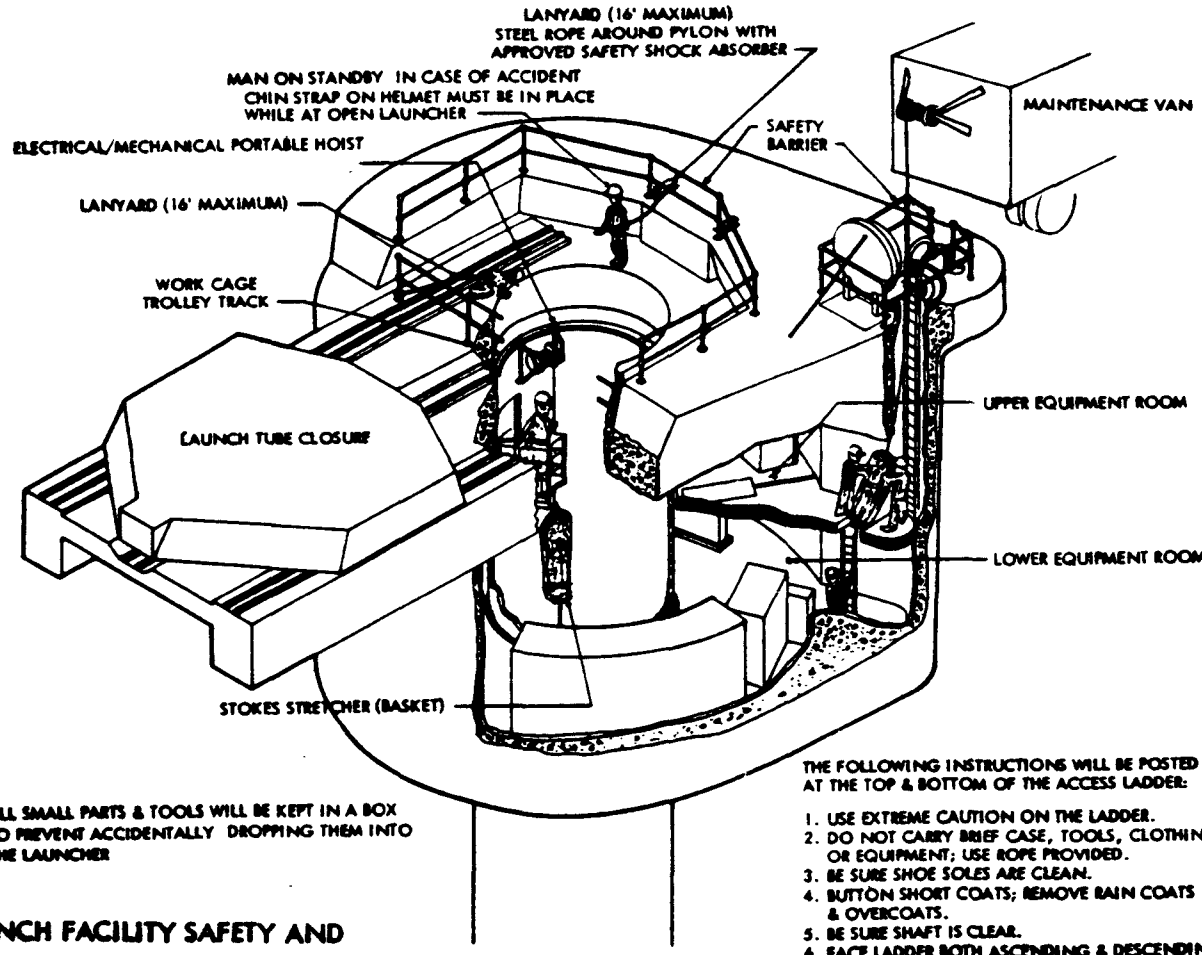
3. The access elevator shall:

   (a) Be proof-load tested to 200% (Wing I&II: 4,000 lbs.; Wing III&IV: 12,000 lbs.) of its rated capacity (Wing I&II: 2,000 lbs.; Wing III&IV: 6,000 lbs.) once every 180 days.

   (b) Not be loaded beyond its rated capacity.

   (c) Be used for all LCC access and egress if possible.

   (d) Have its wire rope examined over its entire length once every 90 days.



NOTE: ALL SMALL PARTS & TOOLS WILL BE KEPT IN A BOX TO PREVENT ACCIDENTALLY DROPPING THEM INTO THE LAUNCHER

THE FOLLOWING INSTRUCTIONS WILL BE POSTED AT THE TOP & BOTTOM OF THE ACCESS LADDER:

1. USE EXTREME CAUTION ON THE LADDER.
2. DO NOT CARRY BRIEF CASE, TOOLS, CLOTHING OR EQUIPMENT; USE ROPE PROVIDED.
3. BE SURE SHOE SOLES ARE CLEAN.
4. BUTTON SHORT COATS; REMOVE RAIN COATS & OVERCOATS.
5. BE SURE SHAFT IS CLEAR.
6. FACE LADDER BOTH ASCENDING & DESCENDING.
7. USE BOTH HANDS TO GRASP LADDER FIRMLY.
8. ONLY ONE PERSON PERMITTED ON LADDER AT ONE TIME.

LAUNCH FACILITY SAFETY AND RESCUE REQUIREMENTS

Fig. 4-4

4. The following fire-fighting equipment shall be provided:

   (a) Launch Control Facility Support Building -

   One 15-pound carbon dioxide extinguisher, located in the hallway between Utility Room and Kitchen.

   One 15-pound carbon dioxide extinguisher, located on outside of building between Generator Room and Garage.

   One 15-pound carbon dioxide entinguisher, located in Equipment Room.

   One 2-1/2-gallon water pump can in Security office. R

   One 55 gallon water drum with two buckets outside the Support Building. R

   (b) Launch Control Center -

   One 2-1/2-gallon water pump can located outside of capsule at the right-hand side of door.

   Three 15-pound carbon dioxide extinguishers distributed inside Launch Control Center. R

5. Caution shall be exercised in the handling and installation of the Potassium Peroxide (oxygen generating) Unit to prevent spills or contact with the chemical. In case of spills, use dry cloths or brush to clean up. Do not use water. R

6. At any time when the environmental control system is not or cannot be utilized, portable temporary ventilation of a minimum of 100 cfm shall be provided whenever personnel are in the LCC.

5.0 WEAPON SYSTEM SAFETY STANDARDS

5.1 Missile Receival and Shipment

Missiles may be received at the base, or shipped from the base, by air, rail or over the road by TE. Loading and unloading facilities for aircraft are located in the Strategic Missile Support Area. The following safety requirements shall be complied with by all personnel.

5.1.1 General (Apply for paragraphs 5.1.2, 5.1.3, 5.1.4, and 5.1.5)

1. The area supervisor shall declare a caution period operation (see paragraph 3.2) and ensure that the applicable checklist is completed.
2. Only one missile shall be loaded or unloaded at one time at the same facility.
3. Support vehicles shall be serviced and inspected in accordance with DD626 (see Appendix, Fig. B-6).
4. "EXPLOSIVE" and "NO SMOKING" signs shall be erected. There shall be no smoking within 100 feet of the operation. (See Fig. E-1)
5. After unloading, the missile shall be transported to the Missile Transfer Facility. If there is a missile in the transfer facility, the second missile shall be transported to the Transient Missile Holding Facility.
6. Do not commence a loading or unloading operation if an electrical storm is imminent. Clear an area within 2,000 feet of the missile whenever an electrical storm approaches within 5 miles. The Host Base Weather Station shall determine storm distances. This weather information coordination shall be definitized in the Base Supplement.
7. Fire Fighting equipment shall be maintained in a ready status.
8. The missile loading, unloading, and transfer and holding

facilities shall be kept free of trash and burnables.

9. Personnel shall be limited to the numbered required to accomplish the operation.

10. While in the Transient Missile Holding Facility, the missile shall be bonded to its container, and the container shall be grounded.

11. All facilities shall comply with the quantity distance criteria required for 7400 lbs. TNT equivalent or specific distances as provided by BSQ.

5.1.2 Aircraft Loading and Unloading

1. If more than one missile-carrying aircraft is in the area, there shall be at least 215 feet between aircraft.

2. The aircraft shall be grounded, and bonded to missile container. Resistance to ground shall not exceed 10,000 ohms.

3. The aircraft shall not be refueled, and its radio equipment shall not be energized, during loading or unloading operations.

5.1.3 Rail Loading and Unloading

1. The missile container (SSCBM) shall be bonded through the BMT to the rail car. The rail car shall be grounded.

5.1.4 Over-the-Road by TE Receival

1. The Boeing Wing Safety Engineer in coordination with Host Base Ground Safety shall coordinate On-base route to be followed by TE, upon arrival. Such a route should terminate at the Missile transfer facility, or the Missile holding facility.

2. Security at Base entrance shall be aware of the pre-determined route, and upon arrival of the TE, direct the driver to follow this route.

5.1.5 Missile Transfer

During transfer of the missile from the SSCBM to the TE (or vice versa), the following requirements shall apply:

1. The missile shall be bonded to SSCBM and the TE. The SSCBM shall be bonded to the TE. Both the SSCBM and the TE shall be grounded.
2. No matches or lighters shall be allowed in the transfer facility.
3. No more than one missile shall be in, or in the immediate vicinity of, the transfer facility at any one time except missiles being transported past facility on established road right-of-ways.

5.1.6 Emergency Procedures

1. Emergencies shall be considered conditions which could cause explosion or ignition of the missile or an explosive item. The following are examples of such conditions:
   (a) Smoke coming from the missile or its container, fire anywhere in the facility, grass fire or vehicle fire near the facility.
   (b) Evident electrical short circuit in or on any part of the missile.
   (c) Severe impact or penetration of the missile.
   (d) S&A mechanism found to be in armed condition.
   (e) Unaccountable or suspicious noises within the missile.
2. In the event of any of the above, the area supervisor shall give the alarm and notify the Host Fire Department or other fire fighting agencies.
3. All electrical power to the missile or associated equipment shall be turned off. Single switch control shall be provided.
4. If the missile propellant is in immediate danger of ignition,

or is burning, no attempt to extinguish the fire shall be made. All personnel within 2,000 feet of the missile shall be evacuated.

5. If the missile propellant is not in immediate danger and is not burning the personnel discovering the fire, including the Fire Brigade shall attempt to control and extinguish the fire, until arrival of the Fire Department.

6. In the event of (c) or (d) above, the AF EOD shall be summoned to disarm the missile.

7. The state of emergency shall not terminate until the cause of the condition is found and corrected and/or the missile is disarmed by the EOD, if required.

5.2 Missile Transportation

5.2.1 The missile shall be transported from the SMSA to the launcher in the transporter-erector. Travel will be over public highways, and therefore introduces the added considerations of control over such routes, to prevent vehicle accidents and the results of such accidents. This movement of the missile shall be very rigidly controlled.

5.2.2 Requirements

1. The missile shall be transported in the TE in convey with an escort vehicle in front and to the rear of the TE.

2. The convey speed limit on base shall be 15 mph, and on the public highways shall be 45 mph. Speed shall be reduced on secondary roads as judged by the driver of the lead escort vehicle but not to exceed 25 mph.

3. The routes the convoy shall follow to the launchers and LCC's

shall be identified in the base supplement to this document. Routes are not to pass through populated areas unless unavoidable, and in no case shall the convey park or stop in such populated areas.

4. The convey vehicles shall leave their lights on at all times, and shall proceed in coordination with state and local police. The convoy shall proceed only between 1/2 hour after sunrise and 1/2 hour before sunset.

5. Before leaving the SMSB, the convoy shall have a definite destination. If departure time is such that arrival at the launcher and missile emplacement cannot be accomplished before nightfall, the destination shall be the appropriate LCC for overnight parking. No more than one missile bearing TE shall be parked at any one LCC at any one time.

6. Prior to missile loading the vehicles shall be throughly inspected for mechanical defects, and repairs shall be accomplished as required before loading.

7. Form DD626, "Inspection Report" (see figure B-6) shall be completed and signed by the inspector and assigned TE operator. Note Particularly:

   (a) Fire extinguishers (one 5-pound dry chemical inside cab, one 20-pound dry chemical outside cab, and one 20-pound dry chemical on outside of the trailer.)

   (b) Emergency equipment - three red electric lanterns, four red reflectors, four red flags, and two reflectorized shoulder warning signs (see Figure 5-1).

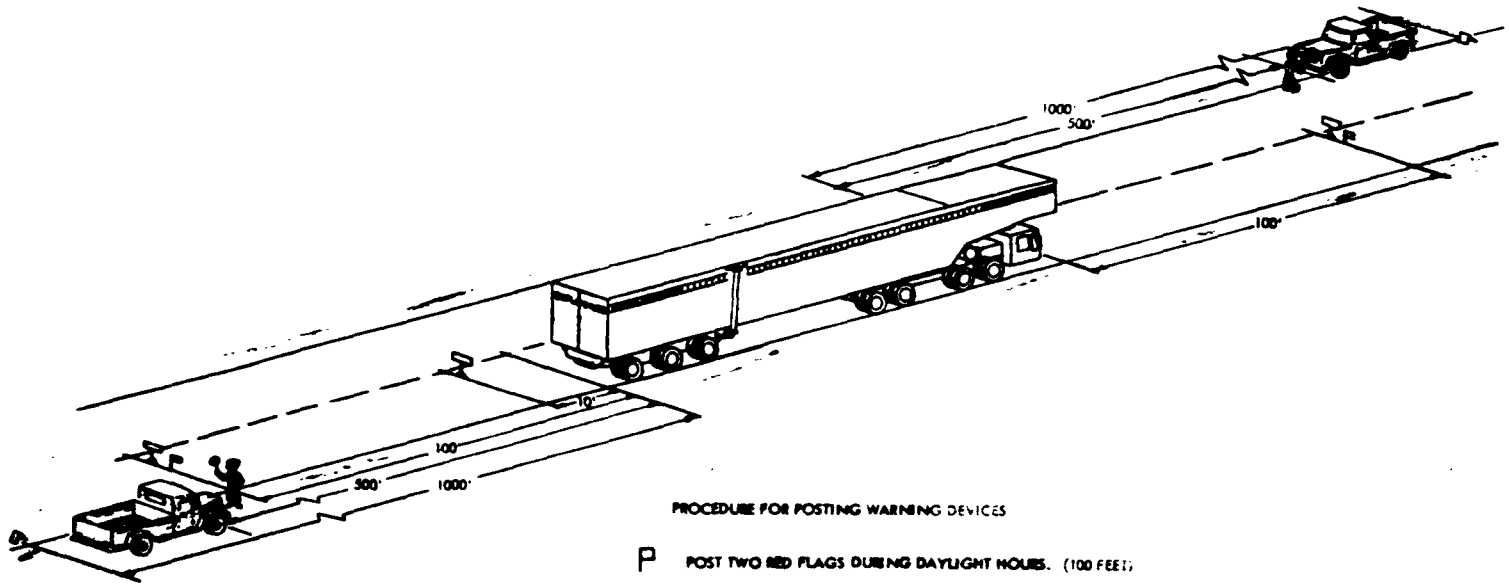
   (c) Installation of spark arrestor, if required by state or local law.

