This copy is a reprint which includes current pages from Changes 1 and 2.

EQUIPMENT SERVICEABILITY CRITERIA FOR ELECTRONIC EQUIPMENT CONFIGURATIONS IN ARMY MODEL CH-47 SERIES HELICOPTERS

Headquarters, Department of the Army, Washington, D.C., 24 August 1973

Section I. INSTRUCTIONS

1. Purpose. This manual furnishes the user with a procedure for evaluating the readiness condition of the equipment to perform satisfactorily its primary mission for 90 days with normal maintenance support.

NOTE

Application of this procedure, however, does not eliminate or reduce the requirement for prescribed maintenance service on the equipment and does not authorize replacement of components.

2. Definitions. *a. Equipment Category GREEN*. Equipment free of conditions that would reduce its capability for reliable performance of its primary mission for a period of 90 days.

b. Equipment Category AMBER. Operationally ready equipment with limitations which may curtail a reliable performance of its primary mission for a period of 90 days.

c. Equipment Category RED. Equipment unable to perform its primary mission immediately or possessing an unacceptable reliability level for 90 days
sustained performance of its primary mission.

d. Color Rating. Rating of equipment accessories, components, etc., in accordance with a, b, and c above.

e. Multiple-aspect equipment. Equipment of one logistic manager which contains subsystems, end items, or components of another logistics manager.

3. General Instructions. a. This technical manual will be filed in the equipment, -log binder. If classified. this technical manual will be filed in accord; ice with the provisions of AR 380-5.

b. This evaluation will be actually performed on the item being rated by the operator/crew.

* This manual supersedes TM 11-1520-209-ESC. 3 April 1969, including all changes.

c. Authorized subsystems and components of multiple-aspect equipment requiring evaluation but which are not available at the organization shall be given the lowest color rating authorized for that item.

d. Equipment covered in this manual which requires serviceability checks but which is not authorized to the evaluating organization shall not be rated.

e. This equipment is rated on the basis of capability for immediate operation and amount of wear life remaining on limited life components. The rating is not meaningful unless each check is made with the utmost care and accuracy.

f. Record the evaluation results on DA Form 2404, Equipment Inspection and Maintenance Worksheet, using a separate sheet for each multiple-aspect item of equipment, subsystem or component, including those evaluated by separately published ESC technical manuals. The blocks will be completed in accordance with TM 38-750.

g. If an URGENT modification work order has not been applied to any authorized equipment, the equipment and the system will be rated "RED".

h. Subsystems and components will be separately color rated.

i. A color rating will be assigned for the overall system.

4. Special Instructions. The electronic configuration in the aircraft may vary, depending on the year of manufacture, production run, geographical area of operation, etc. The equipment that may be installed in the various configurations is listed below. Refer to the master log of the aircraft to be tested to determine which equipment should be installed in the particular aircraft. For' the purpose of ESC evaluations, equipment listed in the master log shall be considered as authorized for the particular aircraft. Equipment listed below, but not listed in the master log of the aircraft, shall be considered as unauthorized.

a. Communication System (Section II).

(1) Control Intercommunications Set C-1611(*)/AIC (item 2).

(2) Radio Set AN/ARC-44, fm communications (item 3).

(3) Radio Set AN/ARC-54 or AN/ARC-131, fm communication (witbou'tTSEC/KY-28 or MD-736/A installed) (item 4).

(4) Radio Set AN/ARC-54 or AN/ARC-131 end communications Security Set TSEC/KY-28 (item 5).

(5) Radio Set AN/ARC-54 or AN/ARC-131 and Discrete Signal Discriminator MD-736/A (item 6).

(6) Radio Set AN/ARC-55(*), ub$f$ communications (item 7).

(7) Radio Set AN/ARC-SIX or AN/ARC-51BX, ub$f$ communications (item 8).

(8) Radio Set AN/ARC-73(*), vb$f$ communications (item 9).

(9) Radio Set ARC Type 12 (Transmitter, Radio T-366A/ARC, emergency h/ communications) (item 10).

(10) Radio Set AN/ARC-134, vb$f$ communications (item II).

(11) Radio Set AN/ARC-102. b/ communications (item 12).

(12) Transponder Set AN/APX-72 or Transponder Set AN/APX44 IFF transponder (item 13).

(13) (Item 14 deleted.)

b Navigation System (Section III).

(1) Radio Set AN/ARC-44 and Antenna Group AN/ARA-31, fm boming (item 16).

