DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

ANNOUNCEMENT OF APPROVAL AND RELEASE OF NONDESTRUCTIVE TEST EQUIPMENT INSPECTION PROCEDURE MANUAL

TM 1-1520-264-23, TECHNICAL MANUAL AVIATION UNIT MAINTENANCE
(AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL
NONDESTRUCTIVE INSPECTION PROCEDURES FOR
AH-64A HELICOPTER SERIES

Headquarters, Department of the Army, Washington, D. C. 1 MAY 1997

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL REFERENCES TO TM 1-1520-264-23, TECHNICAL MANUAL AVIATION UNIT MAINTENANCE (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL NONDESTRUCTIVE INSPECTION PROCEDURES FOR AH-64A HELICOPTER, HAVE BEEN INCORPORATED INTO THE TM 1-1520-238-23, AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL, HELICOPTER, ATTACK, AH-64A APACHE.

1. Priority Classification. Routine

- **2. Purpose.** The purpose of this technical bulletin (TB) is to announce the approval and release of the nondestructive test equipment inspection procedure manual, TM 1-1520-264-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for AH-64A Helicopter. This manual shall be referred to when performing inspections on the AH-64A aircraft.
- **3. Description.** Approved nondestructive test inspection procedures are referenced in Table 1. Refer to TM 1-1520-264-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for AH-64A Helicopter, for safety information, part locations, inspection method descriptions, and complete procedures. Do not attempt to perform any nondestructive test inspection without first referring to TM 1-1520-264-23 as this TB does not provide adequate information to properly perform the inspections.
- **4. Now to Use.** The columns in Table 1. Approved Nondestructive Test Inspection Components/Assemblies, are defined as follows:

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- (1) **Procedure Number:** references the procedure number in TM 1-1520-264-23, Technical Manual Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for AH-64A Helicopter.
- **(2) Component/Assembly:** provides the list of parts approved for nondestructive test inspections on the AH-64A aircraft. Parts not listed have not been approved for nondestructive test inspection and shall be inspected as referenced in TM 1-1520-238-23, Aviation Unit and Intermediate Maintenance Manual, Helicopter, Attack, AH-64A Apache.
- (3) Inspect For: provides the approved manner of inspection. All other types of inspection shall be performed as referenced in TM 1-1520-238-23, Aviation Unit and Intermediate Maintenance Manual, Helicopter, Attack, AH-64A Apache.
- (4) Maintenance Category: details the approved maintenance level for each nondestructive test inspection.
- **(5) Inspection Equipment Requirements:** provides the approved nondestructive inspection method/equipment to perform the inspection. Refer to Notes for the legend.
- (6) **Remarks:** provides the approved backup method/equipment to perform the inspection. Refer to Notes for the legend.

NOTE

Legend for the nondestructive inspection methods/equipment referenced in columns (5) and (6): 001 Fluorescent Penetrant Method 004 Ultrasonic Method 002 Magnetic Particle Method 005 Bond Testing Method 003 Eddy Current Method 006 Radiographic Method

	Table 1. Approved Nor	ndestructiv	e Test In	spection C	Component	s/Assemblies.	
(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	MAINTE	(4) NANCE CAT AVIM	TEGORY DEPOT	(5) INSPECTION EQUIPMENT REQUIRE- MENTS	(6) REMARKS
2.2	Main Rotor Droop Stop Follower (Plunger)	Cracks		1		001	
2.3	Droop Stop Ring	Cracks		1		002	
2.4	Main Rotor Blade (Voids)	Voids		٧		005	
2.5	Main Rotor Blade	Cracks		1		001	
2.6	Main Rotor Blade	Fluid		1		006	
2.7	Main Rotor Blade Weight Support Fittings	Cracks		1		003	
2.8	Main Rotor Mast	Cracks		1		002	
2.9	Main Rotor Mast Retaining Ring	Cracks		1		002	
2.10	Main Rotor Hub Retention Nut	Cracks		7		002	
2.11	Main Rotor Head (Hub)	Cracks		7		003	
2.12	Main Rotor Lead Lag Link (Damper Link)	Cracks		1		003	
2.13	Main Rotor Damper	Cracks		1		003	
2.14	Main Rotor Damper Trunnion	Cracks		1		003	
2.15	Main Rotor Damper Rod End	Cracks		1		002	
2.16	Main Rotor Pitch Housing	Cracks		1		003	

