

## UNCLASSIFIED

T- 8 , NAVSHIPS 0967-034-9016Date 1 AUGUST 1974

INTERIM CHANGE T- 8 TO NAVSHIPS 0967-034-9010  
Technical Manual dated 7 April 1971 for Converter-  
Comparator AN/URA-17, AN/URA-17A, and AN/URA-17B.

THIS CHANGE DOES NOT SUPERSEDE ANY OTHER CHANGE.  
 THIS CHANGE SUPERSEDES \_\_\_\_\_

This Interim Change revises the manual to reflect the equipment changes made by Field Change(s) 8-AN/URA-17, 4-AN/URA-17A, 2-AN/URA-17B, and 2-AN/URA-17C EFCB NAVSHIPS 0967-034-9130 dated 1 August 1974.

This Interim Change originally published in EIB 835.

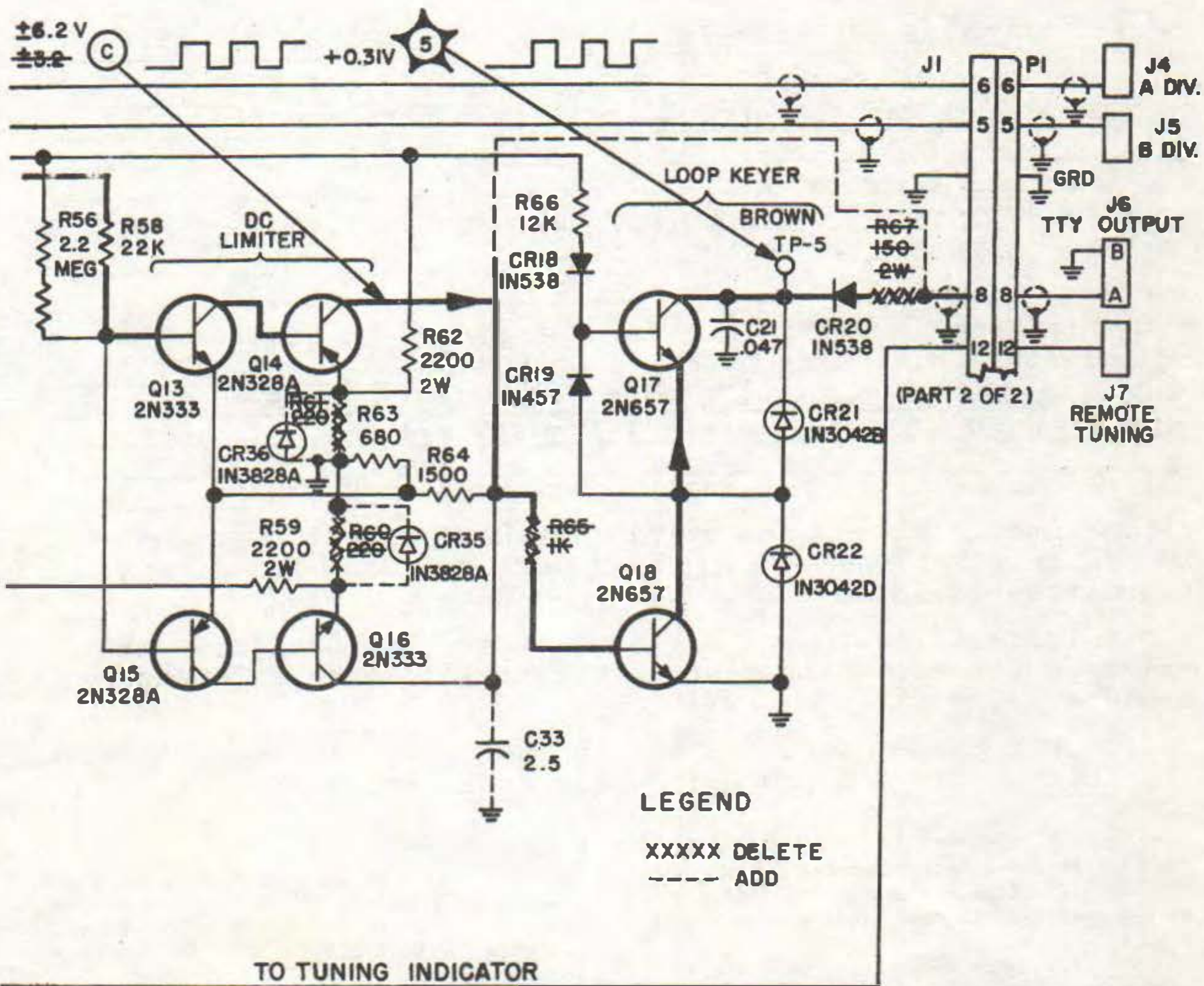
Maintenance Support Activities shall make this change immediately but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment shall not make this change in the manual until accomplishment of the field change referenced above.

Insert this Interim Change in the manual immediately after the front cover and preceding prior changes in effect.

Make pen-and-ink changes as follows:

1. Page 4-5, paragraph 4-2C(4):
  - (1) Line 13--change "deliver a strong positive" to read "deliver a positive 6 volt."
  - (2) Line 18--change "delivers a strong negative" to read "delivers a negative 6 volts."
  - (3) Last line--after word "keyer" add "for High Level systems or provides a  $\pm 6$  volt polar signal for Low Level systems."
2. Refer to figure 1 of this article and make the following changes to page 5-11, 5-12 figure 5-6 and page 6-15, 6-16 figure 6-5:
  - (1) Delete "R60" and "220." Change the resistor symbol to show a zener diode with the anode (+) side connecting to the junction of R59 and Q16. Label this diode "CR35", "1N3828A."
  - (2) Delete the circuit symbol number "R61" and the value "220." Change the resistor symbol to show a zener diode with anode (+) side connecting to the junction of R63 and ground. Label this diode "CR36", "1N3828A."
  - (3) Add the symbol for a capacitor between the collector of Q16 and ground. Label this capitor "C33, 2.5."
  - (4) Add wire between collector of Q14 and J1-8.
  - (5) Delete the symbol, symbol number and value for resistors R65 and R67.
- (6) At the top of page above Q13, waveform C, change "+3.2V" to read  $\pm 6.2V$ ."
- (7) On the bottom of the page following the word Diagram add "for Low Level Polar Output."
3. Page 6-15, 6-16, Table of coordinates:
  - (1) Under Reference Designation after C32 add "C33"; opposite C33 under coordinates add "13C."
  - (2) Under Reference Designation after CR34 add "CR35" and "CR36." Opposite CR35 and CR36 under coordinates add "12B."
4. Page 6-11, 6-12; figure 6-3:
  - (1) Change R60 to show a diode with the (+) side connected to R59. Label this diode "CR35." Delete circuit symbol number "R60."
  - (2) Change R61 to show a diode with the (+) side connected to terminal 43. Label this diode "CR36." Delete circuit symbol number "R61."
  - (3) Show a capacitor between the right terminal of R65 and the (+) side of CR22. Label this capacitor "C33."
  - (4) Show a wire connecting TB2 terminal 50 and the right terminal of R65.
  - (5) Delete resistors R65 and R67.



