ROUTINE

***TB 1–1520–251–20–02**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

RFI LRU RADOME REMOVAL AND REPLACEMENT INSPECTION CRITERIA FOR ALL AH–64D AIRCRAFT

Headquarters, Department of the Army, Washington, D. C.

21 December 2001

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. **Priority Classification.** ROUTINE.

a Aircraft in Use. This Technical Bulletin (TB) should only be used to remove damaged radomes and to install replacement radomes.

b Aircraft in Depot Maintenance. Not Applicable

c Aircraft Undergoing Maintenance. Not Applicable

d Aircraft in Transit.

(1) Surface/Air Shipment. Not Applicable

(2) Ferry Status. Not Applicable

e Maintenance Trainers (Category A and B). Not Applicable

f Component/Parts in Stock Including War Reserves at All Levels (Depot and Others). Not Applicable

g Components/Parts in Work (Depot Level and Others). Not Applicable

2. **Task Inspection Suspense Date.** Not Applicable

3. **Reporting Compliance Suspense Date.** Not Applicable

4. **Summary of the Problem.**

a Currently there are no inspection or maintenance procedures in the AH–64D IETM to support this modification.

b For manpower/ downtime and funding impacts, refer to paragraph 12.

c The purpose of this procedure is to provide a documented process that will enable a technician to remove and replace a damaged radome from the RFI antenna or receiver in the field. The following items are required for removing the radome(s).

(1) Jean (lint–free cloth)

(2) Goggles, 4240–00–052–377

* This TB supersedes TB 1-1520-251-20-02, dated 15 January 2001.

(3) Isopropyl alcohol

(4) Cotton swabs

(5) Replacement kit, P/N 240A054 (NSN 5985–01–485–7165)

d The purpose of this procedure is to provide a documented process that will enable a technician to remove and replace a damaged radome from the RFI antenna or receiver in the field. The following tools are required for removing and installing the radome(s), P/N 240A058–1 (with shrink sleeving).

(1) Heat Gun (293 degree F requirement), 4940–00–785–1162

(2) Small side cutter, 5120–01–356–6611

(3) Needle nose pliers, 5120–01–430–8332

(4) Magnifying lamp, 6650–00–133–7743

(5) Exacto knife, 5110–01–429–7409

NOTE

The replacement kit consists of four radomes, one dental pick, adhesive and radome seal material.

NOTE

The following critical inspection and maintenance procedures must be used along with a current IETM.

5. **End Items to be Inspected.** Not Applicable

6. **Assemblies Components to be Inspected.** RFI Radome, Sensor Assembly, and Spiral Circuit.

7. **Parts to be Inspected.** Not Applicable

8. **Inspection Procedures.**

a Radome and Spiral Circuit Inspection.

CAUTION

Avoid contact with the spiral circuit in the sensor assembly; and use extreme care not to scratch the radome. **Any** damage will degrade performance of the spiral circuit and sensor assembly.

(1) Upon removal of damaged radome, and before installing replacement radome, inspect replacement radome for damage such as scratches, nicks, cracks, and other visible damage.

(2) Inspect spiral circuit face, visible in the sensor, using a magnifying lamp after the radome has been removed. The spiral circuit face shall be free of sealant and visible damage such as circuit line gouges; breaks; deep gashes caused by foreign object/debris; and mishandling. Minor scratches, however, are acceptable.

(3) Inspect radome for thermal deformation. If damage is found, remove and replace radome using paragraph 9.

(4) Inspect spherical and skirt portions of radome for damage or deformation.

(5) Inspect replaced radome for proper squeeze out, wetting of sleeving. and signs of adhesive at radome and sensor housing end of sleeving.

(6) Inspect for unwanted adhesive around radome area.

9. **Correction Procedures.**

NOTE

The RFI radomes (**without** shrink sleeving) must be removed from the aircraft only if the radome is being replaced. The RFI radome (**with** shrink sleeving) does not need to be removed from the aircraft. The procedure can be done at AVIM or AVUM.