During transfer of the missile from the SSCBM to the TE (or vice versa), the following requirements shall apply:

1. The missile shall be bonded to SSCBM and the TE. The SSCBM shall be bonded to the TE. Both the SSCBM and the TE shall be grounded.
2. No matches or lighters shall be allowed in the transfer facility.
3. No more than one missile shall be in, or in the immediate vicinity of, the transfer facility at any one time except missiles being transported past facility on established road right-of-ways.

5.1.6 Emergency Procedures

1. Emergencies shall be considered conditions which could cause explosion or ignition of the missile or an explosive item. The following are examples of such conditions:
   (a) Smoke coming from the missile or its container, fire anywhere in the facility, grass fire or vehicle fire near the facility.
   (b) Evident electrical short circuit in or on any part of the missile.
   (c) Severe impact or penetration of the missile.
   (d) S&A mechanism found to be in armed condition.
   (e) Unaccountable or suspicious noises within the missile.
2. In the event of any of the above, the area supervisor shall give the alarm and notify the Host Fire Department or other fire fighting agencies.
3. All electrical power to the missile or associated equipment shall be turned off. Single switch control shall be provided.
4. If the missile propellant is in immediate danger of ignition,



T/E HIGHWAY STOP WARNING DEVICES

Fig. 5-1

(d) "Explosive placarding" (see Appendix B)

(e) Proof load testing of the TE has been performed as follows: The TE shall be proof load tested to 150% of its rated load every six months or 30 cycles. The hoist wire rope shall be visually inspected in its entirety every three months, or 15 cycles. (See Appendix C.)

8. Form DD836, "Special Instructions to Driver" (see Fig. B-9), shall be issued and signed by the dispatcher and TE operator. The TE operator shall be an operator trained in the operations of the TE, and must be thoroughly familiar with the procedures, routes of travel, and emergency procedures. Operators shall receive an annual physical examination equal to or in excess of the ICC requirements.

9. A convoy supervisor shall be assigned and shall be responsible for ensuring compliance with all safety requirements.

10. Prior to departure the base weather station and the U. S. Weather Bureau shall be consulted for weather forecast information. The convoy supervisor shall analyze such information with reference to destination and route, and in coordination with the Boeing Wing Safety Engineer, determine course of action. Factors of particular significance will be wind and visibility during adverse weather conditions. During transportation, the missile bearing TE is designed for maximum wind loads of 52 knots steady, and 79 knots, gusts.

11. The missile shall be bonded to the TE frame.

12. Smoking or carrying matches, lighters, or other spark producing items in the TE cab or within 100 feet of the vehicle, shall not be permitted.

13. The Te tractor shall be fueled prior to missile loading. Refueling enroute shall be avoided, but may be accomplished provided proper grounding procedures are observed.

14. Enroute, the TE shall not be left unattended except in the event of fire, as in paragraph 5.2.3.2f.

15. Only one missile shall be transported in the same convoy. If more than one convoy are enroute, a distance of at least 2,000 feet shall be maintained between convoys.

16. When parking overnight at an LCF, at least one person shall be in continous attendance at the TE, or in the support building.

5.2.3 Emergency Procedures

1. Emergencies shall be considered as fire in or immediate proximity to the TE, vehicle accident involving TE or escort vehicle, breakdown, or extreme weather conditions.

2. In the event of fire:

(a) Ston convoy; pull to right of road, but not on the shoulder.

(b) Set up road blocks 2,000 feet in each direction and clear area within 2,000 feet of all personnel.

(c) If fire involves only the tractor, the tractor should be disconnected from the container if possible, and driven a reasonable distance away from container.

(d) Have the nearest fire protection agency notified.

(e) If the missile propellant is not in immediate danger, attempts shall be made to extinguish the fire with fire extinguishers and other equipment avaliable.

(f) If the missile propellant is burning or in immediate danger, no attempt to fight the fire shall be made. The

area shall be immediately evacuated of all personnel to 2,000 feet.

(g) Notify the Highway Patrol, SATAF Safety Officer, Boeing Wing Safety Engineer, and Boeing Base Security Chief.

(h) Convoy supervisor shall complete accident report forms as soon as practicable, according to the base supplement.

3. In the event of accident:

(a) Stop convoy and place warning devices per figure 5-1; convoy escort personnel shall direct traffic and emergency turn signals shall be activated if possible.

(b) If personnel are injured, call an ambulance and/or physician.

(c) Notify the Highway Patrol, SATAF Safety Officer, Boeing Wing Safety Engineer, and Boeing Base Security Chief.

(d) Disconnect battery if danger of fire exists.

(e) Convoy supervisor shall complete accident report forms as soon as practicable, according to the base supplement.

4. In the event of equipment breakdown or weather conditions that do not permit travel:

(a) Stop convoy; pull to right of road, but not on the shoulder.

(b) Place warning devices per figure 5-1.

(c) Escort vehicle personnel shall direct traffic.

(d) Activate emergency turn signals.

(e) Avoid stopping near buildings.

(f) Block vehicle, if necessary, to prevent movement.

(g) If condition is not reparable, or of a major nature, see paragraph 5 below.

5. After a fire, accident or equipment breakdown, the convoy supervisor shall have the responsibility of determining the

(a) If damage was minor, limited to the TE tractor and/or road reparable, the convoy may continue to its destination upon repair. However, if considerable time is consumed in repair, the travel plan and destination may require modification.

(b) If damage is such that the TE is operable or road reparable, the convoy supervisor shall determine, if possible, if the emplacement or environmental system of the TE has been affected. The Boeing Liaison Engineering and Wing Safety Engineer shall be summoned to make an evaluation as to whether the TE shall continue to its destination or return to the base for detailed inspection and testing. Emplacement of the missile shall not be attempted until the TE has been thoroughly examined.

(c) If the missile has been damaged, or if the TE has been overturned or severely damaged, the Host Base EOD shall be summoned to assume responsibility for disposition.

(d) The TE shall not be left unattended at any time.

5.3 Launch Complex Equipment Checkout

Launcher/Missile Safety Checklist Procedure

1. Launch Complex equipment checkout is divided into two phases. The first phase is accomplished prior to missile emplacement, and utilizes a missile stimulator when required. The second phase is accomplished after missile emplacement. Phase one at one Launcher may be in progress at the same time that phase two is in progress at another Launcher. Positive mandatory controls shall be employed to positively prevent the possibility of ignition, or initiating the launch sequence. These controls shall be effected at all launchers in the squadron when equipment checkout begins in the first launcher in that squadron. At all times prior to delivery of the Launch Facility to the Air Force, these controls are mandatory:

   (a) The Launcher Safety Control Switch shall be locked in the safe (off) position.

   (b) The Missile Safing Pins (six) shall be installed. (Not removed prior to delivery to AF)

   (c) The Launcher Closure Actuating Explosive Device shall be electrically disconnected and tagged.

   (d) The Launcher Closure Lid shall be closed (except during missile emplacement, missile removal, or rescue operations.)

2. The Launcher/Missile Safety Checklist (Fig. 5-2) shall be utilized at each and every launcher in a squadron, once equipment checkout in that squadron has begun. The checklist shall be completed:

   (a) Each and every time personnel enter a launcher in which there are no other personnel at the time of entry.

LAUNCHER/MISSILE SAFETY CHECKLIST

THIS CHECKLIST SHALL BE COMPLETED UPON ENTERING AND AGAIN UPON LEAVING A LAUNCHER. UPON COMPLETION THE AREA SUPERVISOR SHALL IMMEDIATELY REPORT TO THE SQUADRON CONTROL ROOM THAT LAUNCHER NO. _____ IS IN AN "UNSAFE" STATUS, IF ONE OR MORE OF THE ITEMS (1 thru 4) ARE NOT IN EFFECT. THE DEFICIENCY SHALL BE CORRECTED AND UPON SUCCESSFUL COMPLETION OF THE CHECKLIST THE AREA SUPERVISOR SHALL REPORT THIS FACT TO THE CONTROL ROOM.

T H I S P R O C E D U R E I S M A N D A T O R Y

		INITIALS
1.	LAUNCHER SAFETY CONTROL SWITCH IS LOCKED IN SAFE POSITION	_____
2.	MISSILE SAFING PINS (SIX) ARE INSTALLED. (BY OBSERVING STREAMERS)	_____
3.	LAUNCHER CLOSURE ACTUATING EXPLOSIVE DEVICE IS ELECTRICALLY DISCONNECTED	_____
4.	LAUNCHER CLOSURE IS CLOSED.	_____

ENTERING: _____ _____ _____
AREA SUPERVISOR DATE TIME

LEAVING: _____ _____ _____
AREA SUPERVISOR DATE TIME

Fig. 5-2

(b) Each and every time personnel vacate a launcher. Upon successful completion of the "entry checklist" the checklist shall be placed in the facility log. If any deficiencies are found the area supervisor shall report immediately to the squadron control room that launcher no. _____ is in "unsafe" status, and direct action to correct the deficiencies. When the deficiencies have been corrected and the checklist completed, the area supervisor shall report a "safe" status to the control room. Upon leaving the launcher, the area supervisor shall, upon completion of the "leaving checklist", sign, date, and indicate time on the "entry checklist". Deficiciencies shall be reported and corrected as with the "entry checklist" procedure. The "leaving checklist" shall be sent to the squadron control room.

3. The Control Room shall maintain a control chart showing continually the status of each and every launcher by squadrons, as to whether they are in a "safe" or "unsafe" status, and whether personnel are in the launcher. If one or more launchers in one squadron are in an "unsafe" status, no checkout and testing operations in LF or LCF in that squadron shall be accomplished until all launchers have been placed in a "safe" status. Control Room personnel shall maintain a file of "leaving checklists" as they are received.

5.3.2 Safety Control Switch Key Control

1. Upon receipt at the base, the launcher safety control switch keys shall be logged in and placed in the custody of the Boeing Base Security Chief. Each key shall have

attached, the safety switch key Thong, ACO _____. When launcher checkout with the missile simulator requires the use of this key, the key shall be logged out to the personal custody of the area supervisor in charge of the checkout operations. Upon completion of the checkout tests, the area supervisor shall return the key to the Security Chief's custody. The keys shall remain in the custody of the Security Chief until AF acceptance of the launcher.

2. The area supervisor having personal custody of the safety control switch key during checkout operations shall personally utilize the key and keep it on his person at all times.

5.3.3 During Launch Complex Equipment Checkout the following requirements shall apply:

1. The personnel barriers shall be put in place upon arrival at the facility.
2. The launcher atmosphere shall be determined to be safe per paragraph 4.3.3 (B6) before personnel enter the launcher.
3. Personnel shall comply with all the applicable requirements per paragraph 4.3.
4. The safety requirements outlined in 5.3.4 through 5.3.18 shall be strictly enforced.

5.3.4 The gas generator shall be installed just prior to missile emplacement. The rotary actuator cartridge and the squib and jumper cable assembly shall be installed after missile emplacement.

1. Before installation, shorting plugs shall be installed in these devices and shall not be removed except for test purposes.

Installation and handling of these devices shall be accomplished by certified explosive ordnance handlers. A minimum of two persons shall perform these operations. Electrical connectors of these devices shall be tagged upon installation with tags reading, (see App. E para. 1.4.)

DANGER: NOT TO BE CONNECTED EXCEPT DURING DESIGNATED TESTING. HAZARDOUS CURRENT TEST SHALL BE MADE PRIOR TO CONNECTION.

All electrical connections shall not be completed except for continuity and other designated tests, and shall be disconnected upon test completion. These connections shall be taped and tagged through delivery of the facility. Personnel installing these devices shall discharge body static potential on missile or known ground before handling the devices. The area supervisor shall declare a caution period operation during installation and testing.

5.3.5 When placing or removing the platform over the launcher personnel access in preparation for targeting, the personnel handling the platform sections shall wear safety belts secured to fixed anchor points.

5.3.6 Secondary Explosive Device Continuity Check

The umbilical cables shall be disconnected from the distribution box and connected to the missile for hazardous current tests. After the tests are completed, the cables shall be disconnected from the missile and connected to the distribution box. At no time shall the umbilical cables be connected to both the distribution box and the missile.

5.3.7 Launcher Closure Checkout

The area supervisor shall ensure that all personnel are clear before beginning the procedure.

5.3.8 LCF End-to-End Test

(a) The LCF/DAC shall not be connected to the hardened cable.

(b) The launch control simulator shall be in place in the encoder cavity.

5.3.9 LF Startup

(a) The PG shall not contain a mechanical decoder.

(b) The LF/SCN simulator shall be employed with master control switch set to manual.

5.3.10 Line Equalization Verification Test

(a) The LCF/DDG cable adapter shall be installed at the LCF and LF/

(b) All ten of the "Loss of marks - modulation on input line" indicators on the control panel of the LCF/DAC shall be illuminated.

5.3.11 SCN Single Thread Test

(a) The LF/SCN interface simulator shall be installed and its master control switch on manual.

(b) The LF/IB and LCF/IB shall have only one common line connected from the LCF.

(c) All ten of the "loss of marks - modulation on input line" indicators on the control panel of the LCF/DAC shall be illuminated.

(d) The LCF/DDG cable adapter shall have its LCF transmit selectors properly set and panel plug installed.

5.3.12 LF End-to-End Test

(a) The LF/IB shall have no command lines connected.

(b) The message generator shall be connected to the LF/DAC.

(c) Cable W526 shall be disconnected from the LF/DDG.

5.3.13 Single Thread and Monitor Test

(a) The decoder cavity shall have a missile-launch electrical

function simulator installed.

5.3.14 LF Pair Tests

(a) The Launcher/Missile Safety Checklist procedure (see 5.3.1) shall be rigidly followed.

(b) The decoder cavity plug shall be installed in the decoder cavity of the programmer group launch drawer no. 1.

(c) The LF/SCN interface simulator shall be connected at each LF under test and its master control switch on manual.

(d) The IB's shall have only one command line connected.

(e) The volatile decoder at the LF shall be set to act on test message only.

(f) The LCF/OGE shall have a launch control simulator installed.

(g) All ten of the "Loss of marks - modulation on input line" indicators on the control panel of the LCF/DAC shall be illuminated.

5.3.15 Launch Message Propagation Test

(a) The Launcher/Missile Safety Checklist procedure (see 5.3.1) shall be rigidly followed.

(b) The decoder cavity plug shall be installed.

(c) The LF/SCN interface simulator shall be connected at each LF under test.

(d) The IB's shall have only one command and one receive line connected.

(e) The volatile decoder at each LF shall set to act on "test launch" messages only.

(f) The message generator shall be connected to the DAC in LF no. 2 to conduct the second portion of the LMPT test. During

this portion of the test, LF no. 2 shall have no command lin es connected at its IB.

(g) All ten of the "Loss of marks - modulation on input line" indicators on the control panel of the LCF/DAC shall be illuminated.