NOTES:

1. UNLESS OTHERWISE SPECIFIED:  
ALL CAPACITORS ARE IN UF  
ALL RESISTORS ARE IN OHMS  
ALL RESISTORS 1/2 WATT 10%  
K = 1000 MEG = 1,000,000
2. C31A, C31B IN SAME CASE.  
C27A, C27B IN SAME CASE.
3. UNLESS OTHERWISE INDICATED  
ALL VOLTAGES TAKEN TO CHASSIS  
WITH 20,000 OHM/VOLT VOLTMETER,  
WITH NO INPUT SIGNAL.


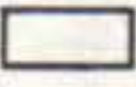
4. EXCEPT FOR POWER TRANSFORMER  
VOLTAGES, ALL VOLTAGES ARE DC.
5.  ZENER DIODE.
6. ALL ROTARY SWITCHES SHOWN IN  
FULLY CCW POSITIONS UNLESS  
OTHERWISE SPECIFIED.
7.  INDICATES FRONT PANEL  
CONTROL.
8. ARROWS ON VARIABLE RESISTORS  
INDICATE CLOCKWISE ROTATION.

Figure 1. Frequency Shift Converter CV-483C/URA-17,  
Keyer Circuits, Functional Schematic Diagram for Low  
Level Polar Output

5. Page 7-4, Table 7-1:
- (1) Under Reference Designation after CR34 add "CR35."
  - (2) Opposite CR35 under Name and Description add "Diode, zener, type 1N3828A." Under Locating Function add "DC Limiter Low Level Output."
  - (3) Under Reference Designation after CR35 add "CR36." Opposite CR36 under Name and Description add "Same as CR35." Under Locating Function add "DC Limiter Low Level Output."
6. Page 7-6, Table 7-1:
- (1) Under Reference Designation after C32 add "C33."
  - (2) Opposite C33 under Name and Description add "Capacitor, 2.5  $\mu$ f 50 volts Type CL27BJ2R5TN2." Under Locating Function add "Filter for Low Level Output."
7. Page 7-14, Table 7-1:
- (1) Delete "R60" and "R61" and their associated Description and Locating Function.
  - (2) Delete "R65" and its Description and Locating Function.
8. Page 7-15, Table 7-1:
- (1) Delete "R67" and its Description and Locating Function.
9. Page 1-8, Table 1-6:
- (1) Add symbols "CR35" and "CR36."
  - (2) Add column for diode type "1N3828A."
  - (3) Opposite CR35 under 1N3828A add "1."
  - (4) Opposite CR36 under 1N3828A add "1."
  - (5) Opposite total number each type under 1N3828A add "2."
  - (6) Under total column change 34 to read "36."

TEMPORARY CORRECTION T-7  
TO TECHNICAL MANUAL FOR  
COMPARATOR-CONVERTER GROUP

AN/URA-17, AN/URA-17A  
NAVSHIPS 0967-034-9010 (formerly NAVSHIPS 94028)

The ordering number for this Temporary Correction is NAVSHIPS 0967-034-9015.

This temporary correction revises the manual to reflect the equipment change made by Field Change 6-AN/URA-17 and Field Change 2-AN/URA-17A. The purpose of this field change is to replace wide-shift bandpass filter, FL1, and wide-shift discriminator filter, FL3, with filters having a center frequency of 2000 Hz.

When this change is included in the manual, the manual shall cover the equipment as though Field Change 6-AN/URA-17 or Field Change 2-AN/URA-17A had been accomplished in the equipment. This correction supersedes T-3 to NAVSHIPS 0967-034-9010.

Maintenance support activities shall make this correction in the Technical Manual immediately, but shall keep the superseded data intact for support of equipment that has not been modified.

Holders of equipment accompanied by Technical Manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction in the Technical Manual immediately after the front cover and preceding T-6.

1. Page 1-3, paragraph 1-5b., third line; correct 2550 to read 2000.
2. Page 3-3, paragraph 3-2g.(1)Step 6, second line; correct 2.5 to read 2.
3. Page 3-4, paragraph 3-2g(2), Step 6, second line; correct 2.5 to read 2. Paragraph 3-3a(3)(a),second line; correct 2.5 to read 2.
4. Page 4-1, Figure 4-3, Discriminator Response Curve (wide-shift Discriminator, FL3); correct 2050 to read 1500, 2550 to read 2000 and 3050 to read 2500. Paragraph 4-2b(1), eleventh line; correct 2550 to read 2000.
5. Page 4-3, paragraph 4-2b(3), second paragraph of the page, fifth line; correct 2550 to read 2000. Sixth line; correct 3400 to read 2850. Eighth line; correct 1700 to read 1150.
6. Page 6-4, paragraph 6-3d(6)(a), Step 6; correct 2550 to read 2000.
7. Page 6-5, Table 6-2 Filter characteristics: Column, "Input Termination"; correct 2550 to read 2000. Column "OUTPUT TERMINATION"; correct 2550 to read 2000. Column "REQUIRED FREQUENCY RESPONSE"; correct 2050 to read 1500 and 3050 to read 2500. Column "INSERTION LOSS"; correct 2550 to read 2000.
8. Page 6-6, paragraph 6-3d(7)(a), Step 10; correct 1500 to read 950.
9. Page 6-7, Figure 6-1, Discriminator Frequency Response Curves "WIDE SHIFT"; correct as indicated.

"PEAKS" -1.15 vice 1.7 and 2.85 vice 3.4 "SUM OF ABSOLUTE VOLTAGES"-  
1.65 vice 2.2 and 2.35 vice 2.9.

"MINIMUM VOLTAGE CHANGE" - 1.65 vice 2.2 and 2.35 vice 2.9.

"CENTER FREQUENCY" - 2.00 vice 2.55. Correct scale as indicated:

1.25 vice 1.8, 1.65 vice 2.2, 2.05 vice 2.6, 2.45 vice 3; 2.85 vice 3.4.

10. Page 6-9, paragraph 6-3d(7)(a), Step 11, second line; correct 3700 to read 3150. Step 13; correct 2200 to read 1650; correct 2900 to read 2350; correct 2500 to read 1950; correct 2600 to read 2050; correct 1700 to read 1150 and correct 3400 to read 2850.