(1)	(2)	(3)		(4)		(5)	(6)
PROCEDURE NUMBER	COMPONENT/ASSEMBLY	INSPÉCT FOR	MAINTEI AVUM	NANČÉ CAT AVIM	DEPOT	INSPECTION EQUIPMENT REQUIRE- MENTS	REMARK
2.17	Main Rotor Feathering Bearing Housing	Cracks		7		003	
2.18	Main Rotor Striker Plate and Shims	Cracks		1		002	
2.19	Main Rotor Hub Bearing	Cracks		1		003	
2.20	Main Rotor Lower Shoe	Cracks	- · · · -	7		003	
2.21	Main Rotor Head Hub Load Plate	Cracks		V		002	
2.22	Main Rotor Hub Brackets	Cracks		1		002	
2.23	Main Rotor Hub Lower Plate	Cracks		1		002	
2.24	Tail Rotor Fork Assembly (Head and Teeter Stop)	Cracks		1		003	
2.25	Tail Rotor Blade	Cracks		1		001	
2.26	Tail Rotor Blade (Voids)	Voids		7		005	
2.27	Tail Rotor Blade (Fluid)	Fluid		1		006	
2.28	Tail Rotor Hub	Cracks		1		003	
2.29	Tail Rotor Clamps and Locking Plates	Cracks		٧		003	
3.2	Drive Shafts	Cracks		٧		003	Backup 001
3.3	Drivetrain Couplings	Cracks		1		003	
3.4	Drivetrain Flanges	Cracks		√		002	
3.5	Damper and Anti-Flail Supports	Cracks		1		003	Backup 001
3.6	Forward Hanger Bearing Flange	Cracks		7		002	Backup 001
3.7	Forward Hanger Bearing Support	Cracks		1		003	Backup 001
3.8	Aft Hanger Bearing Flange	Cracks		7		002	Backup 001
3.9	Aft Hanger Bearing Support	Cracks		٦		003	
3.10	Intermediate Gearbox Centrifugal Fan	Cracks		. 1		003	
3.11	Engine Nose Gearbox	Cracks		1		003	Backup 001

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(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	MAINTE!	(4) NANCE CAT AVIM	regory Depot	(5) INSPECTION EQUIPMENT REQUIRE-	(6)
3.12	Engine Nose Gearbox Input Quill Shaft	Cracks		1		MENTS 002	
3.13	Main Transmission	Cracks		1	 	003	
3.14	Main Transmission Compressor Drive Adapter	Cracks		1		003	
3.15	Main Transmission APU Drive Flange	Cracks		7		002	
3.16	Main Transmission Tail Rotor Drive Flange	Cracks		7		002	
3.17	Main Rotor Gearshaft Drive Gear Teeth	Cracks		1		002	
3.18	Main Rotor Mast Support Base	Cracks		7		003	
3.19	Intermediate Gearbox	Cracks		7		003	1
3.20	Intermediate Gearbox Retainers	Cracks		1		003	Backup 001
3.21	Intermediate Gearbox Flange and Shouldered Shaft	Cracks		1		002	
3.22	Tail Rotor Gearbox	Cracks		1		003	Backup 001
3.23	Tail Rotor Gearbox Shouldered Shaft	Cracks		1		002	
3.24	Tail Rotor Gearbox Retainers	Cracks		1		003	Backup 001
3.25	Tail Rotor Gearbox Forward and Aft Strut	Cracks		1		002	
3.26	Tail Rotor Gearbox Forward and Aft Strut Fittings	Cracks		1		002	
3.27	Main Rotor Head (Hub)	Cracks		1		003	
3.28	Main Rotor Support Mast	Cracks		1		002	
4.2	Fuselage and Empen- nage Access Doors, Covers, Panels, and Fairings - Metal	Cracks		V		003	