5.3.16 Command Network Verification Test

(a) The encoder cavity plug shall be installed in the LCF.

5.3.17 Delivery Status Safety Requirements

(a) The LCF shall have the encoder cavity plug installed.

(b) The LF safety control switches shall be pinned and locked in the safe position.

(c) The missile safing pins shall be installed.

(d) The LF decoder cavity plug shall be installed.

(e) The volatile decoder in the LF/DAC shall be set not to accept launch commands.

5.3.18 Flight-to-Flight Integration Tests

5.3.18.1 Newly Delivered Flight

(a) The LF safety control switches shall be locked in the safe position.

(b) The gag generator shall not be connected electrically.

(c) The missile safing pins shall be in place in the missile.

(d) The decoder cavity plug shall be installed.

(e) The LF volatile decoder shall be disabled.

(f) The LF/DDG cable adapter shall be connected.

5.3.18.2 The Operational Flight

(a) The safety control switch shall be locked in safe position.

(b) The safing pins shall be installed in the missile.

(c) The volatile decoder shall be disabled.

(d) The LF/DDG cable adapter shall be connected.

5.3.19 Emergency Procedures

(a) When missile is not emplaced, the provisions of paragraph 4.3.3 shall apply.

(b) When missile is emplaced, the provisions of paragraph 5.4.2 shall apply.

(c) If, in the process of checkout and testing, the status of the test becomes questionable, the area supervisor shall immediately stop the test, notify all other facilities in the squadron, and no testing in the squadron shall proceed until the situation is clarified and corrective action taken.

5.4 Missile Emplacement/Removal

5.4.1 Safety Requirements

1. Prior to missile emplacement/removal, the launcher and the missile shall be in the following configuration:

   (a) The safety control switch shall be locked in the safe position.

   (b) The safing pins shall be installed in the missile. (Check by observing the streamers).

   (c) The mechanical decoder cavity in the programmer group shall be empty.

   (d) The umbilical cables shall be disconnected from the distribution box.

   (e) The only connections made at the LF/IB shall be status lines.

   (f) The launcher closure actuating and locking mechanism gas generator shall be electrically disconnected.

   (g) The LF/SCN interface simulator shall be connected to the LF/DAC, the PG, and the security rack.

2. The personnel barriers shall be put in place upon arrival at the facility.

3. Wind velocities shall be monitored on site, and emplacement/removal shall not be attempted if velocities are equal to or greater than 39 knots, steady or 45 knots, gusts.

4. Road blocks shall be established on access roads to maintain a radius of ____ feet minimum from the launcher. The area within this radius shall be cleared of all non-essential personnel.

R

5. The area supervisor shall declare a "caution period" operation during emplacement/removal.

6. The launcher atmosphere shall be determined to be "safe" per paragraph 4.3.3 (B6), before personnel enter the launcher.

7. The safety requirements outlined in Section 4.3 shall be complied with as applicable.

8. Before locating transporter-erector in position, clear apron around launcher of all unnecessary equipment such as cables, timbers, hardware, debris, snow and ice.

9. The area supervisor shall be responsible to ensure that no smoking is permitted within 100 feet of the missile. (See Fig. E-1 App. E)

10. The missile shall be bonded to the TE and grounded to the launcher. The TE shall be grounded, and bonded to the launcher.

11. The area supervisor shall have sole responsibility for all direction during the operation.

12. No personnel shall be allowed in launch tube during lowering/raising of the missile.

13. Following emplacement:

    (a) The launcher closure lid shall be closed as soon as possible.

    (b) The safing pins shall again be checked by removing the access covers and observing the actual pin. The safing pins shall never be removed prior to delivery to the Air Force.

    (c) Umbilical cables shall not be connected at the distribution box when connecting the cables to the missile.

    (d) The decoder cavity plug shall be installed.

5.4.2 Emergency Procedures

Fire, personnel injury, atmospheric contaimination, etc. shall be considered emergencies. Procedures involved with atmospheric contamination per paragraph 4.3.3 shall apply. Injured personnel shall be evacuated as soon as possible and given proper medical attention. In the event of fire the provisions of paragraph 5.1.6 shall apply.

6.0 INDUSTRIAL SAFETY STANDARDS

6.1 General

1. Buildings shall be posed with "NO SMOKING" signs where applicable. The area supervisor shall enforce the no-smoking regulations.
2. There shall be no smoking within fifty (50) feet of gasoline or other fuel pumps, or areas using volatile fuels or paints.
3. Appropriate safety practices shall be enforced by the area supervisor.
4. Good housekeeping shall be maintained in all areas.
5. Fire Department telephone numbers and evacuation plans shall be posted in all areas, and drills shall be conducted periodically.
6. No object weighing more than 35 pounds shall be lifted by any one woman. In repeated (10 time/hour) lifting, one woman shall not lift objects weighing more than 20 pounds.
7. Portable metal ladders shall not be used for any operations.

6.2 Housekeeping

6.2.1 Good housekeeping is essential to accident and fire prevention, and is the responsibility of all personnel.

6.2.2 Requirements are:

1. Stairs and steps shall be kept clean and free of all obstacles or slippery materials.
2. Floor shall be kept clean and in good condition at all times.
3. The grounds, especially around buildings and flammable or explosive storage areas, shall be well policed and kept free of all flammable materials.
4. Weeds and other rank vegetation shall not be permitted to grow excessively or accumulate in the vicinity of buildings.
5. Materials shall not be stored under, or piled against, buildings,

against doors or exits, or under stairways.

6. Metal containers with self-closing lids shall be provided in all shops for the disposal of combustible wastes, rags, and other flammable materials. The same type containers shall be used for storing clean rags. Seperate containers shall be provided for oil or paint soaked rags and properly identified.

7. Protruding nails shall be removed from all crates, cases, packing boxes, casks, boards, and lumber.

8. Drips and spills shall be cleaned up immediately.

9. Clothing lockers shall be kept in a clean and orderly condition. Nothing shall be stored on top or underneath clothing lockers.

10. Flammable materials or clothing contaminated with flammable substances shall not be placed in lockers.

11. Food areas shall be maintained in a clean and orderly fashion.

12. All aisleways shall be clearly defined and kept free of material and any hazardous obstructions.

13. Areas shall be kept clear around sprinkler control valves, fuse boxes, electrical switch panels, fire extinguishers and other first aid fire appliances.

14. Standard safety cans shall be used in the handling and use of flammable liquids.

6.3 Office Operations

6.3.1 Hazards present in office areas consist of tripping hazards, electrical shock from machines, improper illumination, fire, and poor ventilation.

6.3.2 Requirements are:

1. All aisles shall be kept clear of obstructions, slipping and tripping hazards, and other debris.

2. Lines, wires, and similar obstructions less than ten feet above

the ground shall be clearly marked.

3. All building doors shall open in direction of exit.

4. Objects such as posters, bulletin boards, etc., which could distract the attention of an individual, shall not be placed in stairwells.

5. Appropriate non-skid waxes of the water base type or other finishing compounds shall be used for floor protection.

6. Cords and wires shall not be strung across floors.

7. Office machines and electrical equipment shall have all hazardous parts effectively guarded. Electrical conductors shall be completely insulated and equipment grounded, when appropriate, to guard against shock and fire.

8. Office fans installed less than eight feet above the floor shall be equipped with mesh guards.

9. Only non-combustible waste baskets shall be used.

10. A sufficient number of safety cans with self-closing lids, painted yellow, with black lettering "CIGARETTE BUTTS" painted or stencilled on each can, shall be provided each office.

11. Sufficient fire extinguishing equipment in accordance with National Fire Protection Agency Standards shall be provided for each building, and all personnel instructed in the use of equipment.

12. Mops, brooms, buckets, and brushes shall be kept in well ventilated designated location to prevent unsanitary conditions and the possibility of fire from spontaneous combustion.

6.4 Construction and Mechanical Operations

6.4.1 Hazards in construction operations are many and varied. The majority of the hazards are due to the temporary and changing nature of the work. Personnel and organizations involved are normally engaged at a location

for a short period of time, and operate with the minimum of facilities.

6.6.2 Requirements are:

1. Construction areas shall be clearly defined by signs and barriers.
2. Lights or flares shall be positioned at construction area perimeters after dark.
3. Personnel access shall be limited to exclude the curious.
4. All personnel operating powder actuating tools shall be trained in their use, and certified per state and local regulations.
5. All openings in floors, roofs, or in the ground shall be encircled with rigid barriers.
6. All ramps or scaffolds more than five feet above the ground, or over excavations, shall be provided with guardrails.
7. Hoisting and lifting gear shall be periodically inspected and proof-load tested per Appendix C.
8. Personnel operating chipping hammers, riveters, welders, sanders, table saws, grinders, drill presses, and similar equipment shall wear safety lens goggles. Personnel in proximity of such operations shall also wear safety lens goggles.
9. Portable electric tools shall be properly grounded, and personnel operating such tools shall position themselves on a clean, dry surface.
10. Power tools such as table saws, grinders, drill presses, jointers, and sanders, shall be adequately guarded, and shall be operated only by trained personnel.
11. Power tools shall be turned off when not in actual use. The power shall be disconnected when maintenance operations are performed.
12. Electric fixed power tools and machines shall be permanently grounded as prescribed in the National Electrical Code.

13. Hand tools shall be used only for the purpose for which they were designed.

14. Adequate ventilation shall be provided for welding and soldering operations, and all operations generating fumes, dusts, vapor, gases, or flying debris.

15. Only the so-called "high flash point", "safety", solvents, or non-flammable solvents, shall be used for cleaning parts or machines.

16. Personnel shall avoid excessive contact with cutting oils.

17. Compressed air shall not be used to clean clothing or the body. Safety lens eye protection shall always be worn when using compressed air.

18. All pneumatic tools shall be grounded to drain off static electricity when used in the vicinity of explosives or volatile flammable liquids.

6.5 Electrical and Electronic Operations

6.5.1 Short circuits, overloading, accidental grounding, poor electrical contacts and misuse are responsible for major accidents involving electricity.

6.5.2 Requirements are:

1. Supervisors shall ensure that all electrical equipment and facilities are continuously inspected to detect and correct hazards.

2. Weather-proof or water-tight equipment shall be installed as required by the National Electrical Code.

3. Explosion-proof fixtures shall be installed where required by the National Electrical Code, such as in areas where flammable mixtures are present in the air.

4. Only trained and authorized personnel shall install and maintain electrical facilities.

5. All personnel working on electrical equipment shall operate in accordance with paragraph 3.3.

6. Locked enclosures or barriers shall be used to protect electrical control panels from accidental contact by passing personnel. Approved insulated rubber matting shall be provided at operating stations.

7. Control switches shall be enclosed. When circuits are being installed or repaired, the line switch shall be locked open and tagged to prevent the circuit from being accidently energized.

8. Adequate warning signs shall be placed in plain sight in all areas where hazardous electrical facilities exist.

9. Metal frames of electrically powered equipment, electrical facilities, and their guards and transmission equipment carrying high voltages, shall be grounded per the National Electrical Code.

10. Electric motors used in areas where flammable or explosive atmospheres are present, shall be of the explosion-proof type.

11. Insulation on all open wiring shall be inspected periodically for deterioration. Bare wires shall be replaced immediately.

12. Insulated or plastic fuse pullers shall be used to remove and replace fuses when de-energized switches are not provided and/or not practical.

13. Cords used on portable electric tools shall contain an equipment grounding conductor.

14. Personnel shall not attempt to adjust any part of electronics equipment when there is a possibility of receiving injuries from unprotected high voltage components.

15. Supervisors shall ensure that all personnel are qualified and fully understand and adhere to safety standards pertaining to high voltage equipment.

16. Electrically rated matting shall be used to cover floors and equipment when working on hazardous electrical equipment.

17. Operators and technicians shall be familiar with the location of power switches and danger areas on the equipment before starting any repairs.

18. The doors of all high voltage racks shall be kept closed at all times, except for necessary and authorized repairs.

19. Microwave and radar radiation of sufficient intensity can damage human tissue, particularly the eyes. Personnel who work with microwave and radar equipment shall be familiar with the hazards involved.

20. Whenever personnel handle high voltage or high value capaciters, they shall be certain either to discharge or ground the components after turning off power.

21. When diluting sulphuric acid (H_2SO_4) battery electrolyte, the ACID SHALL BE POURED INTO THE WATER. A violent reaction occurs when water is poured into the electrolyte which can result in acid being splashed on personnel, causing serious and painful burns.

22. Adequate ventilation shall be provided during electrolyte diluting to prevent dangerous accumulations of explosive hydrogen gas given off during the process.

23. All personnel engaged in electrical operations shall be thoroughly trained in fight aid, particularly in the methods of artificial respiration.

24. First Aid cabinents shall be kept at locations in electronics shops.

25. "DANGER - HIGH VOLTAGE" signs or similar warnings shall be permanently posted in all areas housing high voltage equipment.

26. All fuse and switch boxes shall have stenciled on the outside, the voltage present, rated circuit capacity, and the equipment controlled by the installation.

27. Lightning arrestors and grounding switches shall be installed on all antenna systems.

28. Main power switches shall be equipped with devices for padlocking them open when personnel are working on equipment.

6.6 Material Handling & Transportation

6.6.1 This area of operations is continually plagued with many and varied hazards which can result in personnel injury and property damage. Hazards appear in methods of manual handling, defective or inadequate equipment, improper operation of equipment, danger of fire in the use of gasoline-powered equipment, and the lack of knowledge of the material or equipment in process.

6.6.2 Requirements are:

1. Personnel shall be trained in the safe methods of lifting and carrying.

2. Only fully trained operators shall use powered handling equipment.

3. Sufficient clearance shall be provided for aisles, loading docks, doorways, and turns. Secondary aisles shall be at least 2 feet wider than the widest vehicle used on them. Primary aisles shall be at least 3 feet wider than two of widest vehicles to be used.

4. Aisles, corners, posts, and obstructions shall be clearly marked.

5. Adequate ventilation shall be provided in closed areas where internal combustion powered equipment is used.

6. Maximum safe load limits shall be established for floors.

7. Speed limit within buildings shall be 5 mph. Speed limit out of doors shall be governed by local regulations and posted speed limit.

8. All material handling vehicles shall be inspected daily for safe conditions.

9. Vehicles shall not be put into motion until load is properly stacked and secured.

10. Internal combustion powered vehicles operating in hazardous areas shall be equipped with spark arrestors (complying with MIL-A-27302) on the exhaust, and flame arrestors on the carburetors.

11. Vehicle fueling shall be done in approved areas.

12. Drivers shall be responsible for the safe operation of their vehicles.

13. All personnel operating motor vehicles shall have in their possession a current Motor Vehicle Operator's License.

14. All operators shall:

(a) Be responsible for checking out emergency equipment such as survival kit, fire extinguisher, or chains.

(b) Be responsible for safe operation of the vehicle and the return of all emergency equipment checked out.

(c) Report to dispatcher when survival kit has been used, or if seal is broken, or if fire extinguisher has been used.