11. Page 7-7, "MAINTENANCE PARTS LIST", REF DESIG FL1, under column, "NAME AND DESCRIPTION", correct 2550 where appearing to read 2000 and delete all after 1-3/4 in. W. REF DESIG FL3, under column "NAME AND DESCRIPTION"; correct 1700 to read 1150; correct 3400 to read 2850; correct 2500 to read 2000 and delete all after 1-1/2 in. W.

Record this action on the Record of Corrections Made page.

TEMPORARY CHANGE T-6 to TECHNICAL MANUAL for Comparator-Converter  
Group AN/URA-17, NAVSHIPS 0967-034-9010 (Formerly NAVSHIPS 94028).

This Temporary Change contains information originally published as separate articles (Technical Manual Corrections) in the Electronics Information Bulletin, (EIB), numbers: 687.

The instructions, described herein, for making these changes shall be followed only if they have not been previously accomplished at the time the EIB, in which the information appeared, was received.

The purpose of this Temporary Change is to assure that publications drawn from stock, subsequent to publication of this information in the EIB, can be corrected.

Insert this Temporary Change in the technical manual immediately behind the front cover and preceding the title page or preceding the latest change or correction in effect.

Make pen-and-ink corrections or changes to the technical manual as follows:

This correction revises the manual to reflect the use of the latest preferred test equipment.

Refer to NAVSHIPS 94028, page 1-6, Table 1-3.  
With pen-and-ink, correct the NOMENCLATURE columns so that they agree with the following:

Oscilloscope	AN/USM-117
Electronic Multimeter	ME-6D/U
Signal Generator	AN/URM-127
Digital Readout Electronic Counter	AN/USM-207
Multimeter	AN/PSM-4B
Semiconductor Device Test Set	AN/USM-206

Page 5-5, paragraph 5-4c(2) (a). Correct the test equipment so that it agrees with the list above.

Page 5-9, paragraph 5-4d(2) (a). Correct the test equipment so that it agrees with the list above.

Page 6-0, paragraph 6-2c. Correct the test equipment so that it agrees with the list above.

TEMPORARY CHANGE 5, NAVSHIPS 0967-034-9013, to TECHNICAL MANUAL FOR COMPARATOR-CONVERTER GROUP AN/URA-17A, NAVSHIPS 0967-034-9010, formerly NAVSHIPS 94028.

PREPARED BY Gulf Aerospace Corporation

Houston, Texas

This temporary change to the manual reflects the equipment changes in the Comparator-Converter Group AN/URA-17A as manufactured by Gulf Aerospace Corporation.

Make the following pen-and-ink corrections:

1. Throughout the manual, add "and AN/URA-17A" after every reference to Comparator-Converter Group AN/URA-17.
2. On page 1-1, paragraph 1-1, line 4, insert "and Contract NObsr 91222(FBM)" at the end of the line.
3. On page 7-22, Table 7-2, make the following additions:

<u>Abbreviation</u>	<u>Name</u>	<u>Address</u>
	Dialco Electric Corp.	Brooklyn, N. Y.
GAC	Gulf Aerospace Corp.	Houston, Texas
	Hughes Aircraft Corp.	Newport Beach, Calif.
	Motorola Inc.	Phoenix, Arizona
TRW	Thompson Ramo Wooldridge Inc.	Cleveland, Ohio
UTC	United Transformer Co.	New York, N. Y.

Insert pages 2 through 8 of this temporary change prior to page 7-1 of the technical manual.

Insert this temporary change in the technical manual immediately after the front cover.



## SUPPLEMENTARY PARTS LIST

## NOTE:

Table 7-1 has been corrected by means of the following supplementary table. For any given item, always refer first to the supplementary table, since it completely supersedes any corresponding listing in the basic table. If no information is shown for a given item, refer to the basic table for the required information.

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
CR7		SEMICONDUCTOR DEVICE, DIODE: Zener, Texas Instruments Inc., type 1N3025B	Zener regulator, Q10 emitter (Figure 6-4)
CR21		SEMICONDUCTOR DEVICE, DIODE: Zener, Texas Instruments Inc., type 1N3042B	Protects against induc- tive kickback from keyer relay (Figure 6-3)
CR27		SEMICONDUCTOR DEVICE, DIODE: Zener, Texas Instruments Inc., type 1N3029B	Bias stabilizer, Q19 emitter (Figure 6-4)
CR32		SEMICONDUCTOR DEVICE, DIODE: Silicon, TRW, Inc., type 1N1731	-560 vdc supply rectifier (Figure 6-4)
C1		CAPACITOR, FIXED, ELECTRO- LYTIC: Tantalitic, 6.8 uf, 35 vdc working, MIL type CS13BF685M	Coupling S1 to Q1 base (Figure 6-3)
C14		CAPACITOR, FIXED, ELECTRO- LYTIC: 20 uf -15% +50%, 60 vdc working, MIL type CL65BK200MP3	Decoupling, Q5 collector (Figure 6-3)
C15		CAPACITOR, FIXED, PAPER DIELECTRIC: 0.22 uf $\pm$ 10%, 100 vdc, MIL type CP05A1KB224K3	Decoupling, Q8 collector (Figure 6-4)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C17		CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -15% +50%, 60 vdc working, MIL type CL65BK500MP3	P/O axis restorer network (Figure 6-4)
C22		CAPACITOR, FIXED, ELECTROLYTIC: 25 uf -15% +50%, 125 vdc, MIL type CL65BP250MP3	P/O -48V power supply filter network (Figure 6-4)
C27		CAPACITOR, FIXED, PAPER DIELECTRIC: dual section; 0.1 uf +20%, 1000 vdc working per section; MIL-C-25/4 type CP54B4EG104V1	P/O -560 V power supply filter network (Figure 5-1)
C31		Same as C27	Same as C27
E1		TERMINAL STUD: silver plated brass term; 39/64 in. lg by 1/4 in. hex base; No. 6-32 threaded ceramic base; 2500 RMS breakdown voltage at 60 cps; CTC part No. 3650-2	Grounded input center tap (Figure 2-6)
FL1		FILTER, BANDPASS: 2550 cps +50 cps operating freq; 8000 ohms +5% input/output impedance at 2550 cps; four terminals; 2-1/4 in. lg by 2-1/4 in. h by 1-3/4 in. w; GAC dwg 000975; UTC, type BF442	Wideband filter, input to S1 (Figure 5-1)
FL2		FILTER, BANDPASS: peaked at 800 cps +40 cps and 1200 cps +40 cps with crossover at 1000 cps +15 cps, four terminals, 2-1/4 in. lg by 1-3/4 in. h by 1-1/2 in. w, GAC part No. 000972	Narrow-shift discriminator between Q1 and Q2 or Q3 (Figure 5-1)
FL3		FILTER, BANDPASS: Peaked at 1700 cps +100 cps and 3400 cps +150 cps with crossover at 2550 cps +40 cps; four terminals; 2-1/4 in. lg by 1-3/4 in. h by 1-1/2 in. w; GAC dwg 000973; UTC, type BF440	Wide-shift discriminator between Q1 and Q2 or Q3 (Figure 5-1)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
FL4		FILTER, BANDPASS, LOW PASS: Section A; 45 cps cutoff frequency; 2 db or less insertion loss at 15 cps; 18 db at 140 cps; 50 db min at 560 cps; 65 db at 1500 cps to 8 kc; 20 k $\pm$ 20% input and output imped- ance at 5 cps; Section B: 175 cps cutoff frequency, 2 db or less insertion loss at 15 cps; 18 db at 560 cps; 50 db at 2240 cps; 65 db at 4 kc to 8 kc; GAC dwg 000974; UTC, type BF441	Keying filter at input to Q6 (Figure 5-1)
KT1		KIT, ACCESSORY: GAC part No. 000927	Repair parts kit
Q1		TRANSISTOR: germanium, PNP; Motorola Inc., type 2N526	Audio amplifier (Figure 6-3)
Q10		TRANSISTOR: silicon, NPN; General Electric, type 2N657	DC amplifier (Figure 6-4)
Q11		TRANSISTOR: germanium, NPN; Texas Instruments Inc., type 2N336	Mark lock-up control (Figure 6-4)
Q14		TRANSISTOR: germanium, PNP; Hughes Aircraft Co., type 2N328A	P/O dc limiter (Figure 6-3)
R23		RESISTOR, FIXED, COMPOSITION: 120 ohms $\pm$ 10%, 1w; MIL-R-11 type RC32GF121K; part No. MS35044-219	Emitter bias, Q4 (Figure 6-3)
R47		RESISTOR, FIXED, COMPOSITION: 1 meg $\pm$ 10%, 1/2 w; MIL-R-11 type RC20GF105K; part No. MS35043-223	Voltage dropping resistor (Figure 6-4)
R48		Same as R3	P/O biasing RC network for Q11 (Figure 6-4)