	Table 1. Approved Nor		e Test In		Component		T (0)
(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	MAINTE! AVUM	(4) NANCE CAT AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIRE- MENTS	(6) REMARKS
4.3	Honeycomb Core Fuse- lage Panels, Vertical Fin, etc.	Voids		1		005	
4.4	Fluid in Honeycomb Core Fuselage Panels, Vertical Fin, etc.	Fluid		1		006	
4.5	Fittings, Castings, and Forgings	Cracks		1		003	Backup 001
4.6	Transmission Deck	Cracks		1		003	
4.7	Empennage Frame Assemblies F.S. 530 and F.S. 547 and Attached Stringers	Cracks		√		003	
4.8	Fuselage Support Holes	Cracks		1		003	<u> </u>
4.9	Gun and Ammo Support Mount Pads	Cracks		1		003	
4.10	Main Landing Gear Shock Strut Support	Cracks		1		002	
4.11	Main Landing Gear Cross Tube Mounting Points	Cracks		1		002	
4.12	Rotor Support Mixer Assembly and Mounting Surfaces	Cracks		1		002	
4.13	Rotor Mixer Support Assembly Bolt	Cracks		1		002	
4.14	Transmission Rotor Support Strut Assemblies	Cracks		1		003	
4.15	Nacelle Carry-Through Post Assembly	Cracks		٧		003	
4.16	Wing Attachment Fittings on Wing and Fuselage	Cracks		1		003	
4.17	Wing Rack Attachment Points/Mounts	Cracks		1		003	
4.18	TADS/PNVS Support Fitting	Cracks		√		003	

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(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR		(4) NANCE CAT		(5) INSPECTION EQUIPMENT	(6)
			AVUM	AVIM	DEPOT	REQUIRE- MENTS	
4.19	Vertical Stabilizer Lugs	Cracks		1		003	
4.20	Vertical Stabilizer Barrel Nuts	Cracks		√		002	
4.21	Horizontal Stabilator Actuator Fitting	Cracks		√		003	
4.22	Engine Access and Ventilation Door Assem- bly Rig Connecting Link	Cracks		√		001	
4.23	Aft Inboard Engine Mount Support	Cracks		7		003	
4.24	Engine Nacelle Strut Attachment Area	Cracks		√		003	
4.25	Main Landing Gear Trailing Arms	Cracks		1		002	
4.26	Main Landing Gear Wheels	Cracks		7			
4.27	Main Landing Gear Shock Strut Housing, Piston, and Rod Ends	Cracks		1		002	
4.28	Main Landing Gear Lower Structural Support	Cracks		7		003	
4.29	Main Landing Gear Jack Pad Adapter	Cracks		1		002	
4.30	Main Landing Gear Trailing Arm Cross Tube	Cracks		7		002	
4.31	Main Landing Gear Shock Strut Mount Shaft	Cracks		1		002	
4.32	Tail Landing Gear Fork	Cracks		1		003	
4.33	Tail Wheel	Cracks		1		003	
4.34	Tail Landing Gear Shock Strut	Cracks		√		002	
4.35	Tail Landing Gear Trailing Arms	Cracks		7		003	
4.36	Tail Landing Gear Actuating Cylinder Assembly	Cracks		7		003	
4.37	Brake System Components	Cracks		1		001	

