

# NORMAL

MWO effective date is 1 Apr 1992 and completion date is 31 Dec 1996

MWO 9-2300-200-20-1

## MODIFICATION WORK ORDER

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### MODIFICATION OF 6-TON TACTICAL EXPANSIBLE VAN SEMITRAILERS AND 2-1/2 AND 5-TON 6X6 TRUCK EXPANSIBLE VANS ENCLOSURE OF ASBESTOS CLOTH INSULATION IN VAN BODY HEAT DUCTS

M313 (NSN 2330-00-772-5273)  
M447 (NSN 2330-00-542-5709)  
M447C (NSN 2330-00-472-9999)  
M749 (NSN 2330-00-587-2454)  
M750 (NSN 2330-00-926-7035)  
M291A1 (NSN 2320-00-880-4642)  
M291A1D (NSN 2320-00-880-4647)

M291A2C (NSN 2320-00-907-0707)  
M820 (NSN 2320-00-050-9006)  
M820A1 (NSN 2320-00-050-9007)  
M820A2 (NSN 2320-00-050-9010)  
M292A1 (NSN 2320-00-440-8318)  
M292A2 (NSN 2320-00-077-1642)  
M292A5 (NSN 2320-00-699-3746)

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Headquarters, Department Of The Army, Washington, DC  
30 September 1991

#### REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Write a letter or complete and mail in a DA Form 2028, Recommended Changes to Publications and Blank Forms, to: Commander, U.S. Army Tank-Automotive Command, Attn: AMSTA-MB, Warren, MI 48397-5000. A reply will be provided to you.

Approved for public release; distribution is unlimited.

**1. PURPOSE.** The purpose of this modification is to enclose (seal up) asbestos cloth insulation contained inside heat duct areas in fielded M313/M447/M749/M750 6-ton tactical van semitrailers, and M292A1/M292A2/M292A5 2-1/2 ton truck vans and M291 A1/M291A2/M291A2C/M820/M820A1/M820A5 5-ton 6x6 truck vans. Insulation enclosure will eliminate friable asbestos fibers from the van body breathing zone, thus maintaining a hazard-free inhalation environment. This modification will further render target truck vans/semitrailer vans safe in compliance with Occupational Safety and Health Administration (OSHA), Department of Defense (DOD), Department of the Army (DA) and Environmental Protection Agency (EPA) standards for permissible exposure levels to environmental carcinogenic fibers/materials.

**2. PRIORITY.**

a. This modification is classified "NORMAL" as a result of Advisory Operational Safety-Of-Use Messages (SOU):

SOU, TACOM, AMSTA-MVM, 012100Z Jul 85  
 SOU, TACOM, AMSTA-MVM, 130850Z Dec 85  
 SOU, TACOM, AMSTA-MVM, 132000Z Jan 86  
 SOU, TACOM, AMSTA-MVM, 081200Z Jan 86

b. Operating restrictions contained in the above SOUMs remain in effect until this modification is applied.

c. Equipment in use (including equipment in supply or maintenance activities below depot level and equipment in administrative storage). Equipment in use will be modified as soon as possible but no later than the scheduled completion date. Equipment not modified after expiration of MWO completion date will be reported as NOT MISSION CAPABLE in accordance with applicable Army regulations.

d. Equipment in wholesale depot supply or maintenance activities. All MWOs, to include MWOs which have been incorporated into DMWRs, will be accomplished on serviceable materiel prior to issue and/or subsequent to scheduled completion date. Operational project stock stored at the depots will be modified concurrently with depot stock. Issue of unmodified materiel is prohibited. The MWO will be applied to unserviceable materiel during scheduled depot maintenance.

e. Prepositioned stock. Equipment which is prepositioned will be modified during cyclic maintenance consistent with TM 38-450.

**3. END ITEMS OR SYSTEMS TO BE MODIFIED.**

The following 6-ton tactical expansible van semitrailers and 2-1/2 and 5-ton truck expansible vans are to be modified:

MODEL	NSN	LIN	MODEL	NSN	LIN
M313	2330-00-772-5273	S74490	M291A2C	2320-00-907-0707	n/a
M447	2330-00-542-5709	n/a	M820	2320-00-050-9006	X62237
M447C	2330-00-472-9999	n/a	M820A1	2320-00-050-9007	n/a
M749	2330-00-587-2454	S74832	M820A2	2320-00-050-9010	X62271
M750	2330-00-926-7035	S74832	M292A1	2320-00-440-8318	X61929
M291A1	2320-00-880-4642	X62237	M292A2	2320-00-077-1642	X61929
M291A1D	2320-00-880-4647	X62271	M292A5	2320-00-699-3746	X62203

**4. MODULE (COMPONENTS, ASSEMBLIES, SUBASSEMBLIES, BOARDS, AND CARDS) TO BE MODIFIED.** Not applicable.

**5. PARTS TO BE MODIFIED.** Not applicable.

**6. APPLICATION.**

a. Time Compliance Schedule. The effective date of this MWO is 1 April 92 and its completion date is 31 Dec 96.

b. Level of Maintenance Authorized to Apply the MWO: This modification will be accomplished by Organizational Maintenance.