(2) Radio Sat AN/ARC-54 or AN/ARC-131 and Antenna Group AN/ARA-56. or AS-1922 fm boming (item 17).

(3) Radio Receiver R-1041A/ARN, marker beacon (item 18).

(4) Direction Finder Set AN/ARN-59(V) radio compass (item 19).

(5) Direction Finder Set AN/ARN-83, radio compass (item 20).

(6) Receiving Set. Radio AN/ARN-30D or AN/ARN-30E vor (item 21).

(7) Receiving Set, Radio AN/ARN-82(*), vor (item 22).
(8) Aircraft Magnetic Compass. TypeJ-2 (item 23).
(9) Gyromagnetic Compass A N/ASN-43 (item 24).

c. Stabilization System (Section IV).

(1) Stability Augmentation System (SAS) (items 26 and 27).
(2) Speed Trim Facility (item 28).

d. Auxiliary System (Section V). Proximity Waning System (item 30,)

5. Reporting of Errors. The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded directly to Commander, U.S. Army Electronics Command, ATTN: AMSEL-MA-Q, Fort Monmouth, NJ., 07703.

Section II. COMMUNICATION SYSTEM EVALUATION PROCEDURE

6. Evaluation Requirements. *a. Aircraft Placement.* Have the aircraft placed in a location that is clear of obstructions such as large buildings, hangars. powerlines, and other aircraft.

b. Power Application.

(1) *Auxiliary power.* For those tests not requiring engine operation, items 2 thru 12 use external power or the aircraft auxiliary power unit.

(2) *Aircraft power.* Tests given in item 13 require the use of aircraft engines and aircraft flight controls. For that item. use qualified personnel to operate the aircraft. Refer to TM 55-1520-209-10 for CH-47A helicopters. Refer to TM 55-1520-227-10 for CH-47B and CH-47C helicopters.

c. Controls. Before beginning the tests, set the communication equipment controls to their normal OFF positions. Set the aircraft ac and dc circuit breakers so that power is available to operate the equipment. Perform the tests from each position in turn to insure a complete check of the communication facilities.

CAUTION

Communication equipments require a 3-minute warmup prior to operation except the uhf radio set which requires a 5-minute warmup period.

7. Procedure. *a.* All information will be determined by actual inspection and operation of the equipment. Evaluate each item listed and record the proper color rating on DA Form 2404 as described in Section I. All operator/crew preventive maintenance checks and services shall be performed prior to evaluation.

Item 1. *MWO*

PROCEDURE	RATINGS		
	GREEN	AMBER	RED
Determine if all pertinent URGENT MWO have been applied.	All pertinent URGENT MWO have been applied.		One or more URGENT MWO have not been applied.

Item 2. Control, Intercommunications Set C-1611(*)/AIC, Interphone Operation			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: The following serviceability test applies only to the interphone function of the C-161 I(*)/AIC. Other functions of the C-161 1(*)/AIC, with communication and navigation equip ment interconnected, are tested in other items. Set pilot's,. copilot's and crewmember's C-161 I(*)/AIC for interphone operation. Operate pilot's microphone switch for interphone and speak into microphone. Repeat from copilot's and crewmember's positions.	Adequate sidetone heard in headsets; undistorted audio heard at a comfortable level in the pilot's, copilot's and crewmember's headsets.	Audio heard in pilot's and copilot's headset; other positions inopoperative.	Audio not heard in pilot's or copilot's headsets.

Item 3. Radio Set AN/ARC-44, Fm Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: Establish two-way communication with a tactical fm station located not less than I mile from the aircraft. Caution: Do not set the REM-LOCAL switch to REM; the receiver-transmitter unit will not operate properly. Set the pilot's and copilot's C-161 1(*)/AIC for fm communication. Turn the SB-327/ARC-44 on and set to a fre quency of a local tactical fm station. Set the FM-HOME switch on the SA-474/AR to FM. Establish two-way	Strength and readability of signals are adequate to maintain reliable communication from both positions (pilot's and copilot's). Squelch disabling operative sidetone heard .	Reliable communications possible from one posi tion only. No sideone heard; squelch disabling inoperative.	No reliable two-way communication possible from either position

Item 3. Radio Set AN/ARC-44. Fm Communications (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
communication from pilot's and copilot's position. in turn After communication check. tune SB-327 ARC-44 to an unused channel and check squelch disabling			