(1)	(2)	(3) INSPECT	MAINTE	(4) NANCE CAT	FGORY	(5) INSPECTION	(6)
PROCEDURE NUMBER	COMPONENT/ASSEMBLY	FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIRE- MENTS	REMARKS
4.38	General Helicopter Attaching Hardware	Cracks		1		002	
5.2	Aft Inboard and Aft Lower Engine Mounts	Cracks		1		003	
5.3	Forward Inboard Engine Mount	Cracks		1		002	
5.4	Forward Lower Engine Mount	Cracks		1		002	
5.5	Engine Tubing, Cou- plings, Air Ducts, Fit- tings, Supports, Brack- ets, and Clips	Cracks		1		001	
5.6	Air Inlet Assembly	Cracks		1		003	
5.7	Engine Air Inlet "V" Band Clamp	Cracks		1		001	
5.8	Starter Flange	Cracks		1		003	
5.9	Engine Shroud	Cracks		1		001	
5.10	Engine Load Demand Spindle Bellcrank Support	Cracks		1		003	
5.11	Engine Components	Cracks		1		001	
6.2	Flight Control Bellcranks	Cracks		1		003	
6.3	Main Rotor Swashplate Shoulder Pin Mating Bores	Cracks		7		003	
6.4	Main Rotor Link Barrels	Cracks		1		002	Backup 001
6.5	Main Rotor Scissors Upper Arm	Cracks		1		003	
6.6	Main Rotor Scissors Lower Arm	Cracks		1		003	
6.7	Pilot/CPG Collective Stick Tube	Cracks		1		003	

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(1) PROCEDURE	(2)	(3) INSPECT	MAINTE	(4) IANCE CAT	TEGORY	(5) INSPECTION	(6)
NUMBER	COMPONENT/ASSEMBLY	FOR	AVUM	AVIM	DEPOT	EQUIPMENT REQUIRE- MENTS	REMARKS
6.8	Pilot/CPG Collective Stick Rotor Housing	Cracks		1		003	
6.9	Pilot Collective Stick Cylinder	Cracks		1		003	
6.10	Flight Control Rods, Connecting Links, Rod Ends, Clevises, Levers and Attaching Parts	Cracks		٨		003	
6.11	Pilot Collective Stick Support Assembly	Cracks		√		003	
6.12	CPG Collective Stick Support Assembly	Cracks		1		003	
6.13	Pilot Cyclic Stick	Cracks		1		003	
6.14	Lateral Feel Spring Cartridge	Cracks		1		003	
6.15	Pilot Cyclic Stick Housing and Support Assembly	Cracks		1		003	
6.16	CPG Cyclic Stick Forward and Aft Links	Cracks		1		003	
6.17	CPG Cyclic Stick Remote Control Lever	Cracks		1		003	
6.18	CPG Cyclic Stick Fitting Assembly	Cracks		1		003	
6.19	Ferrous Flight Control System Push-Pull Rods	Cracks		1		002	
6.20	Nonferrous Flight Control System Push- Pull Rods	Cracks		1		003	
6.21	CPG to Pilot Longitudinal F.S. 82.80 Control Bracket	Cracks		1		003	
6.22	CPG to Pilot Collective F.S. 118.50 Bellcrank	Cracks		1		003	
6.23	CPG Directional Shear Pin Activated Decoupler (SPAD) Arms	Cracks		1		003	
6.24	Directional F.S. 121.40 Bellcrank	Cracks		1		003	