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 NAVSHIPS 0967-034-9013

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R63		Same as R5	Stabilizes dc limiter by feedback to Q13, Q15 emitters (Figure 6-3)
S1		SWITCH, ROTARY: First section, two position two shorting movable contacts, six fixed contacts; second section, two position three shorting movable contacts, nine fixed contacts; silver plated brass per QQ-B-613; non-sealed shaft per MIL-S-3786; solder type terminals on Mycalex sections; GAC part No. 000977	SHIFT switch, selects bandpass filter and discriminator (Figure 3-1)
S2		SWITCH, ROTARY: One section, two position; 30° positioning increments; two shorting moving contacts; six fixed contacts; silver plated brass per QQ-B-613; non-sealed shaft per MIL-S-3786; solder type terminals on Mycalex sections; GAC part No. 000976	POLARITY switch. Changes polarity of signal to keying filter (Figure 3-1)
S3		SWITCH, ROTARY: One section, three position; 30° positioning increments; two shorting moving contacts; six fixed contacts; silver plated brass per QQ-B-613; non-sealed shaft per MIL-S-3786; solder type terminals on Mycalex sections; GAC part No. 000978	SPEED switch. Selects keying filter section (Figure 3-1)
S4		SWITCH, ROTARY: One section, three position; 30° positioning increments; two shorting moving contacts; ten fixed contacts; silver plated brass per QQ-B-613; non-sealed shaft per MIL-S-3786; solder type terminals on Mycalex sections; GAC part No. 000979	FUNCTION switch. Selects input to comparator (Figure 3-1)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
S4		SWITCH, ROTARY: One section, three position; 30° positioning increments; two shorting moving contacts; ten fixed contacts; silver plated brass per QQ-B-613; non-sealed shaft per MIL-S-3786; solder type terminals on Mycalex sections. GAC part No. 000979	FUNCTION switch. Selects input to comparator (Figure 3-1)
S5		SWITCH, SENSITIVE: Single pole, double throw; 5 amp rating at 125/250 vac; plastic body; 0.030 in. contact pre-travel; 0.034 in. contact overtravel; three solder type terminals; Unimax part No. T-483	Cabinet interlock (Figure 2-10)
TB1		TERMINAL BOARD: Epoxy glass lamin. 3/32 in. thick per MIL-C-18177, type GEE, GAC part No. 000958	Provides support for component parts (Figure 5-1)
TB2		TERMINAL BOARD: Epoxy glass lamin. 3/32 in. thick per MIL-C-18177, type GEE; GAC part No. 000962	Same as TB1
TP1		TEST JACK: Grayhill part No. 31B1002	Test point (Figure 5-2)
TP2		Same as TP1	Same as TP1
TP3		Same as TP1	Same as TP1
TP4		Same as TP1	Same as TP1
TP5		Same as TP1	Same as TP1
TP6		Same as TP1	Same as TP1
TP7		Same as TP1	Same as TP1
TP8		Same as TP1	Same as TP1

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
T1		TRANSFORMER, DISCRIMINATOR: 600 cps to 3600 cps frequency range; shield between pri and sec grounded to case; 2-1/4 in. lg by 2-1/16 in. w by 1-3/4 in. h; GAC dwg 000970; UTC, type PA5386	Coupling from second mark amplifier (Figure 5-1)
T3		TRANSFORMER, POWER, STEP-DOWN: Terminals 1 and 2, 1 and 3, 1 and 4 for input voltages of 105 vac, 115 vac and 125 vac at 47.5 cps to 420 cps; 0.2 amp primary; 59 vrms +3% secondary at 0.25 amp; 2-3/4 in. lg by 2-1/4 in. w by 1-3/4 in. h case; six solder stud terminals; four No. 6-32 x 9/32 in. mtg studs; internal shield between pri and sec grounded to case; GAC dwg 000970; UTC, type PA 5387	Provides power for -48 vdc supply (Figure 5-1)
T4		TRANSFORMER, POWER, STEP-UP, STEP-DOWN: Input terminals 1 and 2, 1 and 3, 1 and 4 for 105 vac, 115 vac and 125 vac input voltages; 47.5 cps to 420 cps; output terminals 5 and 6 for 59 vrms +3% and 85 ma; terminals 7 and 8 for 550 vac +3% and 0.8 ma; terminals 8 and 9 for 6.3 vac +3% and 0.6 amp; 2-3/4 in. lg by 2-1/4 in. w by 1-3/4 in h case with four 6-32 x 9/32 in. mtg studs; ten solder stud terminals; internal shield between pri and sec grounded to case; GAC dwg 000970; UTC	Supplies voltage for +48 vdc and -560 vdc supplies (Figure 5-1)
XDS1		LAMPHOLDER: Dialco; type MS90287-19	Holder for DS1 (Figure 5-1)
XF1		FUSEHOLDER: Littlefuse part No. 342025	Holder for F1 (Figure 5-1)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
XQ1		SOCKET, TRANSISTOR: Three contacts; Grayhill part No. 2244-2019	Socket for Q1 (Figure 6-3)
XVI		SOCKET, ELECTRON TUBE: 12 pin, per MIL-S-12883; Cinch Mfg. Co., type T-9470-12	Socket for V1 (Figure 5-1)
ZI		FILTER-TRANSFORMER NETWORK: Filter and transformer circuits contained in a single case, not interconnected; filter bandpass operating freq 1000 cps; 6 db bandwidth 500 cps, 40 db bandwidth 1400 cps; 8 k input and output impedance at 1000 cps; a-f input transformer pri impedance 600 ohms with secondary terminated in 8000 ohm load at 1000 cps; frequency response 600 to 3600 cps; 2-1/4 in. lg by 2-1/4 in. w by 1-3/4 in. h; GAC dwg 000971; UTC, type BF438	High frequency noise attenuation bandpass filter and impedance matching transformer (Figure 5-1)
P206		CONNECTOR, PLUG, ELECTRICAL: Two No. 16 female contacts; low loss plastic dielectric; straight shaped aluminum shell; Cannon Electric, type MS3106B14S-9S	External cable connector for TTY OUTPUT, J6 (Figure 2-4)