Item 4 Radio Set AN ARC-54 or AN ARC- 131 Fm Communications (Without TSEC KY-28 or MD-736,A Installed)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: Establish two way communication with a tactical fm station located not less than I mile from the aircraft Set the pilot's. copilot's and troop commander's C-1611(*) AIC for fm communication On the FM COMM control panel. select the frequency of a distant tactical fm station and set the mode control to PTT or T/R Establish two-way communication from the pilot's. copilot's. and troop commander's positions. In turn After communication check. set the FM COMM control panel to an unused channel and check squelch disabling.	Strength and readability of signals are adequate to maintain reliable communications from each position (pilot's. copilot's and troop commander's) Squelch disabling operative; sidetone heard.	Reliable communications possible from one position only No sidetone heard Squelch disabling inoperative.	No reliable two-way communication possible from either position.

Item 5 Radio Set AN/ARC-54 or AN/ARC- 131 and Communications Security Set TSEC/KY-28			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: A tactical fm station equipped with a compatible security encoder and located not less than 1 mile from the aircraft is required. Set the FM COMM control panel to the frequency of a suitably equipped tactical fm station Set the C-8157/AR(' to operate in the plain language mode Set the pilot's. copilot's. and troop commander's C- 161 I()/AIC for fm communication. Establish two-way communication in the plain language mode from the pilot's. copilot's. And troop commander's position. In turn. Set the C-8157/ARC to operate in the secure mode. Establish two-way communication in the secure mode.	Strength and readability of signals are adequate to maintain reliable communications in plain language and secure modes from each position (pilot's. copilot's and troop commander's).	Secure communications not possible.	No reliable two-way communication possible from any position in either mode.

Item 6 Radio Set AN/ARC-54 or AN/ARC- 131 and Discrete Signal Discriminator MD-736/A			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: Establish two-way communication with a tactical fm station located not less than I mile from the aircraft Set the FM COMM control panel to the frequency of a distant tactical fm station. Set the pilot's. copilot's, and troop commander's C- 161 I(*)AIC for	Fm reception disabled when each transmitter is keyed from each position.		Fm reception not disabled when one transmitter is keyed from one position.

Item 6. Radio Set AN/ARC-54 or AN/ARC-131 and Discrete Signal Discriminator MD-736/A (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
fm communication. Establish two-way communication from the pilot's. copilot's. and troop commander's position in turn. While the distant station is transmitting, select the uhf. vhf. and hf transmit position at the pilot's C1611(*)/AIC. At each transmitter position. operate the pilot's P/T switch to 2ND-POS-RADIO. Observe that fm reception is interrupted at the pilot's headset each time the uhf, vhf, or hf transmitter is keyed. Similarly. select and key each transmitter (uhf, vhf, and hf) from the copilot's position. Observe that fm reception is interrupted at the copilot's headset Select and key the hf transmitter at the troop commander's position Observe that fm reception is interrupted at the troop commander's headset.			

Item 7 Radio Set AN/AR(:-5(*). Uhf Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: This radio set operates within line-of-sight. Man made or natural obstructions between the aircraft and communicating stations may prevent	Strength and readability of signals are adequate to maintain reliable communications from	No reliable two-way communication Possible from one position only Squelch inoperative;	No reliable two-way communication possible from either position.

Item 7. Radio Set AN/ARC-55(*). Ubf Communications (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
reliable testing. Establish communications with a station located no less than 1 mile from the aircraft. Do not transmit on emergency uhf frequency of 243.0 megacycles Set the pilot's and copilot's C161 1()/ AIC for uhf communication. Turn the control of the C1827/ARC-55 for TR + G REC operation. Set to frequency of local uhf station. Establish two-way communication from pilot's and copilot's position. in turn. After communication check, tune to an unused channel and check squelch.	Both positions (pilot's and copilot's). Squelch operation normal Sidetone heard	No sidetone heard.	

Item 8 Radio Set AN/ARC-51X.or AN/ARC-1IBX. Uhf Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Nose: This radio set operates within line of sight. Man made or natural obstructions between the aircraft and communicating stations may prevent reliable testing. Establish communications with a station located not less than 1 mile from the aircraft Do not transmit on emergency uhf frequency of 243.0 megacycles	Strength and readability of signals are adequate to maintain reliable communications from both positions (pilot's and copilot's). Squelch operative; sidetone heard.	Reliable communications possible from one position only No sidetone heard Squelch inoperative.	No reliable two-way communication possible from either position.