## c. Work Force and Man-Hour Requirements:

<u>WORK FORCE/SKILLS</u>	<u>MAN-HOURS</u>
1 each vehicle operator to remove register cover, spray foam-in insulation in inside bottom van body cavity and seal vents extending to foldout walls and floors.	0.50 hrs
Operator will apply cement sealant to cover plate and install cover plate to openings in front wall.	0.10 hrs
Operator to dispose of register covers as hazardous waste	0.15 hrs
Disconnect fuel lines and electrical connections from heater.	0.05 hrs
Quality control inspection.	0.10 hrs
<u>Where heaters have already been removed</u> , remove residual bracketery/plates and clean areas to allow adequate cement adherence.	0.10 hrs

Total man-hours required to seal vents in one vehicle is 1.0 hour.

d. MWO's to be applied to or concurrently with this MWO. Not applicable.

e. Additional Information. Apply MWO in well-ventilated area. MWO should not be applied by personnel with respiratory problems. Siliprene contains Toluene. Great Stuff contains less than 15% 4,4-Diphenylmethane Dicyisocyanate (MDI). Chemicals are safe after expansion. Use disposable gloves when applying MWO to prevent skin contact with asbestos fibers.

## 7. TECHNICAL PUBLICATIONS AFFECTED/CHANGED.

TM 9-2320-211-20P & 34P - - (M291A1 , M291A2D, M291A2C)  
 TM 9-2330-238-14&P - - (M313, M447)  
 TM 9-2320-260-34P - - (M447, M447C, M749, M750)  
 TM 9-2320-209-34P - - (M292A1, M292A2, M292A5)

## 8. MWO KITS/PARTS AND THEIR DISPOSITION.

a. Kits/Parts needed to apply this MWO. Parts used to make up this MWO kit include the following:

Kit - NSN 2540-01-328-3328 - (CAGE 19207, PN 57K0880)  
 Yellow Spray Paint - NSN 8010-00-079-3764  
 Stencil - refer to paragraph 14 b(2).

b. Contents of MWO Kit. The following is a list of parts that are included in the MWO kit. The kit should be inventoried before work begins.

<u>NOMENCLATURE</u>	<u>PART NO</u>	<u>CAGE</u>	<u>QTY</u>
Polyurethane Foam "Great Stuff" Insta Foam Products or equivalent,	S1212-01	54577	4
Siliprene Adhesive (8030-01-105-3755)	M6325	00333	1
Register Plate Cover	12377847	19207	4
Screw (NSN 5305-00-432-4172)	MS51861-37	96906	20
Heater Plate Cover	12377846	19207	2
MWO in protective bag (MWO)	MWO 9-2300-200-20-1	19207	1
Bag, plastic, size 10-1/2 x 12 zip lock, (NSN 8105-00-837-7753)	Fed Spec A-A-1799	58536	1
Decal (Caution)	12377855	19207	1

**CAUTION**

**Kit requires application prior to shelf life expiration. Manufacturing date and expiration caution are shown on containers. Shelf life of materials is Polyurethane Foam - 9 months, Siliprene Adhesive - 9 months.**

**WARNING**

**Disposable gloves will be worn to prevent skin contact with asbestos fibers.**

- c. Bulk and Expendable Material. Disposable gloves, obtained through Self-Service Supply Store.
- d. Parts Disposition. Dispose of register covers, spray cans, adhesive and gloves as hazardous waste.

**9. SPECIAL TOOLS; JIGS; TEST MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND FIXTURES REQUIRED.** General Mechanics Tool Box.

**10. MODIFICATION PROCEDURES.**

- a. Permanently disconnect heaters: Position heater power switch in OFF position. Disconnect power cable, fuel pump wiring and thermostat wiring connectors at front of heater. Disconnect fuel overflow line and fuel inlet line at front of heater. Disconnect ground wire at heater front mounting bracket. Tape wires and lines to heater body.
- b. Remove equipment from front of heat registers located in the lower half of the front wall.
- c. Remove four heat register covers. Retain fasteners for reuse with permanent cover plates. Dispose of the register covers in accordance with local procedures as hazardous waste material. Clean wall area around the heater duct openings. Ensure area is free from dirt, grease and oil.