CAUTION

Do not use radomes as handles; and exercise extreme care when moving and handling the RFI antenna or receiver to avoid permanently damaging fragile dome covers.

CAUTION

LRUs contain sensitive items marked with ESD labels. Recommended ESD handling procedures shall be used when touching or handling these items. Failure to use these procedures may result in equipment damage which can degrade spiral circuit and sensor assembly performance.

WARNING

Isopropyl alcohol is flammable and toxic to eyes, skin, and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Good general ventilation is normally adequate. If injury occurs, seek medical aid.

a Radome Removal (Without shrink sleeving.

(1) Refer to IETM for RFI radome removal.

(2) Apply alcohol on sealant bead around radome using cotton swab (see Figure 1).

(3) Carefully pick off sealant bead using modified dental pick (see Figure 2).

(4) Place modified dental pick or orange stick under radome and carefully pry upward while gradually moving around the radome until at least 3/4 of radome seal is broken .

CAUTION

Exercise extreme caution when cutting the radome because any damage degrades performance of the spiral circuit. Avoid contact with the spiral circuit and sensor assembly.

(5) If radome cannot be loosened using dental pick, cut radome with side cutter as shown in Figure 2. Using modified dental pick, carefully work around radome until a minimum of 3/4 of the seal is broken.

(6) Carefully twist and/or move radome until it is removed from sensor housing.

b Radome (with shrink sleeving) Removal.

NOTE

The RFI radome (with shrink sleeving) need **not** be removed from the aircraft when replacing a radome. If removal is required, it can be done at AVIM or AVUM.

(1) Refer to paragraph 8 a of this TB for inspection procedures.

(2) Carefully make straight linear cut from one end of sleeving to the other using Exacto knife. Apply just enough pressure to barely cut through sleeving (see Figure 3).

(3) Grip one end of cut sleeving using needlenose pliers, and turn until sleeving wraps around plier ends. Pull upward while turning until all sleeving is removed.

NOTE

Removal of tabs is not required, but tabs can break off during the bond breaking process.

(4) Use Exacto knife to push under epoxy and both tabs to break bond.

(5) Carefully move and twist the radome until it separates from the sensor housing.

c Radome (with tabs) Installation

NOTE

A radome (without tabs) shall not be installed on the aircraft for any reason.

WARNING

Isopropyl alcohol is flammable and toxic to eyes, skin, and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Good general ventilation is normaladequate. If injury occurs, seek medical aid.

NOTE

Allow area to dry completely before proceeding (approximately five minutes).

(1) Clean bonding area on sensor housing (where epoxy is to be applied) using alcohol and either cotton swabs or Jean (lint–free cloth.

(2) See Figure 5 for illustration of installed radome, 240A058.

(3) Take adhesive materials from pack and squeeze approximately 1/2–inch diameter beads of part A and part B onto a smooth, flat, rigid metal or plastic mixing surface.

(4) Mix parts together using wooden end of cotton swab (or equivalent) until a uniformly white color is present.

NOTE

Although it is not mandatory to remove old tabs and epoxy, it is preferable to do so. However, if this is a second replacement of a radome and old tabs and/or epoxy are present from last radome, the new tabs must be offset approximately 5 to10 degrees from the old marks.

(5) Partially install new radome on housing to establish contact areas with radome tabs and epoxy or marks. Back radome off to allow complete coverage of tab area. Radome tabs should be at the 90–degree and 270–degree marks on the sensor if old tabs are not present.

(6) Remove radome from sensor housing.

NOTE

Adhesive must not be applied to the skirt, radome, or round portion of the radome because undesirable contact with the sensor housing may result.

(7) Apply mixed epoxy adhesive on sensor housing where tabs will be attached (see Figure 4). Apply to approximate thickness of 1/32–inch to 1/16–inch.

(8) Align tabs with bonded area of housing and slide radome on sensor housing. Ensure that adhesive does not contact spiral circuit or sensor housing interface area.