Item 8. Radio Set AN/ARC-51X, or AN/ARC-51BX, Uhf Communications (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Set the pilot's and copilot's C-1611(*)/ AIC for uhf communication. Turn Control C-4677/ARC-51X or C-6287/ARC51BX to TR. Set to frequency of local uhf station. Establish two-way communication from pilot's and copilot's position, in turn. After communication check, tune to an unused channel and check squelch.			

Item 9. Radio Set AN/ARC-73(*), Vhf Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: Do not transmit on emergency vhf frequency of 121.5 megacycles. Set the pilot's and copilot's C-1611(*)/AIC for vhf communication. Set the vhf control unit to the frequency of a local vhf station and establish two-way communication from the pilot's position and then from the copilot's position. After communication check, tune to an unused channel and check squelch.	Received and transmitted signals heard in pilot's and copilot's headsets and strength and readability of signals are adequate to maintain two-way communications at each position (pilot's and copilot's). Squelch operative. Sidetone heard in headsets.	No sidetone heard. Reliable two-way communication possible from one position only(pilot's and copilot's). Squelch inoperative.	No reliable two-way communication possible from either position.

Item 10. Radio Set ARC Type 12 (Transmitter; Radio T-366A /ARC). Emergency Vhf Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: The AN/ARN-30D or AN/ARN-30E is used for emergency vhf reception. Do not transmit on emergency vhf frequency of 121.5 megahertz. This radio transmitter operates within line-of-sight. The power output of the transmitter is low. Man made or natural obstructions between the aircraft and communicating stations may prevent reliable testing. Establish communications with a station located not less than I mile from the aircraft. Set the pilot's and copilot's C-161 I(*)/AIC for emergency vhf communications. Turn on the AN/ARN-30D or AN/ ARN-30E and tune to frequency of local vhf station. Select the same frequency for the T-366A/ARC transmitter. Establish two-way communication from the pilot's and copilot's position. in turn.	Strength and readability of signals are adequate to maintain reliable communications from both pilot's and copilot's position. Sidetone heard.	No reliable communications from either side. No sidetone.	

Item 11. Radio Set AN/ARC-134, Vhf Communication			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Set pilot's and copilot's C-161 I(*)/AIC for vhf communication. Set the VHF control to the frequency of a local vhf station and establish two-way communication from the pilot's position, and then from the copilot's position. After communication check, tune to an unused channel and check squelch((:OMM TEST) switch.	Received and transmitted signals heard in pilot"' and copilot"' headsets and strength and readability of signals are adequate to maintain two-way communication at each position (pilot's and copilot's) Squelch is operative. Sidetone heard in headsets	No sidetone heard. No reliable two-way communication possible from either position(pilot's or copilot's).	

Item 12. Radio Set AN/ARC-102 Hf Communications			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Set pilot's. copilot's. and troop commander's C- 161 I(*)/AIC for hf operation. On HF control panel, apply power to set and select an operating channel. Establish two-way communication with a local hf station from pilot's, copilot's. and troop commander's positions, using upper sideband (usb). lower sideband (Isb), and amplitude modulation (am.).	Strength and readability of signals are adequate to maintain reliable communications from the pilot's. copilot's. and troop commander's positions for sidebands and am.	Two-way communication possible from one position for usb. Isb. or am. only. No sidetone heard.	No reliable two-way communication possible from any position.

Item 13. Transponder Set AN/APX-72 or Transponder Set AN/APX-44. IFF Transponder			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Nose: The aircraft must be in flight for this test. Establish communication with a local ground station equipped with an IFF radar interrogator system. Request that the ground station operator interrogate in each mode and observe the replies. Include mode 4 tests if Computer KIT-IA/TSEC is installed. Include mode C tests if the altitude transducer is installed.	Proper replies received by ground station operator for all operational modes		Proper reply not received by ground station operator in one or more operational modes.
Item 14. (Deleted)			

b. Rating for Communication Systems. The color rating will be the lowest rating recorded above.

Section III. NAVIGATION SYSTEM EVALUATION PROCEDURE

8. Evaluation Requirements. *a. Aircraft Placement*. Have the aircraft placed in a location that is clear of obstructions such as large buildings, hangars. powerlines. and other aircraft.

b. Power Application.

(1) *Auxiliary power.* For those tests not requiring flight of the aircraft. items 15 thru 17 and 19 thru 22 use external power or the aircraft auxiliary power unit.