**WARNING**

**Ozone Friendly Great Stuff Foam Spray Insulation may aggravate respiratory conditions. Use in well ventilated area. See Safety information, page 6.**

- d. Apply spray foam insulation into the bottom of the van body front wall cavity through the register opening in the front wall. Do not disturb asbestos cloth insulation. Evenly spray entire contents of two cans into the four register openings. Spray must foam up to completely seal the lower portion of the ducts, thus containing asbestos fibers at the base of the front cavity/duct. Objective is to seal heat outlets to the folding floor that run the length of the van body. Foam expands in 60 minutes.

**WARNING**

**Exposure to vapor can cause irritation to eyes, lungs and mucous membranes. Excess exposure can cause dizziness, headache, nausea, narcosis and liver and kidney damage. Contact with liquid can cause eye and skin irritation. See page 6.**

e. Apply 1/4 to 3/8 inch bead of Siliprene Adhesive from drilled hole to drilled hole around the entire plate. Ensure entire mating surface between the register cover plate and the front wall plywood panel is coated with this caulking after the register cover plates have been installed. Install register cover plate to front wall sealing heat register openings using previously removed fasteners. Add a 1/4 inch of adhesive around perimeter of affixed plate and van body. Immediately after application, wrap damp rag around finger and wipe adhesive ensuring adhesive fully seals area. (This is also called adding a fillet).

f. If heaters are not installed, install plates to enclose heater openings. Install cover plates using Siliprene Cement Adhesive using same bead size as register plates. The upper (horizontal) plates will not be secured with fasteners. Place a lightweight object, approximately 5 pounds, on plate for 24 hours to allow for permanent seal. The cement will provide a permanent air and water-tight seal.

g. Apply decal (CAUTION) centered between the two middle sealed heater vents. Caution will read "CAUTION, SEALED HEAT DUCTWORK CONTAINS ASBESTOS INSULATION WHICH MAY BE CARCINOGENIC. DO NOT REMOVE SEALS OR OPERATE HEATERS." This decal will be placed on the vertical front wall between the 2nd and 3rd register plates. Stencil stating MWO has been applied will be stenciled 2 to 3 inches above the 2nd and 3rd register plates (reference paragraph 14b (2)).

**11. CALIBRATION REQUIREMENTS.** Not applicable.

**12. WEIGHT AND BALANCE DATA.** Not applicable.

**13. QUALITY ASSURANCE REQUIREMENTS.**

a. General quality assurance inspection criteria cited shall be in accordance with TM 750-245-4.

b. Quality Control personnel shall conduct inspections and/or verify test results during and at completion of the seal enclosure installation. Inspection shall be recorded on DD Form 1711, or DA Form 50, Acceptance Form. Criteria for inspection is as follows:

(1) Pre-inspection of site where plates will be applied for permanently sealing heat vents to ensure area is free from dirt, grease or oil and meet the specifications cited in paragraph 10c.

(2) A post-installation visual inspection shall be performed to ensure the bead applied between the front wall and the plate has no gaps and ensures an air-tight seal per specifications cited in paragraph 10e. Log book will be annotated.

(3) Each van semitrailer or van truck shall be inspected to assure equipment markings (reference 14b) have been applied. A copy of the inspection shall be maintained in the equipment log book and the log book has been annotated of the completed inspection.

(4) Quality Control Inspector shall verify that all waste material is being handled and disposed of in accordance with local procedures.

**14. RECORDING AND REPORTING OF THE MODIFICATION.**

a. Records and Reports.

(1) Refer to AR 750-10, DA Pam 738-750 and TB 9-1100-803-15 for detailed instructions on completing the following forms:

DA Form 5504 or 2407

DA Form 2408-5

DA Form 2409

Maintenance Request

Equipment Modification Record

Equipment Modification Log

(2) Upon completion of DA Form 5504 or 2407, mail the NMP copy (#2) to:

Commander  
US Army Tank-Automotive Command  
ATTN: AMSTA-MRS  
Warren, MI 48397-5000

b. Marking the equipment

(1) After the sealant, the decal is applied per paragraph 10.g above.

(2) Unit must make and apply the stencil. Stencil letters should be one inch in height. Wording should be as follows:

“Asbestos Encapsulation (MWO 9-2300-200-20-1)  
Completed (date)  
By (Unit)”

c. Identification data. Not applicable.

**15. MATERIEL CHANGE MANAGEMENT (MCM).** This MWO is authorized by MCM 1-87-06-4113 and 1-87-06-4114 (TACOM).

**16. MODIFICATION IDENTIFICATION.** Refer to paragraph 10.

**SAFETY INFORMATION**  
**OZONE FRIENDLY GREAT STUFF**

HAZARDOUS CHEMICALS: 4,4 Diphenylmethane Daisocyanate (MDI)

PHYSICAL HAZARDS: The foam has an adhesive like character and will adhere to skin and other surfaces. It will cure sufficiently within a half hour to a residue that cannot be removed readily by common solvents such as paint thinner or mineral spirits.