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	MAINTEN	(4) NANCE CAT AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIRE- MENTS	(6)
6.25	Directional F.S. 121.40 Bellcrank Bracket	Cracks		1		003	
6.26	Pilot Directional Shear Pin Activated Decoupler (SPAD) Transducer Arm	Cracks		1		003	
6.27	Pilot Directional Shear Pin Activated Decoupler (SPAD) Remote Control Lever	Cracks		√		003	
6.28	Pilot Directional Shear Pin Activated Decoupler (SPAD) Bellcranks	Cracks		√		003	
6.29	Directional F.S. 156.07 Bellcrank	Cracks		1		003	
6.30	Directional F.S. 159.98 Bellcrank and Bracket	Cracks		1		003	
6.31	Directional F.S. 164.33 Bellcrank Bracket and Attaching Area on Deck	Cracks		1		003	
6.32	Pilot Longitudinal Shear Pin Activated Decoupler (SPAD) Outer and Inner Lever	Cracks		1		003	
6.33	Pilot/CPG Directional Control Pedal Release Handle	Cracks		7		003	
6.34	Pilot/CPG Directional Control Pedal Release Shaft	Cracks		1		002	
6.35	Pilot/CPG Directional Control Pedal Release Nuts	Cracks		٧		002	
6.36	Directional F.S. 199.25 Tail Rotor Fitting	Cracks		1		003	
6.37	Directional F.S. 275 Rotor Control Bracket	Cracks		1		003	
6.38	Directional F.S. 348 Bellcrank	Cracks		1		003	

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	Table 1. Approved Nor	ndestructiv	e Test In	spection C	Component	s/Assemblies.	
(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	MAINTE AVUM	(4) NANCE CAT AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIRE- MENTS	(6) REMARKS
6.39	Directional F.S. 348 Tail Rotor Bracket	Cracks		1		003	
6.40	Tail Rotor Swashplate Control Bellcrank	Cracks		1		002	
6.41	Tail Rotor Drive Links	Cracks		1		003	
6.42	Exterior Surfaces of All Ferrous Hydraulic Components (Servocy- linders, Actuators, Reservoirs, etc.)	Cracks		1		002	

5. Points of Contact.

- a. Technical point of contact for this TB is Mr. Wayne Suchman, AGSE-PM, AMSAT-D-WAG, DSN 693-1924 or commercial (314)263-1924, e-mail: wsuchman@emh4.wsmd.stl.army.mil.
- b. Nondestructive Test Inspection technical point of contact for this TB is Mr. Scott Huddleston, DSN 693-1923 or commercial (314)263-1923, e-mail: shuddles@emh4.wsmd.stl.army.mil.
- **6. Reporting of Errors and Recommending Improvements.** You can help improve this TB. If you find any mistakes or if you 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: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you. You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.army.mil>. reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual.

By Order of the Secretary of the Army.

DENNIS J. REIMER General, United States Army Chief of Staff

Official:

Administrative Assistant to the Secretary of the Army 03511

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9. Pub Title: TM

10. Publication Date: 04-JUL-85

11. Change Number: 7
12. Submitter Rank: MSG
13. Submitter FName: Joe
14. Submitter MName: T
15. Submitter LName: Smith

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17. **Problem:** 1 18. Page: 2 19. Paragraph: 3 20. Line: 4

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DATE SENT

22 August 1992

PUBLICATION	NUMBER
TM 1-1520	-250-10

PUBLICATION DATE 15 June 1992

PUBLICATION TITLE

Operator's manual MH60K Helicopter

BE EXAC	T PIN-	-POINT WH	IERE IT IS	IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA- GRAPH	FIGURE	TABLE NO	
6	2-1 a	NO .	NO	In line 6 of paragraph 2—1a the manual states the engine has 6 cylinders. The engine of my set only has $\frac{4}{2}$ cylinders. Change the manual to show 4 cylinders.
81		4-3		Callout 16 Lefigure 4-3 is pointed to bolt. In key to figure 4-3, item 16 is calle a shim. Please correct one or the other
PRINTE	D NAME,	GRADE O	R TITLE, A	ID TELEPHONE NUMBER SIGN HERE
JC	HN DO	E, <i>PFC (2</i>	(68) 317-	7111 JOHN DOE John Doe