24, June 1966

TEMPORARY CHANGE T-4 to  
NAVSHIPS 0967-034-9012

TEMPORARY CHANGE T-4 TO TECHNICAL  
MANUAL FOR COMPARATOR-CONVERTER  
GROUP AN/URA-17 NAVSHIPS 0967-034-9010  
(FORMERLY NAVSHIPS 94028)

This temporary change revises the manual to reflect equipment changes. The purpose of this change is to replace wide bandpass filter FL1 and wide discriminator FL3 with filters having a new center frequency of 2000 cps. The field change applies to AN/URA-17.

This correction does not supersede any other corrections or changes.

Make the following pen-and-ink corrections. Insert this temporary correction in the technical manual immediately after the front cover and preceding T-3.

1. Front cover, under AN URA-17, add: "AN/URA-17B".
2. Title sheet, under AN/URA-17, add: "AN/URA-17B".
3. Paragraph 1-4b, add following sentence: "AN/URA-17B: Wide shift, 2000 cps mean frequency; width of shift, 200 to 1000 cps."
4. Paragraph 3-2g (1), step 6, add following sentence: "AN/URA-17B: adjust receiver bfo to 2.0 KC for wide-shift signals".
5. Paragraph 3-2g (2), step 6, add following sentence: "AN/URA-17B: adjust receiver bfo to 2.0 KC for wide-shift signals".
6. Paragraph 3-3a (3) (a), add following sentence: "AN/URA-17B: set receiver bfo to 2.0 KC for wide-shift signals".

TEMPORARY CHANGE T-4 to  
NAVSHIPS 0967-034-9012



7. Paragraph 4-2b (1), add following sentence: "AN/URA-17B, the wide filter, FL1, is used when the center frequency of the input signal is 2000 cps with shifts of 100 to 500 cps each side of center.

8. Paragraph 4-2b (3), add following new subparagraph: "For AN/URA-17B, the wide-shift discriminator, FL3, is used for input signals with shift widths of 200 and 1000 cps. The wide shift discriminator contains two resonant networks with a cross over frequency of 2000 cps  $\pm$  40 cps. The output from terminal 1 increases with frequency to about 2850 cps. The output from terminal 4 increases as frequency decreases to a maximum at approximately 1150 cps".

9. Figure 4-3, response curve for wide-shift discriminator, FL3, add following note:

"For AN/URA-17B, the cross-over frequency is 2000 cps with a lower frequency of 1500 cps for space and an upper frequency of 2500 cps for mark".

10. Paragraph 6-3d (6) (a), add following sentence: "For AN/URA-17B, set audio oscillator to 2000 cps, measured with frequency meter".

11. Table 6-2 under INPUT TERMINATION and OUTPUT TERMINATION columns for FL1, add: "AN/URA-17B: 8000  $\pm$  5% at 2000 cps".

12. Table 6-2 under REQUIRED FREQUENCY column for FL1, add: "AN/URA-17B: 1500 to 2500 cps".

13. Table 6-2 under INSERTION LOSS column for FL1, add: "AN/URA-17B: 3 db maximum at 2000 cps".

14. Paragraph 6-3d (7) (a), step 10, add following sentence: "AN/URA-17B: adjust audio oscillator to 950 cps, using frequency meter, keeping output voltage at 6.0 volts".

15. Paragraph 6-3d (7) (a), step 11, add following sentences:

"AN/URA-17B: Increase audio oscillator frequency in 50 cps steps to 3150 cps. Record multimeter voltage indication at each frequency".

16. Paragraph 6-3d (7) (a), step 13, add following sentences: "AN/URA-17B: Draw a straight line between 1650 and 2350 cps points. Frequency deviation from curve shall not be greater than 35 cps. Cross-over point shall be between 1950 and 2050 cps. Peaks shall be  $1150 \pm 100$  cps and  $2850 \pm 150$  cps".

17. Figure 6-1 response curve for wide-shift discriminator, add following note:

"AN/URA-17B: WIDE-SHIFT

Peaks: 1.15 KC and 2.85 KC

SUM OF ABSOLUTE VOLTAGES AT

1.65 and 2.35 KC:  $0.0 \pm 0.03$  V

MINIMUM VOLTAGE CHANGE BETWEEN

1.65 and 2.35 KC: 0.26 V

CENTER FREQUENCY:  $2.00 \text{ KC} \pm 0.04 \text{ KC}$

MAXIMUM LINEARITY DEVIATION: 30 cps".

18. Figure 6-1, response curve for wide-shift discriminator, add following scale:

AN/URA-17B:

Under 1.8, add: "1.25".

Under 2.2, add: "1.65".

Under 2.6, add: "2.05".

Under 3.0, add: "2.45".

Under 3.4, add: "2.85".

19. Table 7-1, MAINTENANCE PARTS LIST, FL1, under NAME AND DESCRIPTION,  
add the following note:

"AN URA-17B: FILTER BANDPASS: 2000 cps  $\pm$  50 cps operating frequency:  
8000 ohms  $\pm$  5% input/output impedance at 2000 cps; four  
terminals;  
2 1/4 in. (l) by 2 1/4 in. (h) by 1 3/4 in. (w)".