DO NOT incinerate aerosol can.

HEALTH EFFECTS DATA: Ozone Friendly Great Stuff is a mixture of MDI, urethane prepolymer, silicone surfactant and halogenated hydrocarbon.

Primary adverse health effects are related to the MDI component of the mixture. Adequate ventilation should be employed.

**EFFECTS OF OVEREXPOSURE:**

Inhalation: Can lead to irritation of mucous membranes, tightness of chest respiratory tract, coughing, headache, shortness of breath. May lead to an allergic sensitivity in some people with asthma-like symptoms. Extensive exposure could lead to bronchitis, bronchial spasm and pulmonary edema. These effects are usually reversible. High fluorocarbon concentrations may cause asphyxiation due to oxygen deprivation. People with cardiac arrhythmia may be at increased risk in severe exposure.

Skin: Mixture causes localized irritation and dermatitis. Product adheres to skin like an adhesive.

Eyes: Liquid, vapors of aerosol is irritating to the eyes. Foam contact with eyes can cause physical damage due to the foam adhesive properties.

Ingestion: Can result in irritation and corrosive action in mouth and digestive tract.

Components of this blend are not classified as carcinogenic.

**EMERGENCY AND FIRST AID PROCEDURES:**

Inhalation: Move to an area free of exposure. Give oxygen or artificial respiration as needed. Obtain medical attention.

Skin contact: Remove contaminated clothing. Use a mild solvent, like mineral spirits, to remove fresh foam (avoid eye contact). Wash affected areas thoroughly with soap and water. Wash clothing before reuse.

Eye contact: Flush with water for 15 minutes, occasionally lifting eye lids. Obtain medical attention.

Ingestion: DO NOT induce vomiting. Give 1-2 glasses of water or milk to drink. Do not give anything by mouth to an unconscious person. Obtain medical attention.

**EMPLOYEE PROTECTION RECOMMENDATION:**

Use with adequate ventilation, safety goggles, long sleeve work clothes and disposable gloves. DO NOT puncture or incinerate the can.

**STORAGE AND DISPOSAL INFORMATION:**

For longest shelf life, avoid storage above 90° F. Short-term storage between 40°-60° F will not harm the materials. Ideal storage is between 60°-90° F. Storage at less than 40° F may cause liquids in the cans to separate. Shake can vigorously to recombine chemicals. Shelf life from date of manufacturer is approximately 9 (nine) months.

Use the entire can within 30 days of first application. If products has not been completely used, carefully vent can as soon as possible to prevent valve from becoming plugged or frozen. Vent as follows: Invert the aerosol can and dispense the product directly through the can valve into a suitable waste container. Remove the waste container to a safe location with loose fitting cover until the foam is fully cured. Dispose of this material as a plastic waste product.

For further information on the product "Great Stuff" in CONUS, call: 1-800-435-9359 or 1-815-741-6800 (0800 - 1600 Eastern Standard Time); 1-800-424-9300 all other times.

For OCONUS (Joliet, Illinois, USA), call 1-815-741-6800.

**SAFETY INFORMATION**  
**SILIPRENE ADHESIVE**

**HAZARDOUS CHEMICALS:** Toluene

**HEALTH EFFECTS DATA:** Exposure to vapor can cause irritation to eyes, lungs and mucous membranes. Excess exposure can cause dizziness, headache, nausea, narcosis and liver and kidney damage. Contact with liquid can cause eye and skin irritation. Primary route of entry is inhalation.

**EMERGENCY AND FIRST AID PROCEDURES:**

**Inhalation:** Move to fresh air. Administer oxygen or artificial respiration, if necessary. Contact physician.

**Skin contact:** Clean with rubbing alcohol, followed by soap and water.

**Eye contact:** Flush with water for 15 minutes.

**Ingestion:** Contact physician.

**EMPLOYEE PROTECTION RECOMMENDATION:**

Use with adequate ventilation, safety goggles, long sleeve work clothes and disposable gloves.

**STORAGE AND DISPOSAL INFORMATION:**

Store and use away from all sources of direct heat and ignition. Keep containers closed when not in use. Dispose of container as hazardous waste in accordance with local regulations.

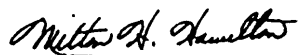
For further information on the product "Silaprene", located in Nishawaka, IN, call 1-219-256-8247 or, if CONUS, call 1-800-336-1973 (out of state of Indiana).



By Order of the Secretary of the Army:

**GORDON R. SULLIVAN**  
General, United States Army  
Chief of Staff

Official:



MILTON H. HAMILTON  
*Administrative Assistant to the  
Secretary of the Army*

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**Distribution**

To be distributed in accordance with DA Form 12-39-E ( Block 0889) Unit maintenance requirements for MWO9-2300-200-20-1.