(d) Immediately report an accident to vehicle dispatcher or Motor Pool Contractor's Facilities Supervisor.

(e) Be familiar with local, city, state, and Air Force driving regulations, and comply therewith.

15. In inclement weather, motor vehicle operators out of the dispatch areas shall check-in every two hours.

7.0 Medical Plan

7.1 General

Medical services shall be provided in accordance with the policies and procedures outlined in this Exhibit. Respective Base supplements will prescrive requirements peculiar to the operations at a particular base. First Aid and emergency medical equipment shall be provided by the Integrating contractor at the remote facilities.

7.2 Ambulance service on the base shall be provided by the local Air Force Hospital.

7.3 Ambulance service for the remote facilities shall be the responsibility of the Boeing Company.

7.4 Emergency hospitalization for Contractor personnel on the base shall be provided by the Base Hospital.

7.5 Emergency hospitalization for employees working off-base shall be the Contractor's responsibility.

8.0 TRAINING

Special emphasis shall be placed on training of personnel. A safety Orientation followed by periodic Safety classes shall occupy a significant portion of all training sessions. The following typify the type of training to be conducted:

A&CO Equipment

Electrical Hazards

Emergency Procedures

Fire Prevention & Control
- General
- Fire Brigade

First Aid

Explosive Devices

Oxygen Deficiency

Vehicular Operation

Weather Indoctrination

Safety Surveillance

Training shall be accomplished by appropriate organizations to ensure that all personnel associated with the MINUTEMAN Weapon System are fully aware of all real and latent hazards and responsibility in the safety program.

9.0 ACCIDENT/INCIDENT REPORTING & ACCIDENT/DISASTER PLAN

9.1 The Contractors shall develop and practice accident/incident reporting procedure in accordance with D2-7997, Minuteman Accident/Incident Reporting Procedures. Reports should be clear and concise, yet include all pertinent information. Such reports are to be analyzed by Contractor Safety Engineers with the purpose of preventing similar accidents/incidents in this and other missile programs.

9.2 The Boeing Company is contractually responsible for integration of Safety at each remote site, as it is related to MINUTEMAN as a Weapon System. If a major accident or disaster occurs, a plan must be available that can be put into effect immediately. The Boeing Company shall prepare a plan that will be coordinated with the Host Base, for on-base disasters. For off-base accidents/disasters the Boeing Company shall develop a plan to confine the results of the accident or disaster as much as possible. Individual responsibilities and actions shall be clearly defined in the plan. Following are suggested items for inclusion:

1. Definition of types of emergencies covered by the Plan:
   (a) Definitions identical to Military.
   (b) Definitions of additional types for which coverage is desired. (Missile or motor fires and/or explosions, T.E. accidents on and off the Base, major building fires, blizzards, storms, floods, vehicle accidents on and off Base.
2. Responsibilities in emergencies under Military Disaster Control Plan.
3. Responsibilities in emergencies under Boeing Major Accident/Disaster Control Plan.

Items (2) and (3) above shall cover the following:

(a) Establishment of disaster teams and definition of teams' responsibility and authority.

(b) Coordination with the Military.

(c) Coordination with Associate Contractors.

(d) Internal responsibilities of Associate Contractors.

(e) Establishment of training program for disaster teams and all other personnel.

(f) Assignment of fire-fighting personnel and areas.

(g) Definition of first aid effort and Medical Section's responsibilities.

(h) Transportation of injured personnel.

(i) Posting of general directions to personnel, including pertinent names and phone numbers.

(j) Evacuation of personnel.

(k) Control of access to affected area.

(l) Control of re-entering affected areas.

(1) Atmosphere testing for toxic gases and oxygen deficiency.

(m) Treatment and disposal of damaged property.

(n) Organization of investigation team.

(o) Assignment of vehicles and drivers to specific tasks.

(p) Provision for availability of tools and equipment needed during emergency.

(q) Coordination with Civil Defense.

10.1 PROTECTIVE CLOTHING & SAFETY EQUIPMENT

10.1.1 Safety Equipment (Personal)

Goggle, cover, flexible plastic frame. Acetate lens (clear). (Can be worn alone or over Rx spectacles.)

Goggle, cover, flexible plastic frame. Acetate lens (green). (Can be worn alone or over Rx spectacles.)

Goggle, clear hinged bridge with side shields and plastic cable temples, with clear lens. (Not designed to be worn over Rx spectacles.)

Goggle, green, hinged bridge with side shields and plastic cable temples, with green lens. (Not designed to be worn over Rx spectacles.)

Goggle, cover, flexible plastic frame (opaque green) with #3 shade filter plate between plastic cover plates.

Lense, filter plate, welding 2" x 4½" (Shades 3.0, 5, 8, 10 and 11.)

Shield, face, standard industrial impact protection, with 8"L x .040 acetate plastic visor.

Shield, face, standard industrial impact splash protection with 8"L x .040 vinyl plastic visor.

Breathing unit, breathing air self-contained (30-minute supply) with pressure demand regulator and pak-alarm

Breathing Unit, breathing air, self-rescue (5-8 minute air supply with case.)

Respirator, face mask (twin cartridge type)

Cartridges, chemical - Organic vapors and acid gases.

Filters, dust - Not significantly more toxic than lead.

10.1.2 Safety Equipment (Facility Type)

Recharging unit, breathing air cascading for charging Air-Pak and Ska-Pak.

Air, Breathing
Oil-Less pumped
20-21% oxygen
CO_2 - 0.1% maximum
CO-0.002% maximum
Oil vapor 130 mg/liter maximum

Belts, Safety, Seat, Auto and Truck
Conformance with SAE SBA-4.

Barrier, safety launcher, portable.

Barrier, launch tube access.

Barrier, launch support facility entrance (For use when LSF is entered)

Hand railing, LCC entrance

Grill, aluminum, self closing, lower Equipment Room.

Floor, wire mesh, rattle space.

Rail, guard, portable (LF personnel access hatch).

Meter, air velocity.

Lantern, hand electric (plus compatible battery).

Thong, Safety Control Switch Key.

Belt, safety, body type, standard general purpose with circle "D" ring in back.

-OR-

Belt, safety, chest-waist type with circle "D" ring.

Lanyard, safety, nylon, one-half inch diameter with safety snap both ends.

10.1.3 Protective Clothing

Hard cap and chin strap.

Aprons, plastic, lab and shop type.

Coveralls, ten-ounce per square yard, cotton herringbone.

Glove, general purpose, work.

Glove, chemical handler's and fuel handler's vylasa plastic.

Glove, welder's.

Glove, chemical handler's lightweight (Trichlor, MEK, Potassium Dichromate)

10.1.4 Maintenance Materials (Protective Clothing & Safety Equipment)

Disinfecting Solution

10.1.5 Emergency and Rescue Equipment

Bag, sleeping (survival kit)

Bag, barracks (survival kit)

Basket-stretcher.

10.2 PORTABLE GAS DETECTION EQUIPMENT

Gas tester, Oxygen with 15-foot sampling hose.

Gas tester, Carbon Monoxide.

Combustible Gas Indicator with 15-foot sampling hose.

10.3 MEDICAL EQUIPMENT

Water purification tablets.

First Aid Kits

First Aid Cabinet

APPENDIX A

1.0 References

1. Boeing Company Safety Analyses, Operating Procedure and Bulletins
2. ASTM Standards (American Society of Testing Materials)
3. ASME, "Code for Pressure Piping" and "Unfired Pressure Vessels"
4. ICC Regulations
5. National Safety Council Codes, Accident Prevention Manual for Industrial Operations
6. American Standard Association Safety Codes
7. Safety and Health Standards, Walsh-Healey Public Contracts Act
8. National Electrical Safety Code, American Standards Association
9. Corps of Engineers' Safety Requirements Handbook, Dept. of the Army
10. Chemical Safety Data Sheets, Manufacturing Chemists Association, Inc.
11. Compressed Air Handbook, Compressed Air and Gas Institute
12. Handbook of Dangerous Materials, N. Irving Sax
13. Manual of Accident Prevention in Construction, Associated General Contractors of America, Inc.
14. Handbook of Fire Protection, National Fire Protection Association
15. National Fire Codes, National Fire Protection Association
16. MIL-STD-709, American Standard, Ammunition Color Coding
17. MIL-STD-803, Human Engineering Criteria for A/C, Missiles and Space Systems, GSE.
18. AFBM 58-10, Reliability Program for Ballistic Missile & Space Systems
19. AFM 32-3, Accident Prevention Handbook
20. AFM 32-6, Explosives Safety Manual
21. AFM 67-3, Storage and Materials Handling
22. AFM 67-14, Military Fuel Operations Handbook
23. AFM 160-25, Engineering Data, Preventive Medicine, and Occupational Health Program
24. T.O. 00-25-212, Procedures for the Dissipation of Accumulated Static Electricity

25. AFR 86-8, Quantity-Distance Standards for Storage of Mass-Detonating Military Explosives

26. AFR 92-1, The Air Force Fire Protection Program

27. AFR 136-6 and 136-9, Ammunition and Explosives Material Surveillance and Safety.

28. T. O. 06-20-6, Safe Handling of Compressed Gases

29. T. O. 21-Series and T. O. 11-Series, Ordnance Safety Manual

30. MIL-S-8512B, Support Equipment, Aeronautical, Special, General Specification for the Design of

31. T. O. 00-25-223, Integraled Pressure Systems and Components (Portable and Installed) 1 Feb. 1962

32. Federal Spec. GGG-H-142C, 18 Dec. 1961

33. D2-7987 Minuteman Accident/Incident Reporting Procedures.

2.0 Glossary

Area Supervisor - Area Supervisor shall mean the supervisor in charge of a specific area.

Arm-Disarm Mechanism - A safe and arm type device that interrupts the electrical circuitry to an explosive item.

Autoignition - The minimum temperature required to cause self-sustained combustion regardless of the source of heat.

Caution Period - A period of time (during a work operation on a missile or related ordnance item) when additional safety precautions will be taken and only essential personnel will be allowed in the area.

Detonator - A initiator which may be actuated electrically, by flame or friction, and which functions to provide a detonating wave of sufficient magnitude to transmit detonation into explosive materials requiring initiation.

Electrical Bonding - Completion of electrical continuity between two units by metal to metal contact or flexible conductor (i.e., missile to trailer, initiator to engine).

Electrical Grounding - Completion of electrical continuity from a single unit to an identified low resistance grounding terminal (i.e., missile to ground, trailer to ground).

Fire Hazard - Any condition favoring destruction of life or property by fire.

Hazardous Material - Explosives (including solid propellant), flammable substances, toxic and radiation substances, oxidizing materials, corrosive substances and compressed gases.

Health Hazard - A condition in the environment that can cause ill health as a result of exposure to hazardous materials, pathogenic organisms or radiation.

ICC - Interstate Commerce Commission.

Igniter - A complete unit whose only function is to provide ignition flames and gases to a material. A squib is an ignitor when it is used alone to ignite the main charge. A squib is not an ignitor when it is the first of a series of components whose purpose is to provide ignition flames and gases to the main charge.

Initiator-- The primary component in any explosive train wherein the electrical spark or mechanical energy is transformed to a flame and amplified or transformed into a detonation. Detonators and squibs are initiators.

Launch Control Center (LCC) - Concrete structure, underground, containing launch control instruments and facilities to control missile

launching within the squadron and to monitor and checkout assigned missiles.

Launch Control Facility - The entire launch control complex including the Launch Control Center, support building service area, and security and perimeter fences.

Launch Facility - The entire launch site including the Launcher, Launch support Facility, service area, and security fence.

Launcher - Below-surface concrete structure containing the missile in a "ready" state. Heretofore referred to as a "silo".

Launcher Closure - Concrete closure (lid) that seals the Launcher against environmental factors such as wind, rain, dust, snow, and temperature, and protects the missile and equipment.

Military Safety Standards - Applicable Air Force Safety Standards as established through Technical Orders, (TO), Air Force Manuals (AFM), and Air Force Regulations (AFR).

National Safety Codes - Applicable Safety Standards as established in American Standards Association (ASA), National Board of Fire Underwriters (NBFU), and National Electric Code (NEC).

Non-Sparking Tools - Tools constructed with non-ferrous materials and which will not produce sparks under normal conditions of use.

Explosive Area - Any room, building or area in which explosive material is handled or stored.

Explosive Manual - Explosive Safety Manual AFM 32-6.

Explosive Ordnance Personnel - Trained qualified personnel assigned to the job of handling explosive items.

Pyrogen Unit - The cast component of a rocket engine ignition system which amplified the flame and hot gases generated by the squib and other components of the pyrotechnic train to such a magnitude that virtually instantaneous ignition of propellant grain occurs. The pyrogen unit is normally a small propellant grain with a large burning surface to mass ratio.

Safe and Arm Mechanism (S/A) - Mechanism that interposes a safety barrier between the electric initiators and the subsequent pyrotechnic or explosive train until such time that the ability to achieve actuation of the pyrotechnic or explosive train is desired.

Solid Propellant - A rocket propellant in a solid state that contains its own oxidizer and fuel and is bonded to the motor case. Sometimes referred to as propellant grain when speaking of the propellant by itself.

Squibs - An initiator normally electrically actuated whose function is to provide hot gases and flame for ignition.

SMSB - Strategic Missile Support Base.

Trans-Erecter - Equipment for highway transportation of the missile with controlled environment of temperature and humidity, and capable of vertical erection for emplacement and/or removal of the missile in the launch tube.

3.0 Abbreviations

ACO	-Assembly and Checkout
BATE	-Base Activation Test Equipment
BMT	-Ballistic Missile Trailer
CCC	-Command Control Console
CCPS	-Communication Cable Pressurization System
CSA	-Contractor Support Area
DAC	-Data Analysis Control
EOD	-Explosive Ordnance Disposal
EGPSS	-Electrical Ground Power Sub-System
FCLU	-Field Construction Liaison Unit
G&C	-Guidance and Control
GOE	-Ground Operational Equipment
GSE	-Ground Support Equipment
GTE	-Ground Transportation Equipment
IB	-Interconnecting Box
IRS	-Integrated Record System
LCC	-Launch Control Center
LCF	-Launch Control Facility
LCS	-Launch Control System
LF	-Launch Facility

M&IR	-Manufacturing and Inspection Record
MIRR	-Manufacturing Inspection Receival Report
PG	-Programmer Group
RPIE	-Real Property Installed Equipment
RV	-Re-entry Vehicle
SATAF	-Site Activation Task Force
SCN	-Sensitive Command Network
SCS	-Security Control System
SM	-Sequence and Monitor
SMSB	-Strategic Missile Support Base
SSCBM	-Shipping and Storage Container, Ballistic Missile
TE	-Transporter Erector
WSF	-Weapon System Familiarization
WSSF	-Weapon System Safety Familiarization
WSSM	-Weapon System Safety Manager

APPENDIX B

1.0 MINUTEMAN EXPLOSIVES GENERAL INFORMATION

1.1 Propellant Characteristics

Solid propellants are essentially a mixture of a fuel, oxidizer and additives to control their burning rate. Propellants are called homogeneous when the oxidizer is attached chemically to the fuel. Propellants are called composite if the oxidizer is mechanically mixed with the fuel, but not combined chemically. Propellants are cast in the motor case from a semi-fluid state and allowed to harden and cure at elevated temperature. The propellant adheres to the motor case, thus resulting in a case bonded propellant.