(9) Rotate radome on sensor housing approximately 5 degrees back and forth to ensure good wetting of housing.

NOTE

Evidence of squeeze out beads (1/16–inch to 1/8–inch) should be noted around the perimeter of the tab.

(10) If necessary, apply additional adhesive or wipe off excess from around radome tab surface using alcohol and cotton swab to attain correct squeeze out bead.

(11) Allow adhesive to cure for approximately one hour.

(12) Remove sleeving from repair kit and position on radome until edge of tab is overlapped 1/4–inch to 1/2–inch on radome and at least 1/4–inch on sensor housing (see Figure 5).

(13) Thermally protect newly replaced radome and adjacent radomes from heat (using scraps from old radome, etc.).

CAUTION

Exercise caution when using heat gun on active portion of radome. Heat deformation can occur.

(14) Apply heat to sleeving with heat gun, turning frequently to prevent uneven heat.

WARNING

Be careful when repositioning sleeving. Heated sleeving can become extremely hot and burn hand or fingers.

(15) If sleeving becomes displaced during initial stage of process, carefully reposition sleeving with fingers, needle nose pliers or wooden end of cotton swab. Continue heating process until sleeving becomes snug around complete perimeter of radome.

NOTE

It is critical to verify that heating was properly applied to sleeving. There must be visible evidence of squeeze out along the entire perimeter of the sleeving ends. This shows that the sleeving was correctly heated. If adhesive squeezes out, but wetting of the radome and housing is not seen, thermal protection for affected radomes must be reinstalled. Sleeving must be reheated while applying pressure on sleeving until squeeze out is acceptable.

(16) If cured adhesive is found on active radome surface, carefully remove it with orange stick or equivalent. If adhesive cannot be removed, repeat radome installation with new radome.

(17) Remove all thermal protection used during shrink sleeving installation.

10. **Supply Parts and Disposition.** Not Applicable

11. **Special Tools, Jigs, and Fixtures.** Not Applicable

12. **Application**

a Category of Maintenance. AVIM.

b Time Required. Not Applicable

c Estimated Cost Impact to the Field. Not Applicable

d TB/MWOs to be Applied Prior to or Concurrently with this Inspection. Not Applicable

e Publications Which Require Change as a Result of This Inspection. Interactive Electronic Technical manual (IETM): TM 1–Longbow/Apache IETM, 1 September 2000 and subsequent. until the printed change is received.

13. **References.** Interactive Electronic Technical manual (IETM): TM 1–Longbow/Apache IETM, 1 September 2000 and subsequent.

14. **Recording and Reporting Requirements.** Not Applicable

15. **Weight and Balance.** Not Applicable

16. **Points of Contact.** Technical point of contact for this TB is Mr. lee Bumbicka, AMSAM–RD–AE–I–P–A, DSN 897–4925 or commercial 256–313–4925, datafax DSN 897–4923 or commercial 256–313–4923, email “lee.bumbicka@redstone.army.mil.

17. **Reporting of Errors and Recommending Improvements.** You can improve this TB. If you find any mistakes or know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to The following address: Commander, U.S. Army Aviation and Missile command, ATTN: AMSAM–MMC–MA–NP, Redstone Arsenal, AL 35898–5230. You may also submit your recommended changes by sending e–mail directly to “2028@redstone.army.mil”. A reply will be furnished directly to you. instructions for sending an electronic 2028 may be found at the back of this manual.