DA FORM 2028-2

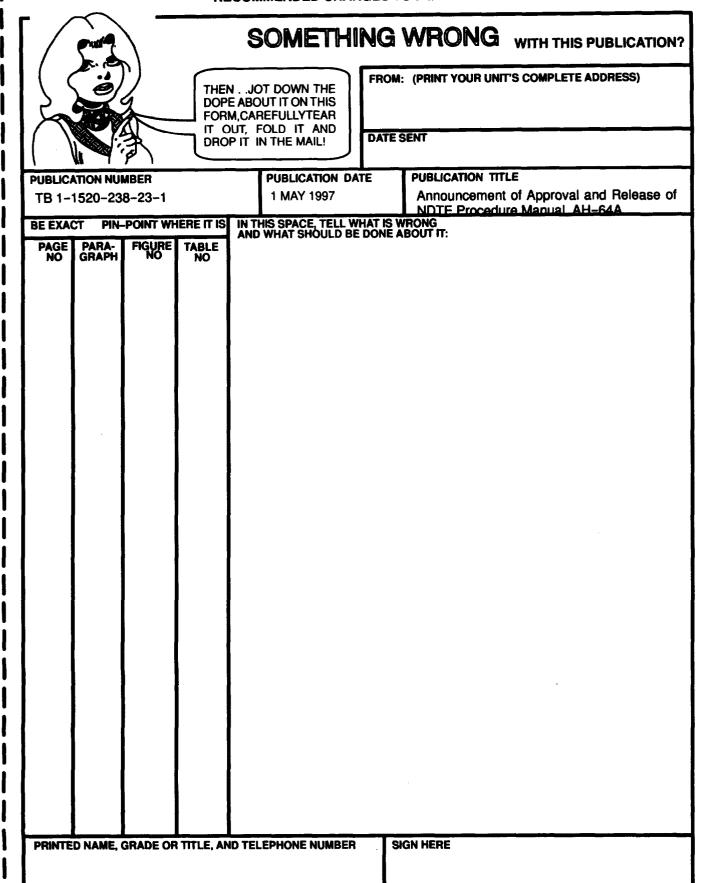
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THE METRIC SYSTEM AND EQUIVALENTS

'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

YEIGHTS

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

 $5/9(^{\circ}F - 32) = ^{\circ}C$

212° Fahrenheit is evuivalent to 100° Celsius

90° Fahrenheit is equivalent to 32.2° Celsius

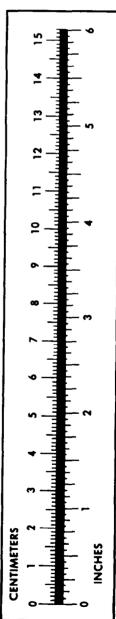
32° Fahrenheit is equivalent to 0° Celsius

 $9/5C^{\circ} + 32 = {\circ}F$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	
Miles	Kilometers	
Square Inches	Square Centimeters	
Square Feet	Square Meters	
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	
Cubic Feet	Cubic Meters	
Cubic Yards	Cubic Meters	
Fluid Ounces	Milliliters	
nts	Liters	
arts	Liters	
allons	Liters	
Ounces	Grams	
Pounds	Kilograms	
Short Tons	Metric Tons	
Pound-Feet	Newton-Meters	
Pounds per Square Inch	Kilopascals	
Miles per Gallon	Kilometers per Liter	
Miles per Hour	Kilometers per Hour	
-	•	

TO CHANGE	то	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	
Kilometers	Miles	
Square Centimeters	Square Inches	
Square Meters	Square Feet	
Square Meters	Square Yards	1 196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	
Cubic Meters	Cubic Feet	
Cubic Meters	Cubic Yards	
Milliliters	Fluid Ounces	
Liters	Pints	
Liters	Quarts	
'ers	Gallons	
.ms	Ounces	
.ograms	Pounds	
Metric Tons.	Short Tons	
Newton-Meters	Pounds-Feet	
Kilopascals	Pounds per Square Inch .	
ometers per Liter	Miles per Square Inch .	9 254
meters per Hour	Miles per Gallon	
miecers per mour	Miles per Hour	U.OZI



PIN: 075432-000