(2) *Aircraft power*. Tests given in items 18. 23. and 24 require the use of aircraft engines For those items. use qualified personnel to operate the aircraft. Refer to TM 55-152()-209-10 for CH-47A helicopters. Refer to TM 55-1520-22710 for CH-47B and CH-47C helicopters.

c. Controls. Before beginning the tests, set the navigation equipment controls to their normal OFF positions. Set the aircraft ac and dc circuit breakers so that power is available to operate the equipment. Perform the tests from each position in turn to insure a complete check of the navigation facilities.

CAUTION

Navigation equipments require a 3-minute warmup prior to operation.

9. Procedure. *a.* All information will be determined by actual inspection and operation of the equipment. Evaluate each item listed and record the proper color rating on DA Form 2404 as described in Section I. All operator/crew preventive maintenance checks and services shall be performed prior to evaluation.

Item 15 MVWO			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Determine if all pertinent URGENT MWO have been applied	All pertinent URGENT MWO have been applied		One or more URGENT MWO have not been applied

Item 16 Radio Set AN/ARC-44 and Antenna Group AN/ARA-31. Fm Homing			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note More conclusive tests of this equipment can be made If the tests are performed in flight If a flight test cannot be performed. move the aircraft through a 180° arc while performing the tests Set the pilot's and copilot's (1611(*) AIC for fm communication Turn the SB327 ARC-44 on and set to a frequency of a local tactical fm station Set the FM-HOME switch on the SA474/AR to FM Establish two-way communication from ether the pilot's or copilot's position Request the local tactical fm station to transmit a carrier signal for at least 30 seconds After the request has been made. switch the FM	A coded D. U. and steady tone is heard in the pilot's and copilot's headset	A coded D. U. and steady tone is heard from one position only	A coded D. U. and steady tone is not heard from either position.

Item 16. Radio Set AN/ARC-44 and Antenna Group AN/ARA-31, Fm Homing (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
HOME switch from FM to HOME. A coded D (dash-dot-dot), coded U (dot-dot-dash), or a steady tone will be heard in the headsets. A coded D indicates the station is to the left of the aircraft. A coded U indicates the station is to the right of the aircraft. A steady tone indicates that station is directly in front or in back of the aircraft. Rotate the aircraft while listening for the three signals. After test is completed, return FM-HOME switch to FM.			

Item 17. Radio Set AN/ARC-54 or AN/ARC- 131 and Antenna Group AN/ARA-56 or AS-1922/ARC Fm homing			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: More conclusive tests of this equipment can be made if the tests are performed in flight. If a flight test cannot be performed. move the aircraft through a 180- arc while performing the test. Set the pilot's and copilot's C-1611(*) AIC for fm communication. Set the mode control of the FM COMM control panel to PTT or T/R. Establish two-way communication with a local tactical fm station. Request the local	Vertical pointer nag completely disappears. Vertical pointer swings left, right. and moves to center.		Vertical pointer flag does not completely disappear. Vertical pointer does not swing left, right, and will not remain centered.

Item 17. Radio Set AN/ARC-54 or AN/ARC-131 and Antenna Group AN/ARA-56 or AS-1922/ARC Fm homing (Continued			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
tactical fm station to transmit a carrier signal for at least 30 seconds. After the request has been made, switch the mode control switch on the FM COMM control panel from PTT or T/R to HOME Set the SQUELCH control to CARR Observe the homing indicator. The red flag will drop completely out of sight The vertical needle on the Indicator will swing to the left. right, or remain centered. A left needle swing indicates that the fm station is to the left A right needle swing indicates the fm station is to the right. A needle center condition indicates the fm station is directly in front of or directly in back of the aircraft. Rotate the aircraft while observing the meter indication for the three conditions After the test is completed. return the mode control switch to PTT or T/R			

Item 18. Radio Receiver R-1041/ARN, Marker Beacon			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: The tests in this chart must be performed with the aircraft in flight Refer to airways map for location of. marker beacon transmitter Set the pilot's and copilot's C-1611(*)/AIC for marker beacon reception and turn on marker beacon control. Fly aircraft directly over airways marker beacon transmitter.	When aircraft is flown over marker beacon transmitter, marker beacon indicator lamp lights and coded audio(400 Hz for outer and1,300 Hz for middle marker) is heard in the headsets.	Marker beacon lamp does not light and no coded audio is heard in headsets,	