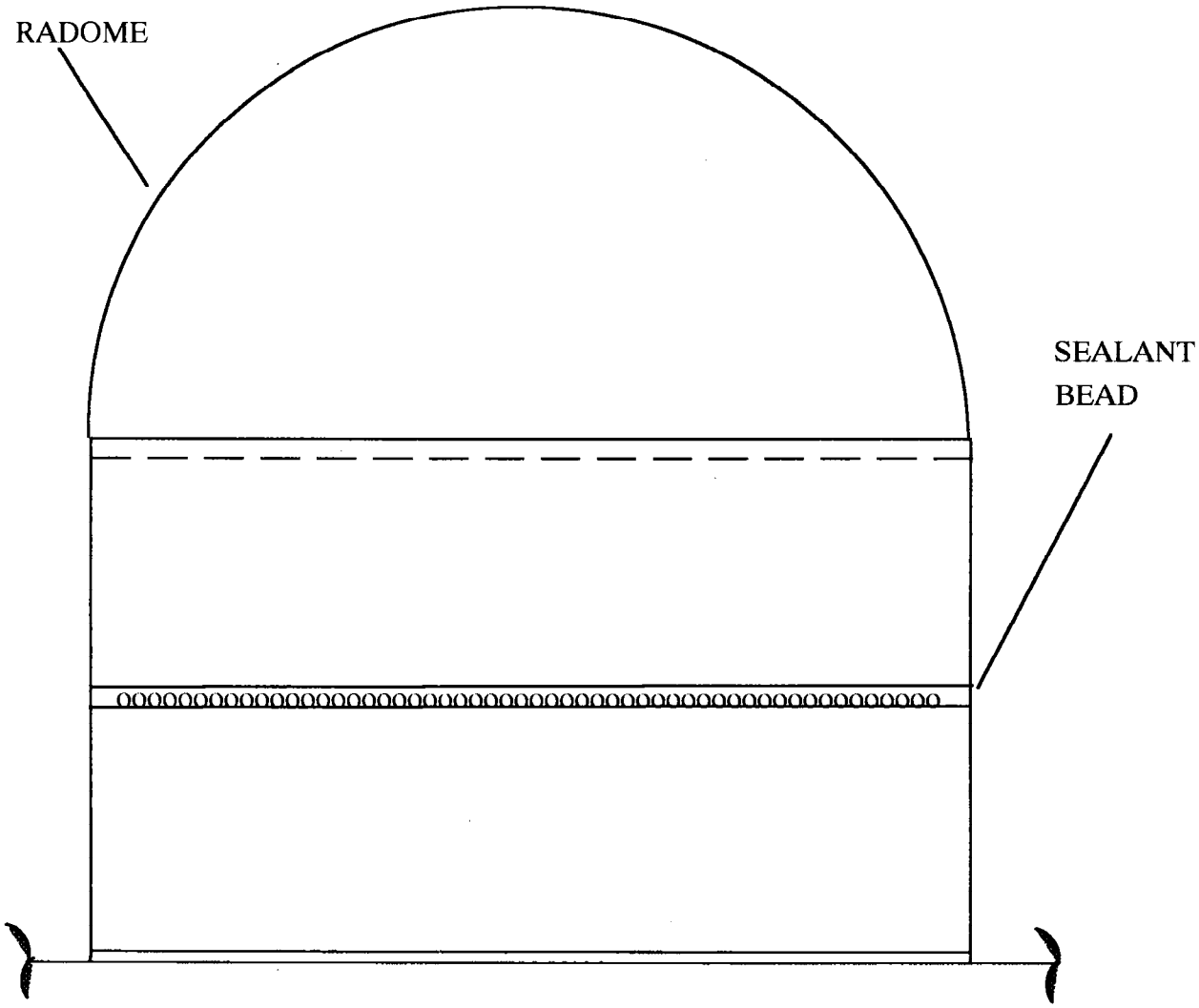

Figure 1. Radome, Without shrink Sleeving

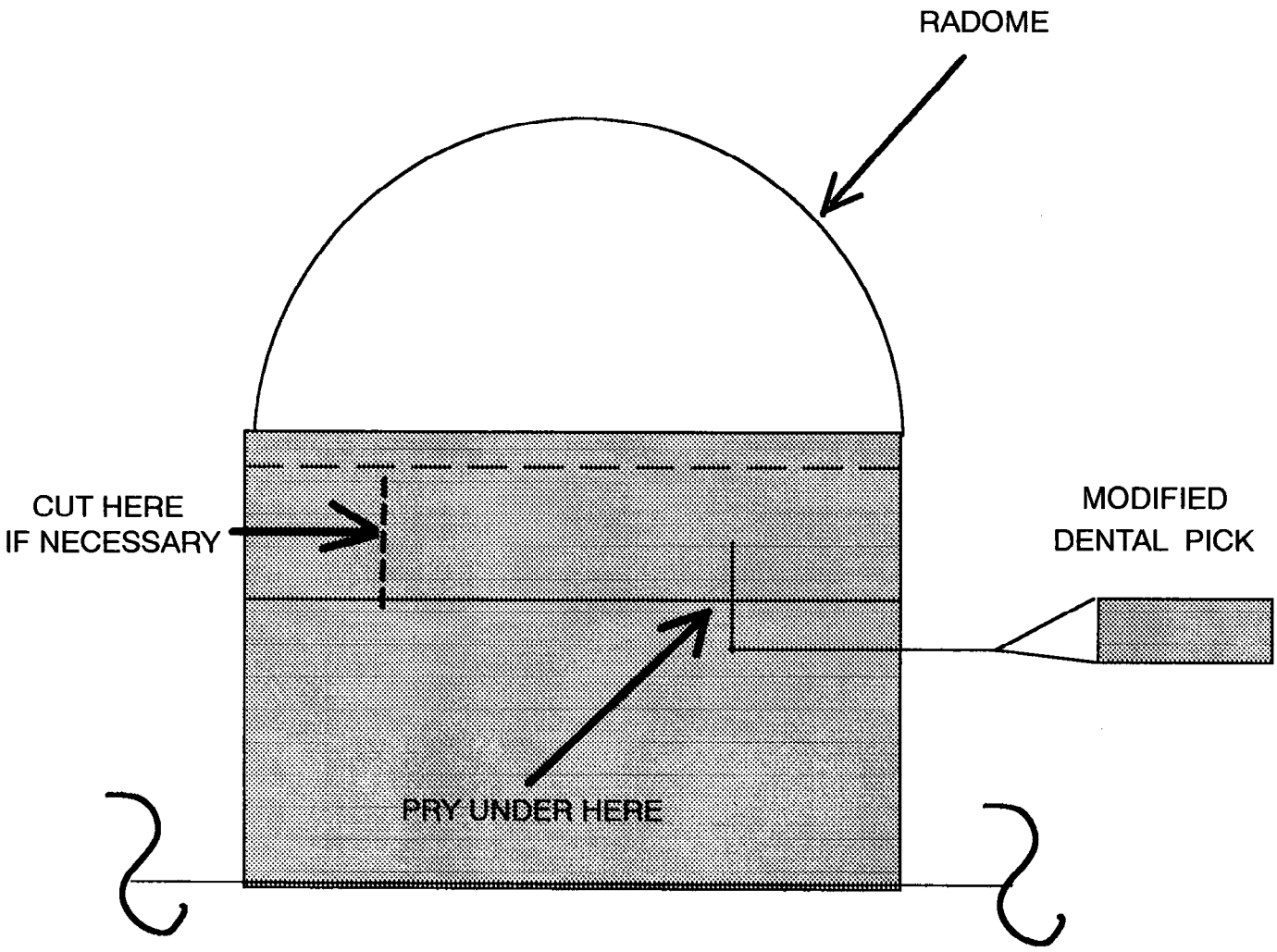

