

EXHIBIT 1

PARTICULARS OF OPERATION

Carrier Frequency (A)	Xmtr (B)	Power ERP (C)	Watts (D)	Emission (E)	Modulation Signal (F)	Necessary Bandwidth (G)
2857.0KHz	1500	1500	PEP	2K80J3E	2.5KHz	3.0KHz
6544.0KHz	1500	10000	PEP	2K80J3E	2.5KHz	3.0KHz
8885.0KHz	1500	10000	PEP	2K80J3E	2.5KHz	3.0KHz
13345.0KHz	1500	10000	PEP	2K80J3E	2.5KHz	3.0KHz
17949.0KHz	1500	10000	PEP	2K80J3E	2.5KHz	3.0KHz
21950.0KHz	1500	10000	PEP	2K80J3E	2.5KHz	3.0KHz
2857.0KHz	375	375	MEAN	2K80H3E	2.5KHz	3.0KHz
6544.0KHz	375	2500	MEAN	2K80H3E	2.5KHz	3.0KHz
8885.0KHz	375	2500	MEAN	2K80H3E	2.5KHz	3.0KHz
13345.0KHz	375	2500	MEAN	2K80H3E	2.5KHz	3.0KHz
17949.0KHz	375	2500	MEAN	2K80H3E	2.5KHz	3.0KHz
21950.0KHz	375	2500	MEAN	2K80H3E	2.5KHz	3.0KHz
2857.0KHz	1500	1500	PEP	3K50J7B	110 BAUD	3.5KHz
6544.0KHz	1500	10000	PEP	3K50J7B	110 BAUD	3.5KHz
8885.0KHz	1500	10000	PEP	3K50J7B	110 BAUD	3.5KHz
13345.0KHz	1500	10000	PEP	3K50J7B	110 BAUD	3.5KHz
17949.0KHz	1500	10000	PEP	3K50J7B	110 BAUD	3.5KHz
21950.0KHz	1500	10000	PEP	3K50J7B	110 BAUD	3.5KHz
2857.0KHz	375	375	MEAN	2K00J2B	100 BAUD	2.0KHz
6544.0KH	375	2500	MEAN	2K00J2B	100 BAUD	2.0KHz
8885.0KHz	375	2500	MEAN	2K00J2B	100 BAUD	2.0KHz
13345.0KHz	375	2500	MEAN	2K00J2B	100 BAUD	2.0KHz
17949.0KHz	375	2500	MEAN	2K00J2B	100 BAUD	2.0KHz
21950.0KHz	375	2500	MEAN	2K00J2B	100 BAUD	2.0KHz
123.375Mhz	25	25	MEAN	6K00A3E	2.5KHz	6.0KHz

Greg Triplett

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HF Group Leader

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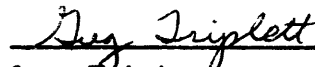
EXHIBIT 2

Project Description

Our experimental station (KI2XA0) continues to be beneficial in the support of the KHF 950 HF SSB system (designed for fixed wing aircraft), and the KHF 990 HF SSB system (designed for rotary wing aircraft). The station has aided in the development of three new flavors of the KTR 953, which is the receiver exciter portion of the KHF 950 system. One new flavor is a data version of the receiver exciter utilizing a standard voice bandwidth (064-1015-53). The two other recently developed flavors of the KTR 953 employ a modified voice bandwidth designed to comply with special Japanese requirements (064-1015-40/41). Our experimental station is also used in defining and analyzing weaknesses in existing designs and demonstrating HF systems capabilities to prospective users. Additionally, the station is useful in the study of antenna radiation patterns of both fixed wing and rotary wing aircraft.

A major function of our station has been and continues to be the identification of problems or potential problems with our existing systems. Once such problems are identified, efforts are made to correct such problems through design improvements and service/installation literature. Some examples of such improvements include making the squelch circuit in the KFS 594 control head more responsive to weak signals, and increasing the audio output power of the KFS 594 to override the high ambient noise experienced in many helicopter installations. Another improvement recently made was in the microphone compressor of the KTR 953, which was modified to be less susceptible to feedback and more tolerant to component variations. (Ref. Attached Service Bulletins).

Bendix/King plans to continue to use our experimental station to develop new flavors of existing systems to meet specialized requirements of HF users in the aviation services. We continue to believe that HF Data communications will become an increasingly important mode of communications in aviation. It is our hope to utilize our experimental station to support the interfacing of our HF systems with the various needs of the aviation industry.



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BENDIX/KING

GENERAL AVIATION AVIONICS DIVISION



SERVICE AID:

KTR 953-105

HF Receiver/Exciter Unit

SUBJECT: Change in microphone sensitivity.

The KTR 953 Receiver/Exciter alignment procedure calls for the microphone sensitivity to be set such that a 20mv microphone input signal will produce full output power from the KHF 950 System. This has resulted in a significant amount of noise riding on the transmitted signal of many aircraft and a high sensitivity to microphone system ground loops.