20. Table 7-1, MAINTENANCE PARTS LIST, FL3, under NAME AND DESCRIPTION,  
add the following note:

"AN URA-17B: FILTER BANDPASS: peaked at 1150 cps  $\pm$  100 cps and 2850  
cps  $\pm$  150 cps with cross-over at 2000 cps  $\pm$  40 cps; four  
terminals; 2 1/4 in. (l) by 1 3/4 in. (h) by 1 1/2 in (w)".

18, May 1965

T-3 to NAVSHIPS 94028

TEMPORARY CORRECTION T-3 TO TECHNICAL  
MANUAL FOR COMPARATOR-CONVERTER  
GROUP AN/URA-17 NAVSHIPS 94028

This temporary correction revises the manual to reflect the equipment changes made by field change 4-AN/URA-17. The purpose of this field change is to replace wide bandpass filter FL1 and wide discriminator FL3 with filters having a new center frequency of 2000 cps. The field change applies to AN/URA-17.

When this change is included in the manual, the manual shall cover the equipment as though Field Change 4-AN/URA-17 had been accomplished on the equipment. This correction does not supersede any other corrections or changes.

Maintenance Support Activities shall make this correction in the technical manual immediately but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment accompanied by technical manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction in the technical manual immediately after the front cover and preceding T-2.

1. Front cover, under AN/URA-17, add: "AN/URA-53".
2. Title sheet, under AN/URA-17, add: "AN/URA-53".

CORRECTION T-3  
NAVSHIPS 0967-034-9011

3. Paragraph 1-4**b**, add following sentence: "AN/URA-53: Wide shift, 2000 cps mean frequency; width of shift, 200 to 1000 cps."

4. Paragraph 3-2 g (1), step 6, add following sentence: "AN/URA-53: adjust receiver bfo to 2.0 KC for wide-shift signals".

5. Paragraph 3-2 g (2), step 6, add following sentence: "AN/URA-53: adjust receiver bfo to 2.0 KC for wide-shift signals".

6. Paragraph 3-3 a (3) (a), add following sentence: "AN/URA-53: set receiver bfo to 2.0 KC for wide-shift signals".

7. Paragraph 4-2 b (1), add following sentence: "AN/URA-53, the wide filter, FL1, is used when the center frequency of the input signal is 2000 cps with shifts of 100 to 500 cps each side of center.

8. Paragraph 4-2 b (3), add following new subparagraph:

"For AN/URA-53, the wide-shift discriminator, FL3, is used for input signals with shift widths of 200 and 1000 cps. The wide shift discriminator contains two resonant networks with a cross over frequency of 2000 cps  $\pm$  40 cps. The output from terminal 1 increases with frequency to about 2850 cps. The output from terminal 4 increases as frequency decreases to a maximum at approximately 1150 cps".

9. Figure 4-3, response curve for wide-shift discriminator, FL3, add following note:

"For AN/URA-53, the cross-over frequency is 2000 cps with a lower frequency of 1500 cps for space and an upper frequency

of 2500 cps for mark".

10. Paragraph 6-3d (6) (a), add following sentence: "For AN/URA-53, set audio oscillator to 2000 cps, measured with frequency meter".

11. Table 6-2 under INPUT TERMINATION and OUTPUT TERMINATION columns for FL1, add: "AN/URA-53:  $8000 \pm 5\%$  at 2000 cps".

12. Table 6-2 under REQUIRED FREQUENCY column for FL1, add: "AN/URA-53: 1500 to 2500 cps".

13. Table 6-2 under INSERTION LOSS column for FL1, add: "AN/URA-53: 3 db maximum at 2000 cps".

14. Paragraph 6-3 d (7) (a), step 10, add following sentence: "AN/URA-53: Adjust audio oscillator to 950 cps, using frequency meter, keeping output voltage at 6.0 volts".

15. Paragraph 6-3 d (7) (a), step 11, add following sentences: "AN/URA-53: Increase audio oscillator frequency in 50 cps steps to 3150 cps. Record multimeter voltage indication at each frequency".

16. Paragraph 6-3 d (7) (a), step 13, add following sentences: "AN/URA-53: Draw a straight line between 1650 and 2350 cps points. Frequency deviation from curve shall not be greater than 35 cps. Cross-over point shall be between 1950 and 2050 cps. Peaks shall be  $1150 \pm 100$  cps and  $2850 \pm 150$  cps.

17. Figure 6-1 response curve for wide-shift discriminator, add following note:

"AN/URA-53: WIDE-SHIFT  
Peaks: 1.15 KC and 2.85 KC  
SUM OF ABSOLUTE VOLTAGES AT

1.65 and 2.35 KC:  $0.0 \pm 0.03$  V

MINIMUM VOLTAGE CHANGE BETWEEN

1.65 and 2.35 KC: 0.26 V

CENTER FREQUENCY:  $2.00$  KC  $\pm 0.04$  KC

MAXIMUM LINEARITY DEVIATION: 30 cps".

18. Figure 6-1, response curve for wide-shift discriminator, add following scale:

AN/URA-53:

Under 1.8, add: "1.25".

Under 2.2, add: "1.65".

Under 2.6, add: "2.05".

Under 3.0, add: "2.45".

Under 3.4, add: "2.85".

19. Table 7-1, MAINTENANCE PARTS LIST, FL1, under NAME AND DESCRIPTION, add the following note:

"AN/URA-53: FILTER BANDPASS:  $2000$  cps  $\pm 50$  cps operating frequency;

$8000$  ohms  $\pm 5\%$  input/output impedance at  $2000$  cps;

four terminals;

$2 \frac{1}{2}$  in. (l) by  $2 \frac{1}{4}$  in. (h) by  $1 \frac{3}{4}$  in. (w)".

20. Table 7-1, MAINTENANCE PARTS LIST, FL3, under NAME AND DESCRIPTION, add the following note:

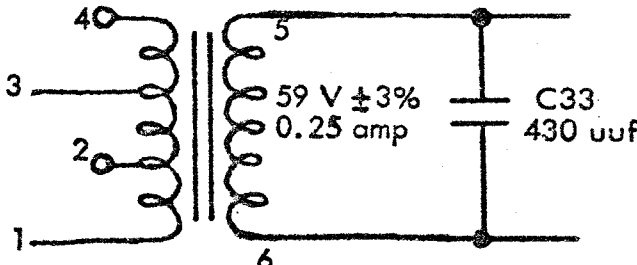
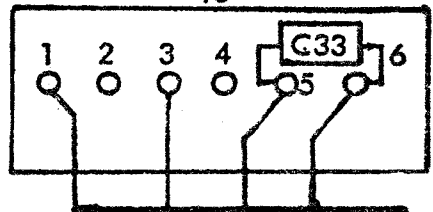
"AN/URA-53: FILTER BANDPASS: peaked at  $1150$  cps  $\pm 100$  cps and  $2850$  cps  $\pm 150$  cps with cross-over at  $2000$  cps  $\pm 40$  cps; four terminals;  $2 \frac{1}{2}$  in. (l) by  $1 \frac{3}{4}$  in. (h) by  $1 \frac{1}{2}$  in. (w)".