1.2 The MINUTEMAN first and second stage motors are of the case bonded composite propellant type, having ammonium perchlorate as the oxidizer and fuel/binder. The 3rd stage motor is a double base composite type.

1.3 The first and second stage propellants are slate gray in color with imbedded shiny flakes and a rubber-like consistency. The third stage propellant is grevish brown. The material burns like a sparkler, but with an intense white light similar to an arc flash. Hydrochloric acid gas is given off when solid propellants containing perchlorates are burned. Nitrogen dioxide and other oxides of nitrogen are evolved when double base propellants are burned. In addition to these acid gases, carbon monoxide gas is given off in large volumes when either or these solid propellants are burned.

1.4 The most common personnel injuries are skin burns, eye flash

burns, and concussions. Impact, compression or static sparks can ignite thin layers of propellant. Penetration of the motor case by high impact fragments could cause propellant ignition. Incidents involving solid propellants in the cured or solid state could be the result of:

1. Dropping or striking the motor.
2. Propellant squeezed on threads or mating surfaces of nozzels or ignitors.
3. Hot spots on the outside of the motor from external heat sources, e.g., fires, grinding, drilling, sanding, soldering, and electric short circuits. (Pyrogen units, initiators, and ignitors are generally more sensitive to hear then the main propellant.)
4. Inadvertent activation of the ignition system.

1.5 The coefficient of elasticity of the propellant grain is approximately ten times that of the confining container. Therefore, the chamber burning pressure in transmitted directly to the container, which is designed to withstand evenly distributed pressures only slightly higher than the normal chamber pressure. Fires originating between the propellant and the motor case could cause an over-pressure condition. This could result in an explosion similar to that of a pressure vessel. A burning motor or case rupture, may throw large chunks of burning propellant over a wide area. (Distances of 2000 feet or more have been noted.) Propellant contains its own oxidizer and burns readily when confined, even under water.

2.0 MINUTEMAN PRIMARY EXPLOSIVE DEVICES

2.1 The following are components of the missile as received:

Stage Separation and Skirt Removal

- Boosters
- Detonators
- Delay Boosters
- Linear Explosive
- Mechanical S & A

First Stage Motor

- S & A Device
- Pyrogen Unit
- Motor Propellant

Second Stage Motor

- S & A Device
- Ignitor Basket
- Motor Propellant

Third Stage Motor

- Thrust Termination
- S & A Device
- Ignitor Basket
- Motor Propellant

Battery Actuation Squibs

Squib Critical Lead Disconnect Switches

G&C Umbilical Disconnect Switches

Battery Disconnect

2.2 The following are components of the LF and will be received, tested, and installed as individual items, by certified explosive ordnance handlers only.

- Rotary Actuator Cartridge
- Squib and Jumper Cable Assembly
- Gas Generators

3.0 COLOR MARKING FOR MINUTEMAN MOTORS AND EXPLOSIVE SYSTEMS

Ref: GM 60-7650.3-3124, 22 December 1960 (Old), 29 August 1961 (New)

COMPONENT OR PART	OLD MARKING SYSTEM		(MIL-STD-709) NEW MARKING SYSTEM	
	Loaded (5)	Inert (4)	Loaded (5)	Inert (4)
Motors (1)	Yellow letters on OD background	White letters on black background	White letters on brown background	White letters on blue background
Ignitors (2)	Yellow letters on OD background	White letters on black background	White letters on brown background	White letters on blue background
Safety and Arming Mechanism (2)	Yellow letters on OD background	White letters on black background	White letters on brown background	White letters on blue background
Jet Perforator (2)	Yellow letters on OD background	White letters on black background	White letters on brown background	White letters on blue background
Primacord, Linear Shaped Charges, Explosive Connections, and Couplings (3)	Yellow letters on OD background	White letters on black background	White letters on brown background	White letters on blue background

NOTES: (1) 4" letters on 6" high background in the center spaced approximately 120 degrees apart.
(2) 1/2" letters, entire unit painted background color.
(3) Mark with decals attached at a maximum of every three feet of charge.
(4) All inert loaded components will be marked with the word "INERT".
(5) All live motors will be marked with the word "LOADED". All other live components will be marked with the Lot, and Loading Numbers.

4.0 QUANTITY-DISTANCE CLASSES

The following Quantity-Distance classes are represented in the explosives to be encountered.

4.1 Class 2 items burn with intense heat, but usually do not form dangerous fragments or generate pressure blasts.

4.2 Classes 10 can be expected to mass-detonate, and are principally a blast hazard. The quantity-distance requirements are based on the net weight of explosive involved, progressively increasing as the amount of explosive increases.

5.0 MINUTEMAN EXPLOSIVE CLASSIFICATIONS

The recommended Interstate Commerce Commission (ICC) and Military Explosive Classifications for the MINUTEMAN motors alone, the assembled missile (minus re-entry vehicle) and the LF ordnance items are as follows:

	Recommended ICC Explosive Classification	Recommended Mil. Explosive Class.
Stage I Motor (Alone)	B	2
Stage II Motor (Alone)	B	2
Stage III Motor (Alone)	A, Type 3	10
Stage I, II, and III Motors (Assembled) (Total high explosive equivalent wieght of 7,400 pounds)	A, Type 3	10*
Rotary Actuator Cartridge	B	2
Gas Generator	B	2
Squib and Jumper Cable Assy	B	2

*Class 2 (total explosive equivalent weight of 60,000 pounds) if this is the more conservative practice, i.e., greater quantity-distance, for the storage condition being accomplished.

6.0 RADIO FREQUENCY AND RADAR HAZARDS TO EXPLOSIVES AND PROPELLANTS

Both RF energy and high-powered radar beams are capable of firing electric squibs and fuzes from a considerable distance. Electric squibs used in rocket detonating systems can also be fired prematurely by RF energy and high-powered radar beams. Squib wires need only be of the proper length and configuration to act as a receiving antenna for such electrical impulses. This condition may result in the actual firing of rocket motors. Therefore, explosives that are electro-actuated will not be loaded or handled within distances from various power source specified in Figure B-1.

TABLE 1 - MINIMUM DISTANCES VERSUS MOBILE TRANSMITTERS

Transmitter Power (Watts)	Minimum Distance (Feet)
1-10	5
10-30	10
30-60	15
60-250	30

NOTE: Induced currents resulting from mobile-type radio transmitters up to five (5) watt RF output can be disregarded as a safety hazard.

TABLE 2 - MINIMUM DISTANCES VERSUS RADIO TRANSMITTERS

Transmitter Power (Watts)	Minimum Distance (Feet)
0-30	100
30-100	200
100-250	300
250-1,000	1,000
1,000-5,000	2,000
5,000-50,000	5,000
50,000-and up	10,000

TABLE 3 - MINIMUM DISTANCES VERSUS RADAR TRANSMITTERS

Transmitter Power (Watts)	Minimum Distance (Feet)
5-25	100
25-50	150
50-100	220
100-250	350
250-500	450
500-1,000	650
1,000-2,500	1,000
2,500-5,000	1,500
5,000-10,000	2,200
10,000-25,000	3,500
25,000-50,000	5,000
50,000-100,000	7,000
100,000-and up	7,000

Fig. B-1

7.0 GENERAL MINUTEMAN EXPLOSIVE SAFETY POLICIES

7.1 Lightning Protection

7.1.1 All buildings in which explosives are processed, handled or stored and all buildings in immediate area shall have complete lightning protection that conforms with AFM 32-6.

7.1.2 If an electrical storm approaches to within 5 miles or its projected path includes the area where explosive testing, installation or missile emplacement, removal, unloading, loading or transfer operations are in progress, such operations shall be discontinued until the storm has passed. During exposure to such a storm, test equipment and power to the missile shall be disconnected. The only exception to this policy is during transfer, emplacement or removal of the missile, the operation may be continued, if actually begun, at the descretion of the area supervisor.

7.1.3 Lightning systems shall be inspected semi-annually and tested annually. Maximum resistance shall be 10 ohms to ground.

7.2 Explosive Ordnance Certification

All personnel who handle, install, adjust or verify explosive ordnance devices, or supervise the activities of explosive ordnance handlers, shall be certified or otherwise qualified.

7.2.1 All Boeing supervisors and employees shall be certified by the Boeing Explosive Ordnance Certification Board.

7.2.2 All other personnel shall present evidence of qualification to the local SATAF Commander.

7.2.3 Certified explosive ordnance handlers shall wear cotton overalls when performing their assigned operations.

7.3 Electrical Bonding and Grounding

7.3.1 Explosives shall be bonded to their container or vehicle and the container shall be grounded.

7.3.2 Electrical bonds and grounds on explosives shall be tested per AFM 32-6. Maximum resistance shall be 25 ohms. Grounds shall be tested every 30 days.

7.3.3 Bonding and grounding connections shall be tested each time they are disconnected and reconnected or every 30 days whichever is less.

7.3.4 Grounding cords shall always be attached to the vehicle or missile first, then to ground. Reverse this procedure when disconnecting.

7.4 Non-Sparking Tools

7.4.1 Non-Sparking tools are not required for any scheduled explosive ordnance operations.

7.4.2 Non-scheduled or emergency operations involving explosives shall be evaluated and coordinated with the Boeing Wing Safety Engineer to determine if a requirement for non-sparking tools exists.

7.5 Conductive Floors and Footwear

7.5.1 Conductive floors or approved mats and footwear are required in all MINUTEMAN operations involving handling of unpackaged explosives devices, exposed explosives or in areas having a flammable concentration of dusts or vapors.

7.5.2 Conductive floors or approved mats and footwear:

1. Are not required for explosives storage facilities.
2. Are not required for launcher explosives installation operations. Grounding provisions shall be provided for personnel handling electric actuated devices and personnel shall discharge body potential at these grounding points

before beginning such operations.

3. Are not required for functional testing of explosive items in the special explosives testing facility.

7.6 Vehicle Placarding and Inspection Requirements

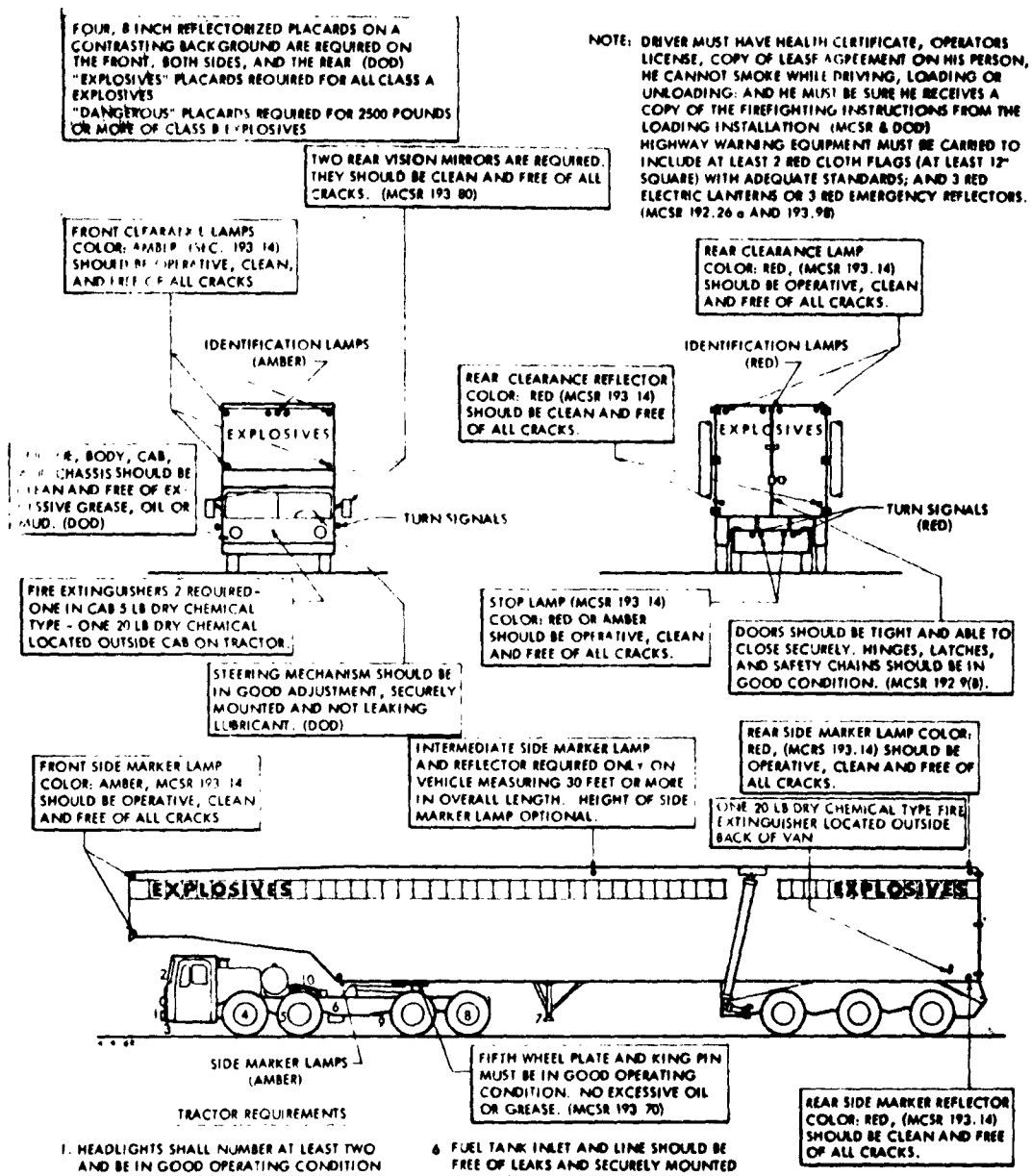
Whenever the assembled MINUTEMAN Missile or its propellant or explosive components are being transported, the carrier must comply with the placarding and inspection requirements as shown on Fig. B-2 thru B-5.

Figures B-6 thru B-8 are facimilies of the DD626 and DD836 forms to be utilized prior to departure.