Figure 2. Radome (Without Shrink Sleeving), Removal

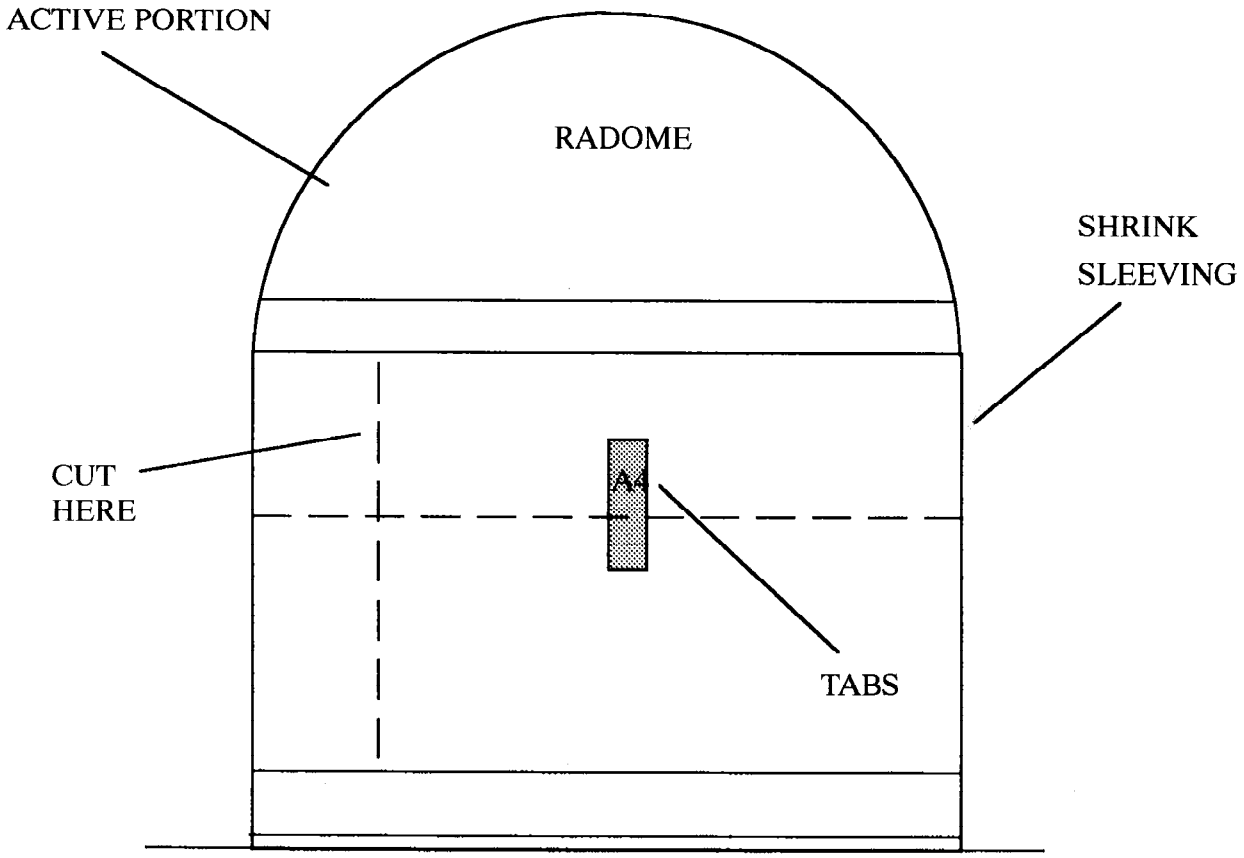

Figure 3. Radome With Shrink Sleeving

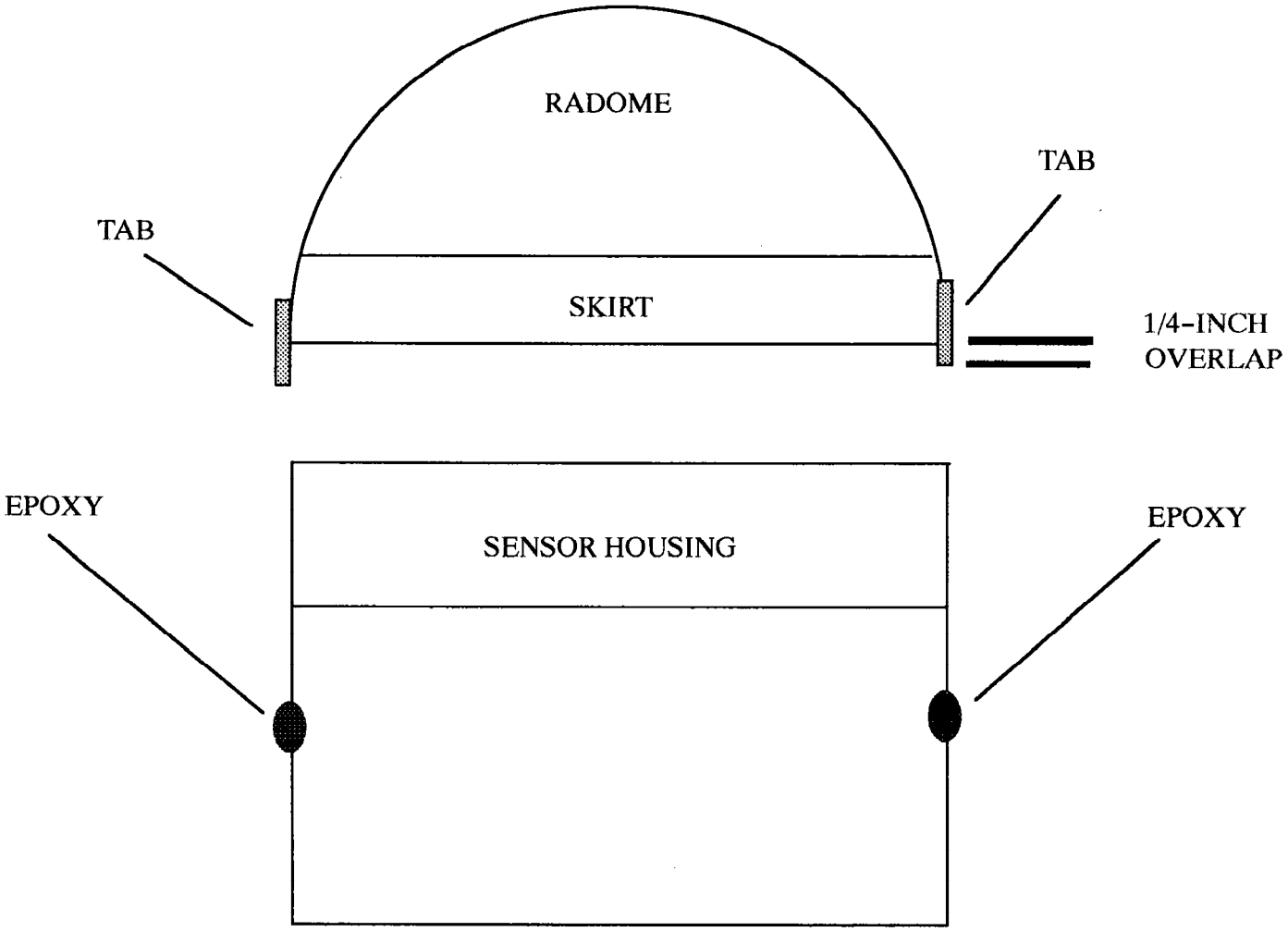