TEMPORARY CORRECTION T-3 to TECHNICAL MANUAL FOR COMPARATOR -  
 CONVERTER AN/URA-17 NAVSHIPS 94028

This temporary correction revises the manual to reflect production changes made to the equipment to reduce radio interference. This change applies to all equipments supplied under Contracts NObsr 87493 and NObsr 89307. This correction does not supersede any other corrections or changes.

Maintenance Support Activities shall make this correction in the technical manual immediately but shall keep the superseded data intact for support of equipments that do not include this production change.

Make the following pen-and-ink corrections. Insert this temporary correction in the technical manual immediately after the front cover and preceding T-2.

PAGE NO.	CHANGE IN EFFECT	PARA & LINE OR FIG & LOCATION	ACTION
5-15 5-16	ORIG.	Figure 5-8 Top right of center	Add C-33 across terminals 5 & 6 of T3 as follows: 
6-13 6-14	ORIG.	Figure 6-4 Top, Center	Add C-33 across terminals 5 & 6 of T3 as follows: 
6-15 6-16	ORIG.	Figure 6-5 Center, right hand side (Grid Coordinate B3)	See ACTION column for Figure 5-8 and correct as indicated.
		Figure 6-5, Table of Road Map Coordinates	After C32-11C, Add C33-3B
7-6	ORIG.	Table 7-1	Enter the following information after C32.

C33	Capacitor, Fixed, Mica Dielectric 430 uuf - 5%, 500 vdc MIL-C-53 Type CM15E431KN3	Across T-3 Reduces radio interference (Figure 6-4)
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TEMPORARY CORRECTION T-2 to TECHNICAL MANUAL FOR COMPARATOR-CONVERTER  
AN/URA-17 NAVSHIPS 94028

This temporary correction revises the manual to reflect the equipment changes made by Field Change 2-AN/URA-17 and 3-AN/URA-17. The purposes of these field changes are to replace resistors R20 and R22 to improve reliability of capacitors C-12 and C-13, and replace resistor R71 to provide better centering of -48 volt DC power supply adjustment range. The field changes apply to AN/URA equipments, serials A1 through A155. All later AN/URA-17 equipments were corrected by identical production changes.

When these changes are included in the manual, the manual shall cover the equipment as though Field Changes 2-AN/URA-17 and 3-AN/URA-17 had been accomplished on the equipment. This correction does not supersede any other corrections or changes.

Maintenance Support Activities shall make this correction in the technical manual immediately but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment accompanied by technical manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction in the technical manual immediately after the front cover and preceding T-1.

1. Table 1-1. Comparator-Converter Group AN/URA-17, Equipment Supplied.  
Add, just above "2-Technical Manual - NAVSHIPS 94028": 6-CLAMP, CABLE -AN3057-6.
2. Figure 5-4. Frequency Shift Converter CV-483/URA-17, Signal Processing Circuits, Functional Schematic Diagram.  
Change values of R20 and R22 from 1800 to 2200.
3. Figure 5-8. Frequency Shift Converter CV-483/URA-17, Power Supplies, Functional Schematic Diagram.  
Change value of R71 from 2200 to 2700.
4. Paragraph 6-2h, "MARK AND SPACE GAIN CONTROL ADJUSTMENTS."  

Step 3, line 2:	Change WIDE to NARROW
Step 5, line 1:	Change 2550 to 1000
Step 8, line 2:	Change FL3 to FL2
Step 9, lines 1 and 2:	Change FL3 to FL2
Step 10, line 3:	Change FL3 to FL2
Step 11, line 2:	Change FL3 to FL2
5. Paragraph 6-2i, "DC DIFFERENTIAL AMPLIFIER ADJUSTMENTS."  

Step 9, line 2:	Change 3200 to 1200
Step 14, line 3:	Change +32 to +35
Step 15, lines 5, 6 and 7:	Delete last two sentences
Steps 16, 17, and 18:	Delete
Step 19:	Change to "Step 16"
6. Figure 6-5. Frequency Shift Converter CV-483/URA-17, Over-all Schematic Diagram.  
Change value of R71 from 2200 to 2700. Change values of R20 and R22 from 1800 to 2200.
7. Table 7-1. Comparator-Converter Group AN/URA-17, Maintenance Parts List.  
Add: "E2-CLAMP, CABLE: AN3057-6." Secure cables to connectors.  
Change "Name and Description" column entry for R20 to: RESISTOR, FIXED, COMPOSITION: 2.2k +10%, 1 w; MIL-R-11 type RC32GF222K; part MS35044-15.  
Change "Name and Description" column entry for R71 to: RESISTOR, FIXED, COMPOSITION: 2.7k +10%, 1/2 w; MIL-R-11 type RC20GF272K; part MS35043-206.
8. Record this action on RECORD OF CORRECTIONS MADE page.