Item 19. Direction Finder Set AN/ARN-59(V), Radio Compass			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: 1. Tests performed at night or using radio stations too distant may give erroneous results Note: 2. If two AN/ARN-59(V)'s(ADF No. I and ADF No. 2) are installed, repeat the test below for ADF No. 2 Note: 3. If only a single (one) AN/ ARN-59(V) is authorized and it is inoperative, it will be given a rating of RED. If dual (two) AN/ARN-59(V)'s are authorized and only one is operative, an AMBER rating will be given If both are inoperative, a RED rating. will be given.	In ANT mode, maximum indication on tuning meter occurs when radio set is properly tuned to the same frequency as the station. Undistorted station signal of adequate volume is heard in headset. In COMP mode, direction finding indicator gives correct relative bearing to the station. Operation of LOOP switch moves the needle to the left and	Radio compass operates correctly in COMP mode on one band only. Radio compass operates correctly on all three bands in LOOP mode only. Direction finding indicator inoperative in COMP mode. Reliable adf station signals heard at one position only(pilot's or copilot's).	No reliable adf station signals heard at either position (pilot's or copilot's). ADF indicator inoperative in both LOOP and COMP mode. One set installed and is inoperative. Two sets installed and both are inoperative.

Item 19- Direction Finder Set AN/ARN-59(V), Radio Compass (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Apply power to the AN/ARN-59(V). Set pilot's or copilot's C-161 I(*)/AIC for NAV signal reception. Set C-2275/ARN control panel for antenna (ANT) mode. With the station tuned in properly, set the C-2275/ARN for compass(COMP) operation. After the needle on the bearing indicator stabilizes, opcrate the LOOP switch momentarily to the right and then left while observing the bearing indicator. Set the C-2275/ ARN for LOOP operation. Turn the BFO switch on. Rotate the loop to either side of the station bearing. Tune in a station, identify, and perform tests on each of the three bands.	right of the relative bearing. Needle returns to relative bearing when LOOP switch is released. In LOOP mode of operation, and with BFO turned on, a beat note is heard in the headset. Pitch varies as radio tuning is changed. Volume of beat increases as the loop is rotated away from the station bearing.	Two sets installed and one is inoperative.	

Item 20. Direction Finder Set AN/ARN-83, Radio Compass			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: Tests performed at night or using radio stations too distant may give erroneous results Apply power to the AN/ARN-83. Set pilot's or copilot's C-161 (*)/AIC for NAV signal reception. Set C-6899/ARN radio set control panel for an	In ANT mode, maximum indication on tuning meter occurs when radio set is properly tuned to the same frequency as the station. Undistorted station signal of ade-	Bearing indicator operates correctly in ADF mode on one band only. Bearing indicator operates correctly on all three bands in LOOP mode only.	No reliable adf station signals heard at either position (pilot's or copilot's).

Item 20. Direction Finder Set AN/ARN-83. Radio Compass (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
tenna (ANT) mode of operation. With the station tuned in properly. set the C-6899/ARN for ADF mode. After the needle on the bearing indicator stabilizes, operate the LOOP switch momentarily to the right and then left while observing the bearing indicator. Set the C-6899/ARN for LOOP mode of operation. Turn the BFO switch on. Using LOOP switch, move bearing indicator pointer to either side of the station bearing. Tune in a station, identify, and perform tests on each of the three bands.	quate volume is heard in headset. In ADF mode, bearing indicator gives correct relative bearing to the station. Operation of LOOP switch moves the needle to the left and right of the relative bearing. Needle returns to relative bearing when LOOP switch is released. In LOOP mode of operation, and with BFO turned on, a beat note is heard in the headset. Pitch varies as radio tuning is changed. Volume of beat note increases as the loop is rotated away from the station bearing.	Bearing indicator inoperative in ADF mode. Reliable adf station signals heard at one position only (pilot's or copilot's).	ADF indicator inoperative in both LOOP and COMP modes.

Item 21. Receiving Set, Radio AN/ARN-30D or AN/ARN-30E. Vor			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: The following test covers the vor function only. Turn on AN/ARN-30D or AN/ARN-30E. On VHF NAV control panel. set controls for vor operation, and tune to local vor station of known bearing Set VOR-ADF SELECTOR switch for VOR No. I operation for both course indicator and RMI. Received signal is heard in pilot's and copilot's headset and identified by station call letters. On course indicator. vertical flag goes out of sight and vertical pointer moves off center. (Pointer will stay at center if helicopter bearing corresponds to course pointer indication.) Turn course indicator knob until vertical pointer is centered. Note that course pointer corresponds to bearing of helicopter and TO-FROM meter indicates TO or FROM the vor station. Rotate course indicator knob to reciprocal bearing. Note that vertical pointer centers and TO-FROM meter indicate reciprocal bearing from vor station.	Undistorted station signal of adequate volume heard in pilot's and copilot's headset RMI needle No. I or No 2 indicates known station bearing TO-FROM arrow indicates whether course is to or from vor station. In the reciprocal heading, the TO-FROM arrow reverses position.	No signal heard in headset; visual indications normal.	RMI needle No. I or No2 does not indicate known station hearing Vertical flag does not go out of sight Vertical pointer will not center and TO-FROM meter does not change as vertical pointer is rotated to reciprocal hearing