Figure 4. Radome, With Tabs

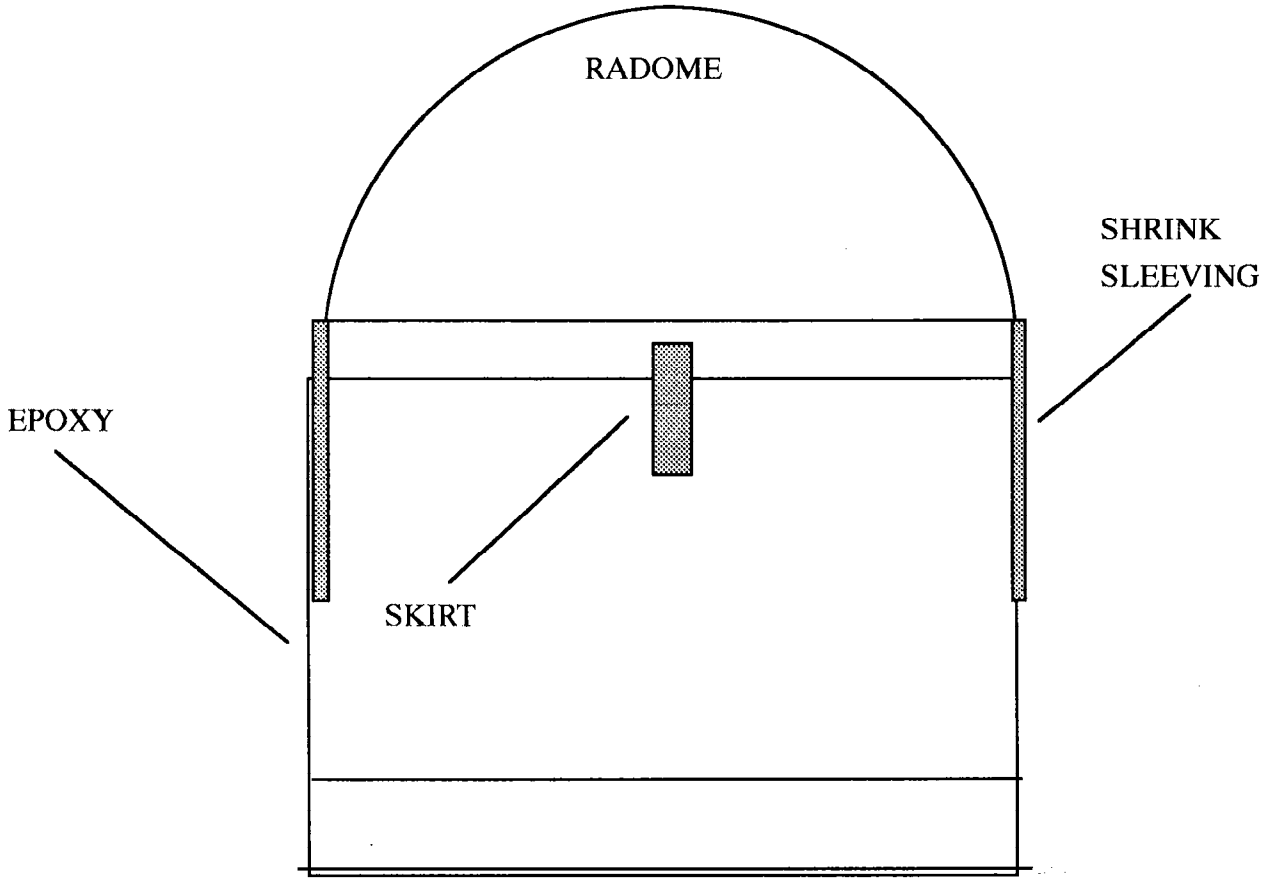

Figure 5. Radome WithShrink Sleeving

By Order of the Secretary of the Army:

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THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

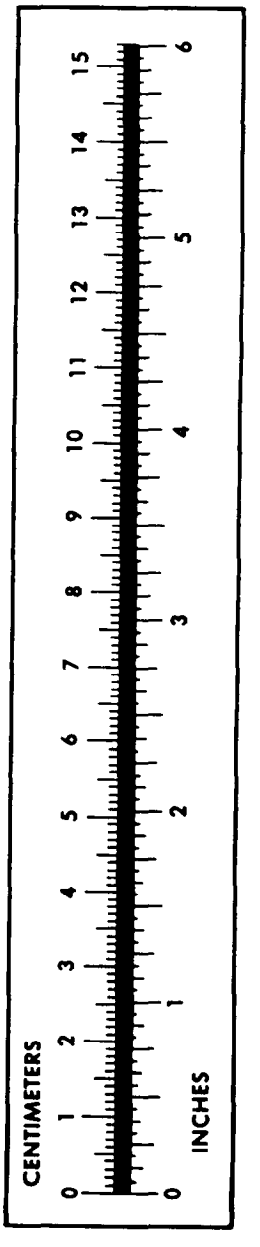
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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