MINUTEMAN PLACARDING REQUIREMENTS

ITEM BEING TRANSPORTED	MODE OF TRANSPORTATION	APPLICABLE REGULATION	PLACARDING REQUIRED	PLACARDING TYPE PLACARD	COMMENTS
1) 1st Stage Motor	Motor Carrier	Para. 77.823 of ICC Tariff No. 13	Yes	"DANGEROUS" 4 Required 1 each side	Minimum Recommended Size and Color - 8" - Red Letters White Background
2) 2nd Stage Motor	Motor Carrier	Para. 77.823 of ICC Tariff No. 13	Yes	"DANGEROUS" 4 Required 1 each side	"
3) 3rd Stage Motor	Motor Carrier	Para. 77.823 of ICC Tariff No. 13	Yes	"EXPLOSIVES" 4 Required 1 each side	Minimum Recommended Size and Color - 8" - Red Letters, White Background
4) Assembled Missile (Less Warhead)	Motor Carrier	Para. 77.823 of ICC Tariff No. 13	Yes	"EXPLOSIVES" 4 Required	"
5) Assembled Missile (Less Warhead)	Rail	Para. 74.540 of ICC Tariff No. 13	Yes	"EXPLOSIVES" 4 Required (See Comments) 1 each side	Piggyback Shipments - "EXPLOSIVES" signs as specified in 4 above are covered or removed or removed and placards conforming to Para. 74.550 of ICC Tariff No. 13 are attached to shipment
6) Assembled Missile (Less Warhead)	Military Air	Para. 2-3 AFM 71-4	Yes	"EXPLOSIVES" 4 Required (See Comments) 1 each side	This placarding applies to packaged items within plane. If loaded, plane is parked for an appreciable time, exterior placards are also required
7) Inert Missile or Other None-Explosive Material	All	Para. 77.823F of ICC Tariff No. 13	No	N.A.	Placard must be covered or removed.
8) Empty Carrier	All	AFM 32-6 - Para. 0712-4	No	N. A.	Placard must be covered or removed.
9) Items 1 thru 4 Being Transported Exclusively on Military Reservation	Motor Carrier	AFM 32-6 030612	Yes	"EXPLOSIVES" or "DANGEROUS	Fire symbols requirement in addition to placards have been deleted per AFM 32-6
10) Silo Lid Gas Generator and Umbilical Disconnect Squibs	Motor Carrier	AFM 32-6 071204	Yes	"DANGEROUS"	Gas Generator is an ICC Class B Explosive. Umbilical Disconnect Squibs are ICC Class C Explosives "DANGEROUS" placards for Class B Explosives are required.

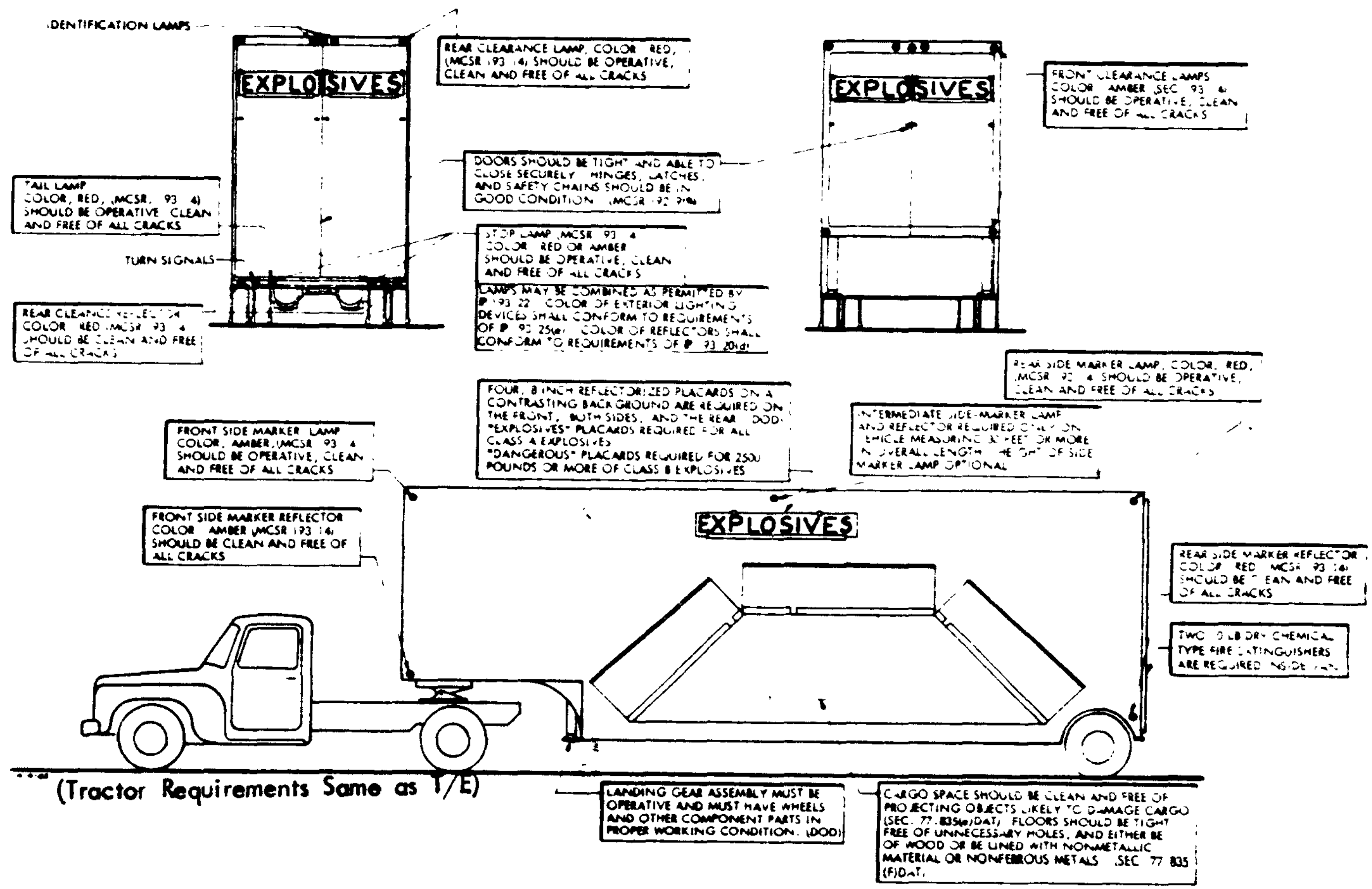
Figure B-2



TRACTOR REQUIREMENTS

1. HEADLIGHTS SHALL NUMBER AT LEAST TWO AND BE IN GOOD OPERATING CONDITION INCLUDING THE HIGH-LOW BEAM (MCSR 193. 13)
2. TWO WINDSHIELD WIPERS IN GOOD OPERATING CONDITION ARE REQUIRED. DEFROSTERS MUST BE OPERATIVE WHEN CONDITIONS REQUIRE ITS USE. (MCSR 193.78) 79).
3. HORN MUST BE OPERATIVE, SECURELY MOUNTED, AND OF SUFFICIENT VOLUME TO INSURE THAT PURPOSE FOR WHICH IT IS INTENDED TO SERVE.
4. WHEEL LUGS SHALL BE TIGHT AND NONE SHALL BE MISSING. (MCSR 196)
5. TIRES SHALL NOT BE SMOOTH NOR HAVE CUTS OR INJURIES EXTENDING INTO THE CORD BODY. TIRES SHOULD BE PROPERLY MATCHED. (MCSR 193.75(c).
6. FUEL TANK INLET AND LINE SHOULD BE FREE OF LEAKS AND SECURELY MOUNTED GAS CAP SHOULD HAVE A GASKET AND BUTANE FUEL IS PROHIBITED IN AN EXPLOSIVES AREA. (MCSR 193.65) (DOD)
7. LANDING GEAR ASSEMBLY MUST BE OPERATIVE AND MUST HAVE WHEELS AND OTHER COMPONENT PARTS IN PROPER WORKING CONDITION.
8. BRAKES MUST ALL BE OPERATIVE, INCLUDING HAND BRAKE AND AIR PRESSURE WARNING DEVICE. (MCSR 193.40-51)
9. EXHAUST SYSTEM SHALL BE IN GOOD CONDITION AND SECURELY MOUNTED AND SHALL DISCHARGE TO THE REAR OF THE CAB, IF NOT VERTICALLY, BEYOND ANY SADDLE TANKS. (MCSR 193.83)
10. BARE WIRES SHALL NOT BE PRESENT IN ANY LOCATION ON EITHER THE TRACTOR OR TRAILER. ALL SPLICES MUST BE IN GOOD CONDITION AND PROPERLY INSULATED (MCSR 193.28-32).

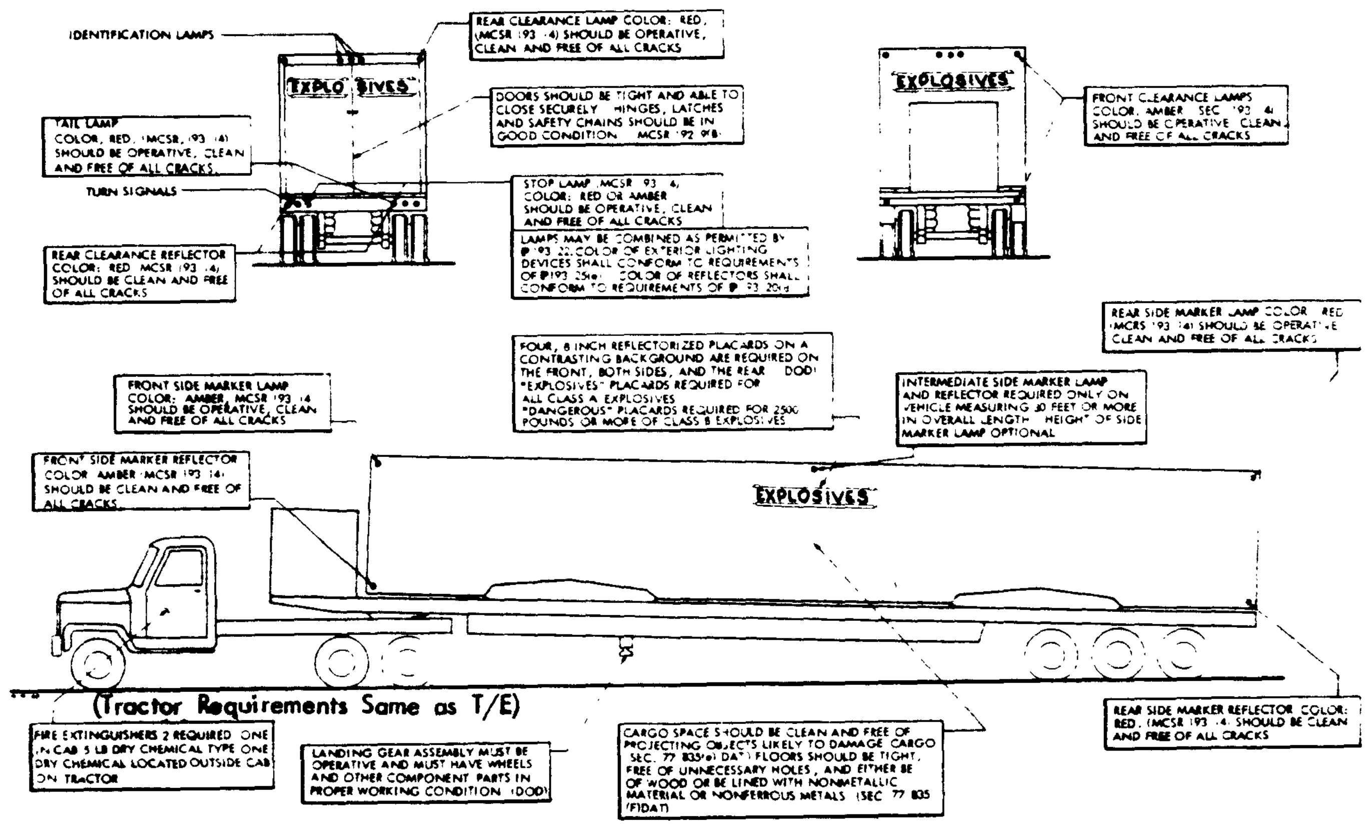
T/E INSPECTION REQUIREMENTS
Figure B-3



R/V AND G&C VAN INSPECTION REQUIREMENTS

Figure B-4

R



SSCBM INSPECTION REQUIREMENTS

Figure B-5

R

U3-4071-1000 (was BAC 1546-L-R3)

67

Rev 6-15-62

INSPECTION REPORT

MOTOR VEHICLE TRANSPORTING CLASS A OR B AMMUNITION AND EXPLOSIVES OVER PUBLIC HIGHWAYS

	DATE	*REPORT CONTROL SYMBOL*
	ACTIVITY REPORTING	CHECK ONE [ ] ORIGIN [ ] DESTINATION
NAME OF CARRIER		ENTERING [ ] EMPTY [ ] LOADED
NAME OF DRIVER	DRIVER'S STATE PERMIT NUMBER	PHYSICAL CONDITION OF DRIVER [ ] SATISFACTORY [ ] UNSATISFACTORY
		DOCTOR'S CERTIFICATE DATED

VEHICLE

TYPE OF VEHICLE *(Double trailers are prohibited for use in transportation of explosives)* [ ] TRUCK [ ] TRUCK AND TRAILER [ ] TRUCK & FULL TRAILER	TRUCK LICENSE NO. / ICC NUMBER	TRAILER NO. AND LICENSE	SLEEPER CAB [ ] YES [ ] NO
	EQUIPMENT [ ] COMPANY OWNED [ ] LEASED FROM *(Specify)*	LENGTH OF LEASE	LEASE EXPIRES
NOTE: All of the following items should be checked on empty equipment prior to loading. Items 1, 8, 10, 11, 12, 14, 17, 19, 21, and 22 should be checked on equipment arriving loaded.		POINT OF ORIGIN	

ITEM NO.	CHECK APPROPRIATE COLUMN *(See reverse side for explanatory notes)*	SATISFACTORY	UNSATISFACTORY	REMARKS *(Explain unsatisfactory items, use reverse side if necessary.)*
1	ENGINE BODY, CAB AND CHASSIS CLEAN (e.g., no excessive oil or grease)			
2	STEERING MECHANISM			
3	HORN OPERATIVE			
4	WINDSHIELDS AND WIPERS *(2 wipers operative required)*			
5	SPARE ELECTRIC FUSES AND BULBS AVAILABLE			
6	REAR VIEW MIRRORS INSTALLED			
7	HIGHWAY WARNING EQUIPMENT			
8	FULL FIRE EXTINGUISHERS *(2)* INSTALLED			
9	LIGHTS AND REFLECTORS OPERATIVE *(Head, stop, tail, front & rear clearance)*			
10	EXHAUST SYSTEM *(No apparent leakage)*			
11	FUEL USED *(Liquid petroleum gas prohibited in explosive area)*			
12	FUEL TANK, LINE, AND INLET			
13	COUPLING DEVICES KING PIN LOCK			
14	ALL BRAKES OPERATIVE			
15	LANDING GEAR ASSEMBLY OPERATIVE			
16	SPRINGS AND ASSOCIATED PARTS			
17	TIRES			
18	CARGO SPACE			
19	ELECTRIC WIRING			
20	TAILGATES AND DOORS ON CLOSED EQUIPMENT SECURED			
21	FIRE AND WATER RESISTANT TARPAULIN ON OPEN EQUIPMENT			
22	REFLECTORIZED PLACARDS *(4 required)*			
23	ANY OTHER DEFECTS *(Specify)*			

[ ] APPROVED [ ] REJECTED
(If rejected, give reasons on reverse side. Equipment will be approved if deficiencies are corrected prior to loading.)