Item 22. Receiving Set. Radio AN/ARN-82(*). Vor			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: The following test covers the vor function only. Apply power to the AN/ARN-82(*).Set pilot's or copilot's C- 161 I(*)/AIC for NAV signal reception. Set the control unit power switch to PW/R. Tune receiving set to frequency of local vor station of known bearing Turn the omnibearing selector (OBS) knob until vertical pointer is centered and the to/from indicator reads TO. Listen for coded station identification of vor station. Rotate the OBS knob to reciprocal heading (180° from previous heading). Determine bearing of air craft using magnetic compass.	Bearing of vor station corresponds to position of aircraft within + 2°. Flag alarm for vertical pointer is completely out of sight. To/from indicator reads TO. Undistorted station signal of adequate volume heard in pilot's or copilot's headset. To/from indicator reads FR and vertical pointer centers when OBS knob is rotated to reciprocal heading.	No signal heard in headset; visual indications normal.	Bearing of vor station does not correspond to position of aircraft. Flag alarm remains visible. To/from indicator reads incorrectly.

Item 23. Aircraft Magnetic Compass. Type J-2			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: This test must be performed with engines running at a speed sufficient to extinguish the GEN OFF light Set BATTERY switch to ON Position aircraft on compass rose Align aircraft to a known correct magnetic heading. Check that J-2 COMP	Compass card indicates within 2'° of known correct magnetic head ing after 3 minutes have passed.	Compass card does not Indicate within t 2° of known correct heading after 3 minutes have passed	

Item 23 Aircraft Magnetic Compass. Type J-2 (Continued)

PROCEDURE	RATINGS		
	GREEN	AMBER	RED
AC andJ-2 COMP DC circuit breakers are closed Set the COMPASS SLAVING switches to IN Note that compass card of RMI indicates within ± 2° of known correct heading after 3 minutes have passed			

Item 24 Gyromagnetic Compass AN./ASN-43

PROCEDURE	RATINGS		
	GREEN	AMBER	RED
Note: This test must be performed with engines running at sufficient speed to extinguish the GEN OFF caution light Set BATTERY switch to ON Position aircraft on compass rose Align aircraft to a known correct magnetic heading Check that COMP and RMI circuit breakers are closed Set MAG-DG switch to MAG. Note that compass card of RMI indicates within ± 3° of known correct magnetic heading b. Rating /or Navigation System. The color rating will be the lowest rating recorded above.	Compass card indicates within ± 3° of known correct magnetic heading	Compass card does not indicate within ± 3° of known correct heading	

b. Rating for Navigation System. The color rating will be the lowest rating recorded above.

Section IV. STABILIZATION SYSTEM EVALUATION PROCEDURE

10. Evaluation Requirements. *a. Power Application.* Use external power or the aircraft auxiliary power unit. Both electric and hydraulic power are required for items 26 and 27.

b. Controls. Before beginning the tests, set the aircraft ac and dc circuit breakers so that power is available to operate the stabilization equipment.

11. Procedure. *a.* All information will be determined by actual inspection and operation of the equipment Evaluate each item listed and record the proper color rating on DA Form 2404 as described in Section I. All operator/crew preventive maintenance checks and services shall be performed prior to evaluation.

Item 25. MWO			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Determine if all pertinent URGENT MWO have been applied.	All pertinent URGENT MV/WO have been applied.		One or more URGENT MO have not been applied.