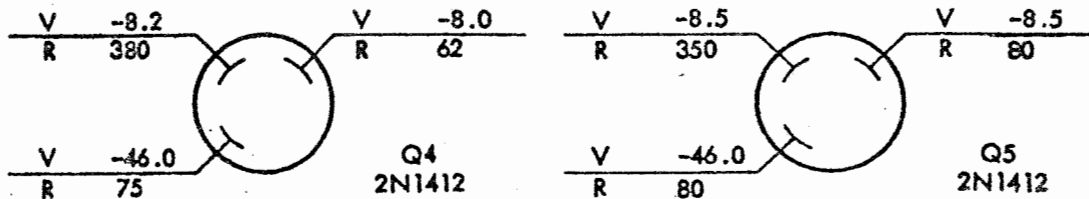
CORRECTION T-2

TEMPORARY CORRECTION T-1 TO TECHNICAL MANUAL FOR  
 COMPARATOR-CONVERTER GROUP AN/URA-17, NAVSHIPS 94028

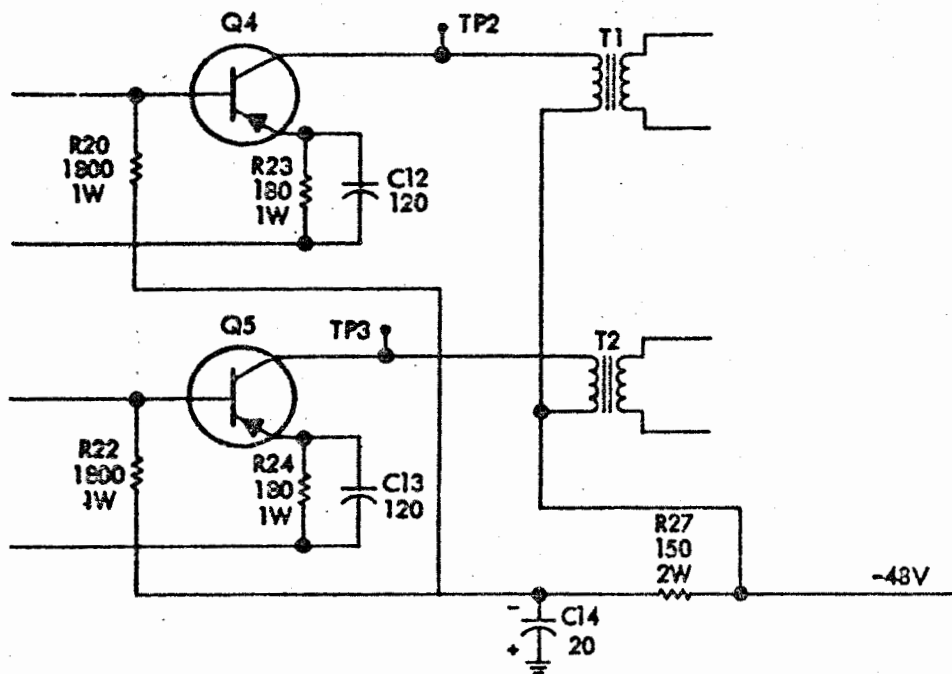
This temporary correction changes the manual to reflect the equipment changes made as the result of design changes.

Make the following pen and ink corrections. Insert this temporary correction in the technical manual immediately after the front cover.

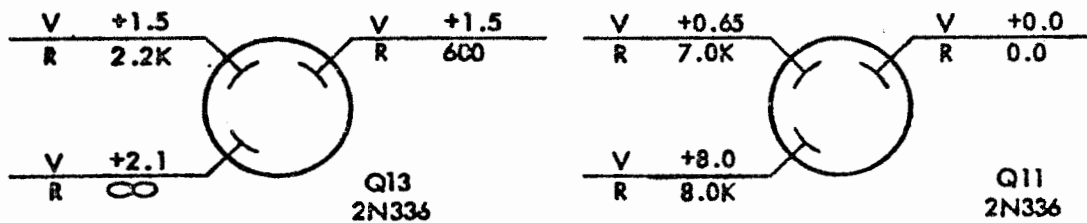
<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA &amp; LINE C. FIG &amp; LOCATION</u>	<u>ACTION</u>
1-7	ORIG.	TABLE 1-5	Opposite Q13, delete the "1" in "2N333" column and add a "1" in the "2N336" column. Correct totals.
1-8	ORIG.	TABLE 1-6	Delete "CR33" and the "1" under "IN1731" on same line. Correct totals.
4-6	ORIG.	Second para under "4-2c(6) MARK LOCK-UP" 1st line: 2nd line: 8th line: 13th line:	Change "C19" to "C32" Change "CR10" to "CR11" Change "C19" to "C32" Change "C19" to "C32"
		Para 4-2d(3) 2nd line:  3rd line:	Change "two" to "one", Change "diodes" to "diode", Delete "and CR33". Delete "series connected".
5-6	ORIG.	Fig. 5-3, Top Left Corner.	Change voltages and resistances of Q4 and Q5 as shown below:



<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA &amp; LINE OR FIG &amp; LOCATION</u>	<u>ACTION</u>
5-7, 5-8	ORIG.	Fig. 5-4, right side.	Change values of R23 and R24 from "120" to "180" Change value of C12 from "47" to "120". Delete "R28" from schematic. (Do not short out its terminals.) Change wiring of "T1" and "T2" primary windings as shown below:



5-10	ORIG.	Fig. 5-5, Top.	Change Q13 from "2N333" to "2N336". Change voltages and resistances of Q11 and Q13 as shown below:
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<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA &amp; LINE OR FIG &amp; LOCATION</u>	<u>ACTION</u>
6-11, 6-12	ORIG.	Fig. 5-6, Center.	Change value of R47 from "1 MEG" to "1.8 MEG". Change value of R48 from "100K" to "47K". Change value of R49 from "10K" to "15K". Change value of R51 from "33K" to "47K". Change Q13 from "2N333" to "2N336".
5-13	ORIG.	STEP 2, under "NEXT STEP", 2nd line.	Delete "and CR33".
5-15, 6-16	ORIG.	Fig. 5-8	Delete "CR33" completely. Add line across its terminals.
6-11, 6-12	ORIG.	Fig. 6-3, Lower left corner of TB-2.	Delete wires "10-39" and "9-33" from main cable and delete terminal "11" from TB-2. Number terminal at bottom of R28 as "11". Delete "R28". Connect new "10-39" and "9-33" wires from new terminal "11" to main cable.
6-13, 6-14	ORIG.	Fig. 6-4, Bottom, center.	Move "+" end lead of CR32 from present terminal to the terminal to which "+" end lead of CR33 is connected. Delete CR33 entirely. Move R82 to connect between terminals 28 and 29 on TB-1.
6-15, 6-16	ORIG.	Fig. 6-5.	See ACTION column for Figures 5-4, 5-6, and 5-8 and correct as indicated.
7-4	ORIG.	TABLE 7-1.	Delete CR33 entry entirely.
7-5	ORIG.	TABLE 7-1. NAME & DESCR. Column.	Change description of C12 to "Same as C13".
7-9	ORIG.	TABLE 7-1. NAME & DESCR. Column.	Change description of Q13 to "Same as Q11".
7-11	ORIG.	TABLE 7-1. NAME & DESCR. Column.	In description of R23, 1st line: Change "120" to "180". 2nd line: Change "RC32GF121K" to "RC32GF181K". 3rd line: Change "MS35044-219" to "MS35044-219".
7-12	ORIG.	TABLE 7-1,	Delete R28 entry entirely.

<u>PAGE NO.</u>	<u>CHANGE IN EFFECT</u>	<u>PARA &amp; LINE OR FIG &amp; LOCATION</u>	<u>ACTION</u>
7-13	ORIG.	TABLE 7-1. NAME & DESCR. Column.	In description of R47, 1st line: Change "1 MEG" to "1.8 MFG". 2nd line: Change "RC20GF105K" to "RC20GF185K". 3rd line: Change "MS35043-220" to "MS35043-223". Change description of R48 to "Same as R3". Change description of R49 to "Same as R30". Change description of R51 to "Same as R3".
7-16	ORIG.	TABLE 7-1. NAME & DESCR. Column.	Change description of R83 to "RESISTOR, FIXED, COMPOSITION: 100K ± 10%, 1/2 w, MIL-R-11, type RC20GF104K; part no. MS35043-25".