SIGNATURE OF INSPECTOR

	ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE THE INSPECTOR AND THE DRIVER SHALL SIGN THIS INSPECTION FORM TO CERTIFY THAT	CHECK
24	MIXTURES OF EXPLOSIVES PROHIBITED BY I.C.C. REGULATIONS ARE NOT LOADED ONTO THIS VEHICLE	
25	LOAD IS SHORED TO PREVENT MOVEMENT	
26	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED	
27	DRIVER HAS INSPECTED LOAD, DRIVER INSTRUCTED AS TO NATURE OF LOAD HAZARD INVOLVED	
28	SEAL(S) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPAULIN ON OPEN VEHICLE	
29	PROPER PLACARDS APPLIED	
30	FIREFIGHTING INSTRUCTIONS RECEIVED BY DRIVER *(Will accompany load to destination)*	
31	COPY OF INSPECTION REPORT FURNISHED DRIVER TO ACCOMPANY LOAD TO DESTINATION *(Truckloads only)*	
32	SHIPMENT MADE UNDER I.C.C. SPECIAL PERMIT NUMBER [illegible] SEE INSTRUCTIONS ON REVERSE	

INSPECTOR'S SIGNATURE	DRIVER'S SIGNATURE

DD, FORM, JAN 87, 626 EDITION OF 1 OCT 84 IS OBSOLETE

FORM DD 626

Figure B-6

U3-4071-1800

EXPLANATORY NOTES

REFERENCES IN ITALICS BELOW ARE THE APPLICABLE PORTIONS OF THE I.C.C. MOTOR CARRIER SAFETY REGULATIONS (M.C.S.R.) AND THE EXPLOSIVES REGULATIONS (Published in Explosives Tariffs). DOD REQUIREMENTS ARE ESTABLISHED BY THE DEPARTMENT OF DEFENSE

(THE INSPECTOR MUST BE FAMILIAR WITH THE CITED PORTIONS OF THE SAFETY AND EXPLOSIVES REGULATIONS)

PHYSICAL CONDITION OF DRIVER - Certificate must not be over 36 months old. *(M.C.S.R. Section 191.10)*

Item 1, ENGINE, BODY, CAB, AND CHASSIS CLEAN *(e.g., no excessive oil or grease)* - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris, check under cab and chassis for excessive grease. *(DOD Requirement)*

Item 2, STEERING MECHANISM - Inspect to see that steering mechanism is in good condition, in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape *(DOD Requirement)*

Item 3, HORN OPERATIVE - Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. *(M.C.S.R. Section 193.81)*

Item 4, WINDSHIELDS AND WIPERS - Inspect to see that the windshields of the tractors are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative when conditions require it. *(M.C.S.R. Sections 193.78 and 79)*

Item 5, SPARE ELECTRIC FUSES AND BULBS AVAILABLE - Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as spare, and spare bulbs for each type of lamp used. *(M.C.S.R. Section 193.95 (c) and (d))*

Item 6, REAR VIEW MIRRORS INSTALLED - Every truck and truck tractor shall have installed two rear vision mirrors, one at each side, firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. *(M.C.S.R. Section 193.80)*

Item 7, HIGHWAY WARNING EQUIPMENT - This equipment must include either three red electric lanterns in operating condition and two red flags or three red emergency reflectors and two red flags. Flame producing equipment is prohibited. Red flags must not be less than 12 inches square. *(M.C.S.R. Section 193.95 (f),(h), (i) and (k))*

Item 8, FULL FIRE EXTINGUISHERS - Inspect to see that the two full fire extinguishers utilize an extinguishing agent which does not need protection from freezing, have been inspected and labeled by Underwriters Laboratories, Inc., or equal, as complying with both classifications B and C, are securely mounted and readily accessible. *(M.C.S.R. Section 193.95 (a))*

Item 9, LIGHTS OPERATIVE - *(Head-Stop-Tail-Front and Rear Clearance)* Inspect all lights and switches, including clearance lights and turn signals, make sure they are not obscured by dirt or grease or have broken lens, high and low beam switch must be operative. *(M.C.S.R. Sections 192.33, 193.18 through 193.33.)*

Item 10, EXHAUST SYSTEM - Inspect the exhaust pipe to see that it is securely attached to the exhaust manifold, that the gaskets or packing does not show visible evidence of leakage, and that the other end is clamped securely to the muffler. Inspect the muffler to see that it is in good condition and securely mounted. Check the tail pipe to see that it is securely clamped to the muffler, properly supported, and unobstructed at its outer end. The exhaust system shall discharge at a location to the rear of the cab and beyond any saddle tanks of the tractor. *(M.C.S.R. Section 193.83)*

Item 11, FUEL USED - Liquid petroleum gas burning equipment may be readily identified by the presence of pressure regulating valves in the fuel line near the tank and a breather pipe extending from the tank to the top of the cab. *(DOD Requirement), (M.C.S.R. Sections 193.65 (a) and (d) and 193.66)*

Item 12, FUEL TANK, LINE, AND INLET - Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and securely mounted. Examine caps for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable condition, securely supported and not leaking at joints. *(M.C.S.R. Sections 193.65 (a), (d), (e), (1), (f), (5) and (9))*

Item 13, COUPLING DEVICES - KING PIN LOCK - Inspect to see that the fifth wheel rocker plate and bed are in good condition, properly assembled and mounted, and adquately lubricated. King pin lock must operate freely and properly, lock securely, and not show excessive wear. *(M.C.S.R. Section 193.70 (a), (b), and (c))*

Item 14, ALL BRAKES OPERATIVE - *(Including hand brakes, and air pressure warning devices)* - Inspect for oil or grease leaks around drum flanges, pedal travel, air or vacuum line leaks, moisture in tanks, compressor build up and governor cut off. Test for proper and adequate brake application. *(M.C.S.R. Sections 193.40, 43, 46, 49 and 51)*

Item 16, SPRINGS AND ASSOCIATED PARTS - Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies, and auxiliary parts such as U-bolts, shackles, center bolts and hangers, for breakage, improper adjustment, and, as appropriate, lack of lubrication. *(DOD Requirement)*

Item 17, TIRES - Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Insure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. *(M.C.S.R. Section 193.75 (c).)*

Item 18, CARGO SPACE - Inspect to see that cargo space is clean and in good condition to prevent damage to lading from exposed bolts, nuts, screws, nails, or other inwardly projecting parts. Check floor to make sure it is tight and free of holes. *(Applicable Explosives Tariff Section 77.835 (n) and (l))*

Item 19, ELECTRIC WIRING - Electric wiring must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wires or improper splices or connections. Wires and electric fixtures inside the body must be protected from the lading. *(M.C.S.R. Sections 193.28, 29, 30 and 32)*

Item 20, TAILGATES AND DOORS ON CLOSED EQUIPMENT SECURED - Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. *(M.C.S.R. Section 192.9 (b))*

Item 21, FIRE AND WATER RESISTANT TARPAULIN - If shipment is made on open equipment, check to make sure the lading is properly covered with a fire and water resistant tarpaulin. *(Applicable Explosives Tariff Section 77.835 (b))*

Item 22, REFLECTORIZED PLACARDS - Check to see that the four reflectorized placards are conspicuously displayed, one in front, rear, and each side, that the lettering is at least 8 inches high, and that the letters are styled according to Series B of the Standard Highway Alphabet of the Bureau of Public Roads. *(DOD Requirement), (M.C.S.R. Section 193.26 (d), (4))*

Item 24, MIXTURE OF EXPLOSIVES PROHIBITED - Check carefully to prevent loading of incompatible explosives. *(Applicable Explosives Tariff Section 77.848)*

Item 26, WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED - Inspector should check the loading of the shipment to make sure that the loading plan or weight distribution recommendation furnished by the carrier is complied with and that the maximum gross weight that may be loaded on the vehicle for the particular shipment as stated by the carrier is not exceeded. *(DOD Requirement)*

Item 32, SPECIAL PERMIT NUMBER 868 - This item will be checked when a shipment is made under the provisions of I. C. C. Special Permit No. 868. When checked, it signifies that the shipment was loaded in compliance with carrier's advice on maximum weight and that the driver is relieved from certifying to Items 24, 25, 26 and 27. *(DOD Requirement)*

REMARKS

REVERSE SIDE FORM DD 626

Figure B-7

SPECIAL INSTRUCTIONS FOR DRIVERS

DATE

TO: (Carrier's Name and Trailer Number)

FROM: (Station Issuing Instructions)

BILL OF LADING NUMBER

PLACARDS

THIS TRUCK IS LOADED WITH (Item Nomenclature)

While operating over public roads keep at least 300 feet from trucks loaded with explosives or other dangerous articles; a greater minimum distance must be maintained if required by state or municipal regulations.

IN CASE OF FIRE

1. If any part of the truck, outside of actual contents, catches fire, take truck to a clear or uninhabited area, if practicable, and/or attempt to put fire out immediately with hand extinguishers.
2. If fire reaches contents of truck or gets out of control, warn nearby persons and request notification of police and fire departments.
3. If in convoy, other trucks proceed to safe distance.
4. ~~You can use water to fight this cargo fire~~. NO
5. Firemen should not approach closer than [1] (a) from fire; persons should be evacuated from area at least [1] 2000' away from truck.
6. Fire fighting apparatus should be kept at least [1] (b) from fire.

[1] *NOTE. The distances shown in items 5&6 are minimums, greater distances should be used whenever possible.*

7. As soon as practical notify the nearest military installation for instructions.

IN CASE OF ACCIDENT

1. Set brake and block vehicle to prevent movement.
2. Post flags by day, and red electric lanterns or reflectors by night warning traffic approaching from each direction.
3. Call for ambulance, if necessary.
4. Notify nearest police.

NOTIFY (By phone or wire as soon as possible)

per Base Supplement

IN CASE OF BREAKDOWN

1. Do not attempt to tow loaded vehicle. (c)
2. Post flags by day, and red electric lanterns or reflectors by night warning traffic approaching from each direction.

GENERAL PRECAUTIONS

1. Protect the public from the hazards of the cargo.
2. Do not allow smoking or the use of matches or lighters in or near the vehicle.
3. Obey all state and local traffic regulations.
4. Do not exceed posted speed limits.
5. Stop at all railroad crossings.
6. Use designated routes; wherever possible avoid congested residential or business areas.
7. Do not permit unauthorized persons to ride on vehicles.
8. At other than company rest stops or exchange points select parking locations in an isolated area. Explosive loaded vehicles should not group together at these parking locations.
9. Deliver load only to persons authorized to receive it.

OTHER SPECIFIC PRECAUTIONS

(a) and (b) 1000 ft when cargo is involved.

(c) Vehicle has towing capability; Convoy Supervisor assumes responsibility.

THESE INSTRUCTIONS MUST BE TRANSFERRED TO EACH SUBSEQUENT DRIVER FOR TURN-IN AT FINAL DESTINATION. IF MORE THAN 3 DRIVERS ARE INVOLVED THE ADDITIONAL SIGNATURES SHOULD BE MADE ON AN EXTRA SHEET AND ATTACHED HERETO.

SIGNATURE OF SHIPPER REPRESENTATIVE

SIGNATURE OF FIRST DRIVER

SIGNATURE OF SECOND DRIVER

SIGNATURE OF THIRD DRIVER

DD FORM 1 JAN 87 836

REPLACES DD FORM 836, 1 MAY 85, WHICH IS OBSOLETE.

* U.S. GOVERNMENT PRINTING OFFICE 1988 0-223300

(Sample Entries made as for TE)

DD Form 836

Figure B-8

APPENDIX C

1.0 Lifting Equipment - Proof Load Testing Requirements

Lifting equipment will be inspected and load tested in accordance with the following criteria:

1.1 Category I

General equipment, continually in use, such as chain, wire or other rope slings, hooks, bridles, and other rigging gear.

a. Inspect visually at 30-day intervals.

b. Proof load at 200% of rated load initially and every six months.

1.2 Category II

Large hoisting gear and fixtures such as spreader bars.

a. Visually inspect at 90-day intervals.

b. Proof load at 200% of rated load initially and at 6-month intervals.

1.3 Category III

Items in Categories I and II which normally are used infrequently shall be visually inspected before and after each use. Conduct proof load test at 200% of rated load initially and at 6-month intervals.

1.4 Category IV

Overhead cranes, mobile cranes, monorail hoists, portable handling equipment, and overhead permanently attached lift eyes.

a. Inspect visually at 30-day intervals.

b. Conduct proof load test of 150% of rated load initially and every 12-months (except mobile cranes, cherry pickers).

c. Conduct proof load test on mobile cranes (cherry pickers)

at 105% of rated load initially and every 12-months. With boom supported conduct proof load tests at 150% of rated capacity initially and every 12-months.

1.5 Category V

Hydraulic lifting jacks.

a. Inspect visually at 30-day intervals.

b. Conduct proof load test at 150% of rated load initially and at 90-day intervals.

1.6 Category VI

Handling gear used for temporary or experimental purposes. For inspection and proof load test purposes, this equipment will be scheduled with similar equipment in Categories I through V.

1.7 Transporter-Erector

Emplacing the missile shall be considered as one cycle. Removing the missile shall be considered as one cycle.

a. Conduct 150% load test initially and after 30 cycles or at 6-month intervals, whichever comes first and after repair or replacement, of components of the emplacement system.

b. Conduct a complete visual inspection every 3 months or 15 cycles whichever comes first.

c. Inspect assembly and cables visually before each missile loading.

1.8 Personnel Lifts, or Elevators (Launcher Work Cages & LCC Elevator)

a. Inspect visually before each use and if practicable, during use.

b. Conduct a complete visual inspection at 90-day intervals.

c. Conduct a 200% load test initially and at 180 day intervals.

1.9 Inspection of wire rope shall result in replacement of the wire rope if one or more of the following exist:

a. More than 2 wires in are strand in one lay are broken.

b. The wire rope is kinked or has areas of "bird caging".

c. A crown wire has worn such that the width of the flat of the worn area is 90% or more of the diameter of the wire.

d. The wire rope has rust areas that cannot be wiped clean with an oil soaked cloth.

APPENDIX D

1.0 Fire Protection Engineering Requirements

1.1 Fire protection equipment requirements for facilities shall be per Fig. D-2.

1.2 Fire extinguisher requirements for vehicles shall be per Fig. D-1.

1.3 All extinguishers should be of a type listed by Underwriter's Laboratories, Inc. Dry chemical extinguishers should be of the stored pressure type with direct reading gauge and squeeze grip control valve. Water pump can extinguishers should have a copper container with double acting brass insert pump and should be treated to prevent freezing. Standard automotive type brackets should be provided for mounting extinguishers on vehicles.