Item 26. Stability Augmentation System (SAS). Single SAS Operation			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Note: SAS tests require ac and hydraulic power to be supplied to the aircraft Set FLT CONT panel SAS switch to NO. 1 ON and NO. 2 ON. in turn. Set the selector switch to DC and AC. in turn, and observe meter indications. Set selector switch to PITCH. ROLL YAW, and S/SLIP. in turn. Operate	SAS OFF caution light comes on for inoperative amplifier. Meter (on operating amplifier) indicates between 250 and 350 with selector switch at DC Meter indicates between 250 and 450 with selector switch at A(C With se-		Meter readings are erratic and incorrect SAS OFF caution light operation not as required

Item 26. Stability Augmentation System (SAS). Single SAS Operation (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
L-R switch alternately to L and R at each switch position and observe meter indication.	lector switch at PITCH, ROLL and S/SLIP during L-R switch operation meter pointer moves slowly to a value between I50 and 350. For SAS amplifiers 114E3030-40. 114E3030-42. and 114E3030-43. meter pointer remains at that position. For SAS amplifiers 1 14E3030-47 and I 14E3030-49. meter pointer slowly returns to 0O. (Record the maximum indication for use in item 27) With selector switch at YAW for SAS amplifiers 114E3030-40, -42, and -43. meter pointer moves in the direction indicated by the position of the L-R switch Indication then decreases to one-third of the original indication within 3 to 7 seconds. With the selector switch at YAW		

Item 26. Stability Augmentation System (SAS), Single SAS Operation (Continued)

PROCEDURE	RATINGS		
	GREEN	AMBER	RED
	for SAS amplifier 1 14E3030-47 and -49, meter indicates between 150 and 350 in the direction indicated by the L-R switch and then decreases to one half the maximum indication in approximately 7 seconds and holds steady.		

Item 27. Stability Augmentation System (SAS), Dual SAS Operation

PROCEDURE	RATINGS		
	GREEN	AMBER	RED
Set FLT CONT panel SAS switch to both ON and perform test procedures given in item 26 for each SAS amplifier	Meter indications for DC and AC are the same as for single SAS operation. Meter indications for PITCH, ROLL, YAW, and S/SLIP are one-half (* one scale division) of the values recorded in item 26. SAS OFF caution light comes on for the inoperative amplifier.		Meter readings are erratic and incorrect.

Item 28. Speed Trim Facility			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Set the speed trim amplifier selector switch to AC, B+, and MAN; for each switch position set, observe meter indications. Set selector switch to A/S, FWD, and AFT and, in turn, press the PRESS TO TEST switch in each switch position. Observe meter indications.	With selector switch at AC and B+, meter indicates between 0.7 and 0.9. At MAN, meter indicates between 0.5 and 0.9 for maximum forward trim wheel position, 0.0 to 0.1 for maximum aft position, and 0.3 to 0.4 for 0 position. At FWD and AFT, meter indicates 0; press the PRESS TO TEST switch, meter indicates approximately 0.5. For speed trim amplifier 114E2186-23 or 114E218626, with selector switch at AS, meter indicates a maximum of 0.1. Press the PRESS TO TEST switch; meter indicates greater than 0.1. For speed trim amplifier 114E2186 30, with selector switch at AS, meter indicates a maximum of 0.3. Press the		Meter readings are erratic and incorrect

Item 28. Speed Trim Facility (Continued)			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
	PRESS TO TEST switch; meter indicates greater than 0.3. Note: The AC position is not wired in speed trim amplifier 114E2186-30.		

b. Rating for Stabilization System. The color rating will be the lowest rating recorded above.

Section V. AUXILIARY SYSTEM EVALUATION PROCEDURE

12. Evaluation Requirements. *a. Power Application.* Use external power or the aircraft auxiliary power unit for item 30.

b. Controls. Before beginning the tests, set the aircraft ac and dc circuit breakers so that power is available to operate the Proximity Warning System.

13. Procedure. a. All information will be determined by actual inspection and operation of the equipment. Evaluate each item listed and record the proper color rating on DA Form 2404 as described in Section I. All operator/crew preventive maintenance checks and services shall be performed prior to evaluation.

Item 29. MWO			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Determine if all pertinent URGENT MWO have been applied.	All pertinent URGENT MWO have been applied.		One or more URGENT MWO have not been applied.

Item 30. Proximity Warning System			
PROCEDURE	**RATINGS**		
	GREEN	**AMBER**	**RED**
Set the Proximity Warning System TRANSPONDER GND TEST/ CONFIDENCE TEST SWITCH TO CONFIDENCE TEST Note: The ABOVE. EQUAL. and BELOW lamps normally light and cycle one time when power is initially applied.	Receiver-Transponder ABOVE, EQUAL and BELOW indicator lamps light in cycle. Audio alarm is heard in the pilot's and copilot's headsets.		Receiver-Transponder ABOVE, EQUAL or BELOW indicator lamps do not light. Audio alarm not heard in pilot's and copilot's headsets.

b. Ratings for Auxiliary System. The color rating will be the lowest rating recorded above

By Order of the Secretary of the Army:

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