1.4 These recommendations exceed the normal ICC and Air Force requirements for extinguishers on vehicles for the following reasons:

a. The extremely high value represented by many of the vehicles and their contents far exceeds that normally encountered in rolling stock of similar size.

b. The vehicles, particularly those which are especially fabricated, are vitally important to the support of the entire Minuteman Program and replacement would be expensive and time consuming.

c. A large part of the time these vehicles will be operated in areas where little or no public or AFB fire protection is avaliable.

d. In many instances, the vehicles will be located, or in operation in areas exposing other high value facilities or equipment, i.e. the RV and GC Van located over the top of a launcher.

It must be noted that the extinguisher recommendations for

facilities are the minimum requirements for the building and fixed facilities only and do not contemplate the additional needs created by vehicles in or near the buildings.

"VEHICLE FIRE EXTINGUISHER REQUIREMENTS"

ACO or Fig. A No.	Description	Extinguishers
	Station Wagons, sedans, pick-up trucks	(1) 2 1/2 lb. dry chemical inside
	Fork lift trucks	(1) 2 1/2 lb. dry chemical
	Truck used to transport explosive devices	(1) 5 lb. dry chemical in cab (1) 20 lbs. dry chemical outside cab on driver's side
ACO 375	Shelter, Mobile	(1) 2 1/2 gal. Water Pump (1) 20 lb. Dry Chemical
ACO 420	Truck, Pre-Delivery Maint. and Support	(1) 5 lb. Dry Chemical
ACO 431	Truck, Explosives Handling and Support	(1) 5 lb. Dry Chemical In Cab (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
ACO 658	Semi-trailer, Van, Launch Facility and Launch Control Facility Assembly	(1) 20 lb. Dry Chemical on Tractor (2) 10 lb. Dry Chemical on Trailer
ACO 659	Truck, Van, Electronic Assembly	(1) 20 lb. Dry Chemical on Tractor (2) 10 lb. Dry Chemical on Trailer
ACO 7753, 7754, and 7762	Highway Transporter-Engine Stages I, II and III	(1) 5 lb. Dry Chemical in Tractor Cab (1) 20 lb. Dry Chemical Outside Cab on Driver's Side (1) 20 lb. Dry Chemical on Outside of Trailer

Figure D-1

"VEHICLE FIRE EXTINGUISHER REQUIREMENTS" (cont'd)

ACO or Fig. A No.	Description	Extinguishers
Fig. A 3080 and 812	Truck, Transporter	(1) 5 lb. Dry Chemical in Cab (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4024	Semi-Trailer, R/V and G/C Section	(2) 10 lb. Dry Chemical in Van
Fig. A 4116	Truck, Tractor, R/V & G/C Maint. Van	(1) 20 lb. Dry Chemical
Fig. A 4031	Truck, Van, Mechanical Maint.	(1) 20 lb. Dry Chemical in Van (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4059	Semi-Trailer, Transporter Erector	(1) 20 lb. Dry Chemical on Outside of Trailer
Fig. A 4075	Truck Tractor, Transporter Erector	(1) 5 lb. Dry Chemical in Cab (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4062	Truck, Van, Targeting	(1) 20 lb. Dry Chemical in Van (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4063	Truck, Van, Electronic Maint.	(1) 20 lb. Dry Chemical in Van (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4076	Tractor, Wheeled, Industrial	(1) 5 lb. Dry Chemical
Fig. A 4118	Chassis, Truck	Included with Fig. A 4062, 4031, 4063 and 4119

Figure D-1 (Cont'd)

"VEHICLE FIRE EXTINGUISHER REQUIREMENTS" (Cont'd)

ACO or Fig. A No.	Description	Extinguishers
Fig. A 4485	Truck, Wrecker	(2) 20 lb. Dry Chemical
Fig. A 4419	TE Escort Truck	(1) 20 lb. Dry Chemical in Van (1) 20 lb. Dry Chemical Outside Cab on Driver's Side
Fig. A 4129	SSCBM Truck Trailer	(1) 5 lb. Dry Chemical in Cab and (1) 20 lb. Dry Chemical Outside on Driver's Side
	SSCBM Trailer	(2) 10 lb. Dry Chemical outside of Trailer
ACO 4441	Bus	(1) 5 lb. Dry Chemical

NOTE: Dry chemical extinguishers provide much greater extinguishing capacity for their size and weight than comparable CO_2 extinguishers. However, if it is desired to utilize CO_2 extinguishers on some of the above vehicles, the extinguisher or extinguishers provided should be of the same rating, as determined by Underwriter's Laboratories, Inc. listings, as the recommended dry chemical unit. It should be noted that in many cases it would take two or three CO_2 extinguishers to provide the same extinguishing capacity as a single dry chemical extinguisher.

Figure D-1 (Cont'd)

MINIMUM PORTABLE FIRE EXTINGUISHING EQUIPMENT DISTRIBUTION - MINUTEMAN

SPACE OR AREA	TYPES AND NUMBER OF UNITS		
	2 1/2, 4- or 5-gal. Water	15-lb. CO_2	55-gal. Salvaged Water Drums, 2 Buckets Each
LCF Support Building			1 (outside)
Telephone Room / Generator Room / (outside)*		1*	
Equipment Room		1	
Kitchen - Dining Room		1	
Bedroom Area	1		
Security Office	1		
LF Support Building	1**	1 x 10	
Launch Control Center	1**	3	
Launch Control Equipment Building ***		1***	
Launcher Equipment Room	1**	2**	
Water Well Pump House & Garage (outside)		1	
Grade Level			10 (1 each launcher area)
Total Units Required Per Complex, I&C (1 LCC, 10 launchers)	2	17	11
Total Units Required Per Complex, Operational	2	17	-
Difference (Units to be removed per complex after I&C)	-	-	11
Total Units Required Per Squadron, I&C (5 LCC, 50 launchers)	10	85	55
Total Units Required Per Squadron, Operational	10	85	-
Difference (Units to be removed per squadron after I&C)	-	-	55

* Malmstrom and Ellsworth only.
** Units brought in on temporary basis by A&C/O personnel.
*** Other than Malmstrom and Ellsworth.

Fig. D-2

Added 6-15-62
REVISED

2.0 Fire Hazard Groups by Class

Fire symbols are provided to indicate the type of material or hazard present. They shall be removed [illegible] when the hazard or material is no longer present.

2.1 Symbol No. 1 group consists of quantity-distance (Q-D) classes 1, 11, 12 ammunition; classes 150 and 1050 fuels and oxidizers used together as propellants; solvents, oil, paint, compressed gases, and other inorganic oxidizing agents in sealed containers. While these materials are principally fire hazards, and while fires in which they are involved may be fought as such, minor explosions may be expected; hence caution must be exercised particularly where small arms ammunition, oxidizing agents, and chemical ammunition are involved.

2.2 Symbol No. 3 group consists of Q-D class 2 and 2A propellants which are packed in approved type containers, chemical ammunition when not assembled with explosives components, and class 2 pyrotechnic material. The Rotary Actuator Cartridge, squib and Jumper Cable Assembly and gas generators are class 3 items.

2.3 Symbol No. 4 group consists of Q-D classes 4 through 10 ammunition and explosives and class 950 liquid fuels and oxidizers used in propellants. Every effort should be made to prevent a fire from reaching this class of material, which is especially hazardous. Except for Q-D classes 4 and 5, these materials are subject to mass detonation. Therefore, no attempt to fight fires involving symbol 4 material shall be made except for manual activation of installed fire extinguishing equipment. The MINUTEMAN missile is class 4 fire hazard.

Appendix E

1.0 Sign Specifications and Sign Color Code

1.1 General

Properly and intelligently used signs can be effective in helping to prevent accidents. To be completely effective, personnel should react to signs automatically and not have to stop, read and analyze the meaning of each sign. Therefore, sign uniformity is important.

1.2 Sign Color Code

Red. Danger signs will be red and used only to identify or give warning of specific dangers, These signs are used around high voltages, explosives, temporary obstructions, and so forth. Danger signs will carry appropriate messages.

Green. Safety instruction signs which are used to provide personnel with information relating to safe practices will be predominately green. Signs will carry approrpriate messages.

Yellow. Caution signs will be predominately yellow. Such signs will be used to warn personnel of physical hazards and unsafe practices. Signs will carry appropriate messages.

Black and White. Used for directional and information signs.

1.3 Fire Hazard Symbols No. 1 through No. 4

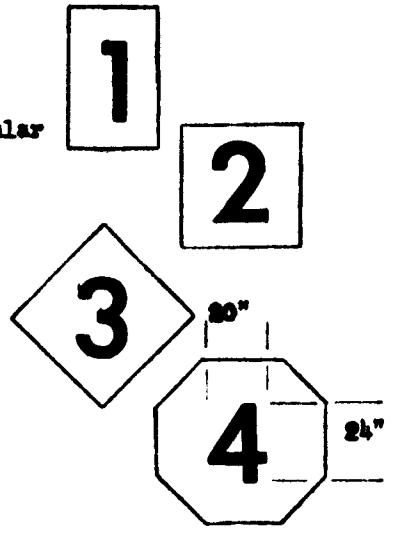
1.3.1 The symbols should apply to the most hazardous material contained within the area. The numbers should be at least 24 inches high and 20 inches wide, and must be visible from the most likely means of approach for fire fighters. To facilitate recognition, distinctive background shapes have been developed for each symbol.

Symbol No. 1 - Rectangular

Symbol No. 2 - Square

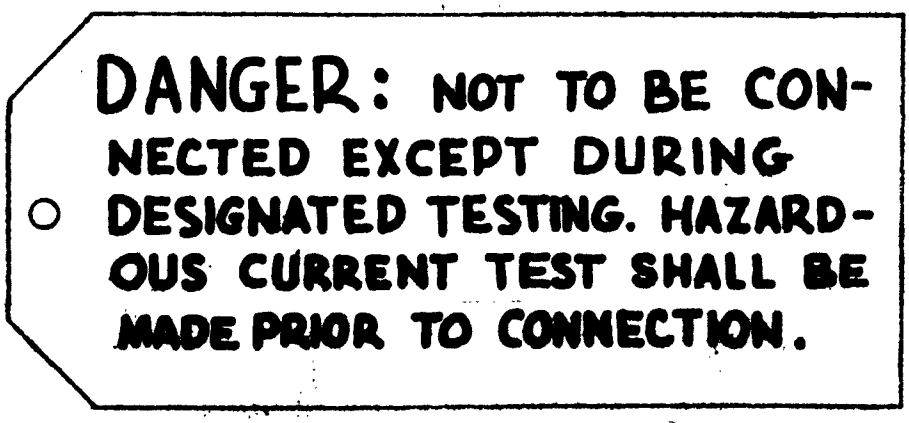
Symbol No. 3 - Diamond

Symbol No. 4 - Octagon



1.3.2 Specifications:

1. Stroke width, 1/6 of height or 4 inches.
2. Color - Black numbers and blocking with an orange background.



1.4 "Danger" Tags

1. Material may be wood or metal.
2. Letters shall be red on a white background.

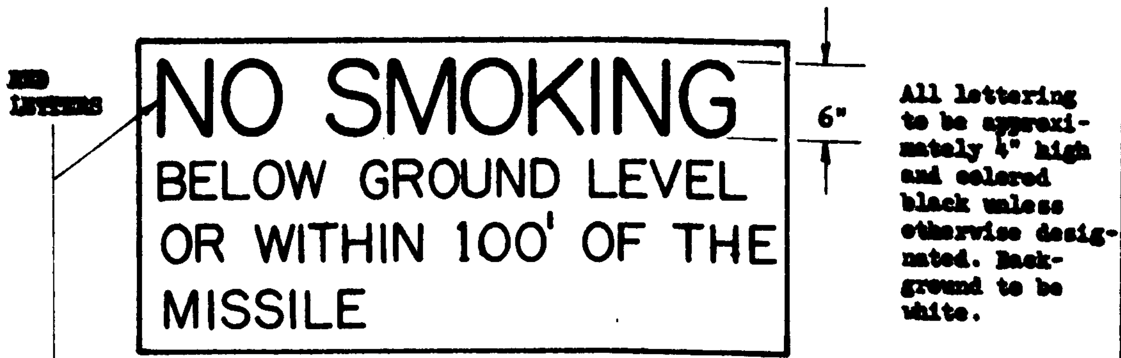


Fig. E-1

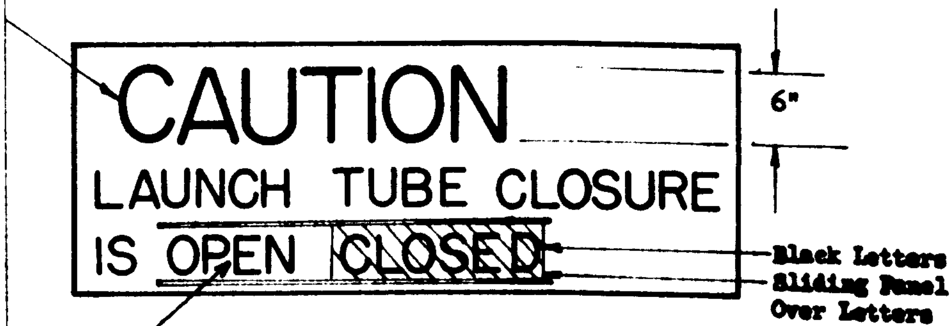


Fig. E-2

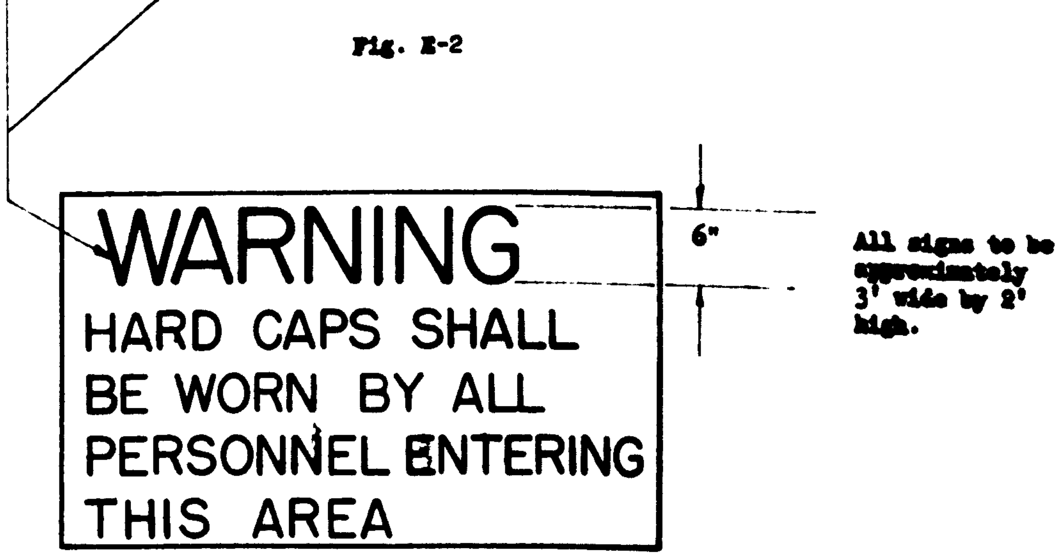


Fig. E-3