The minimum performance specification for the KTR 953 has been changed to call for a microphone sensitivity of 100mv. Every KTR 953 leaving Finished Goods or our Customer Service Shop will be set for the 100mv level. In the vast majority of installations, this change will not adversely affect the operation of the system and should generally improve the quality of the transmitted signal.

The "MIC Audio Adjust" procedure given in the KTR 953 section of the service manual will be obsolete. It should be replaced by the following:

1. Apply a 100mv RMS, 1KHz signal to the "MIC" input of the KTS 157.
2. Initially set R162 maximum CCW. Monitor TP221 with an oscilloscope or audio voltmeter.
3. Adjust R162 CW, such that the level on TP221 rises and tends to reach a maximum. This maximum will occur at approximately 3.5V P-P (1.2V RMS) on a standard unit and approximately 6.5V P-P (2.3V RMS) on a speech processed unit, KPN 064-1015-10/11. Leave R162 at this position.

In those installations where abnormally low output level microphones are used or where the microphone signal has been attenuated to eliminate noise or ground loop problems, full RF output power may not be achieved. The 20mv sensitivity will still be achievable by the re-adjustment of the "MIC Level Adjust", R162. Unfortunately, this adjustment is accessible only when the dust cover is removed and the unit is hinged open.

Date: September 19, 1988

KPN 601-4520-50

SA KTR 953-105

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BULLETIN NO:

KFS 594-2
HF Control Display UnitEFFECTIVITY

KFS 594, KPN 071-1274-00/01/02/03/04, serial number 2065 and below.

Units with serial numbers above those stated have Mod 2 incorporated during original manufacturing.

REASON

To reduce the amount of squelch hysteresis in the HF System. This modification, also, adds the "Squelch Range" function to Pin 13 of J594. Grounding this pin will extend the effective squelch range in KHF 990 Systems. The KFS 594 will still be fully compatible with KHF 950 Systems.

DESCRIPTION

This modification consists of the addition of one (1) capacitor, one (1) resistor, one (1) eyelet and one (1) length of magnet wire, the change in value of four (4) resistors and the replacement of one (1) integrated circuit.

COMPLIANCE

Recommended at next scheduled maintenance period.

WARRANTY INFORMATION

Warranty credit or payment will be issued for any KFS 594, serial number 2065 and below, requiring this modification if the modification is completed by an appropriately rated BENDIX/KING Service Center. A properly completed warranty claim for three (3.0) hours labor plus parts may be submitted. In order to ensure warranty payment, the claim must be marked to show that Mod 2 was performed.

APPROVAL

Conforms to FAA TSO: C74c, RTCA DO-160A and DO-163

MANPOWER

Three (3.0) hours including testing.

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REFERENCES

KFS 594 Maintenance/Overhaul Manual, KPN 006-5575-00, IB 293.

MODIFICATION PROCEDURE

1. Remove the four (4) screws that secure the equipment dust cover. Remove the dust cover. Refer to Figure 6-1 of the maintenance manual.
2. Loosen the four (4) screws that secure the Power Supply Board. Remove the five (5) screws that secure the Multiplexor Board.
3. Gently lift and remove the Power Supply Board. Remove the plug that connects the Display Board to the Microprocessor Board. Gently pull the Display Board away from the unit. Gently lift and remove the Multiplexor Board.
4. Referring to Figure 6-4 of the maintenance manual, locate R326 and replace it with a 5.1K, KPN 131-0512-13.
5. Locate R325 and replace it with a 10K, KPN 131-0103-13.
6. Locate R324 and replace it with a 470K, KPN 131-0474-13.
7. Locate R323 and replace it with a 820K, KPN 131-0824-13.
8. Locate I303 and replace it with KPN 120-3053-00.
9. Solder the new C334, KPN 111-0001-00, from Pin 5 to Pin 6 of I303.
10. Drill a .040" hole where indicated in Figure 1 of this bulletin.
11. Install eyelet, KPN 092-5015-06, from the component side of the board into the previously drilled hole.
12. Install the new R356, KPN 131-0152-13, from the previously installed eyelet to the lead of R326 closest to CR309. Insulate the exposed ends of R356 with teflon tubing, KPN 150-0004-10.
13. Install a small piece of magnet wire from the new eyelet to Pin 13 of J594.
14. Reassemble unit.

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TESTING PROCEDURE

Test the KFS 594 in accordance with Section 5.2.4 of the KFS 594 Maintenance Manual.

IDENTIFICATION PROCEDURE

Stamp an "X" on the mod status tag to indicate Mod 2 is complete.

MATERIAL INFORMATION

A parts kit is available under KPN 050-2886-00 to fully modify one (1) KFS 594 per this service bulletin. This kit contains the following items:

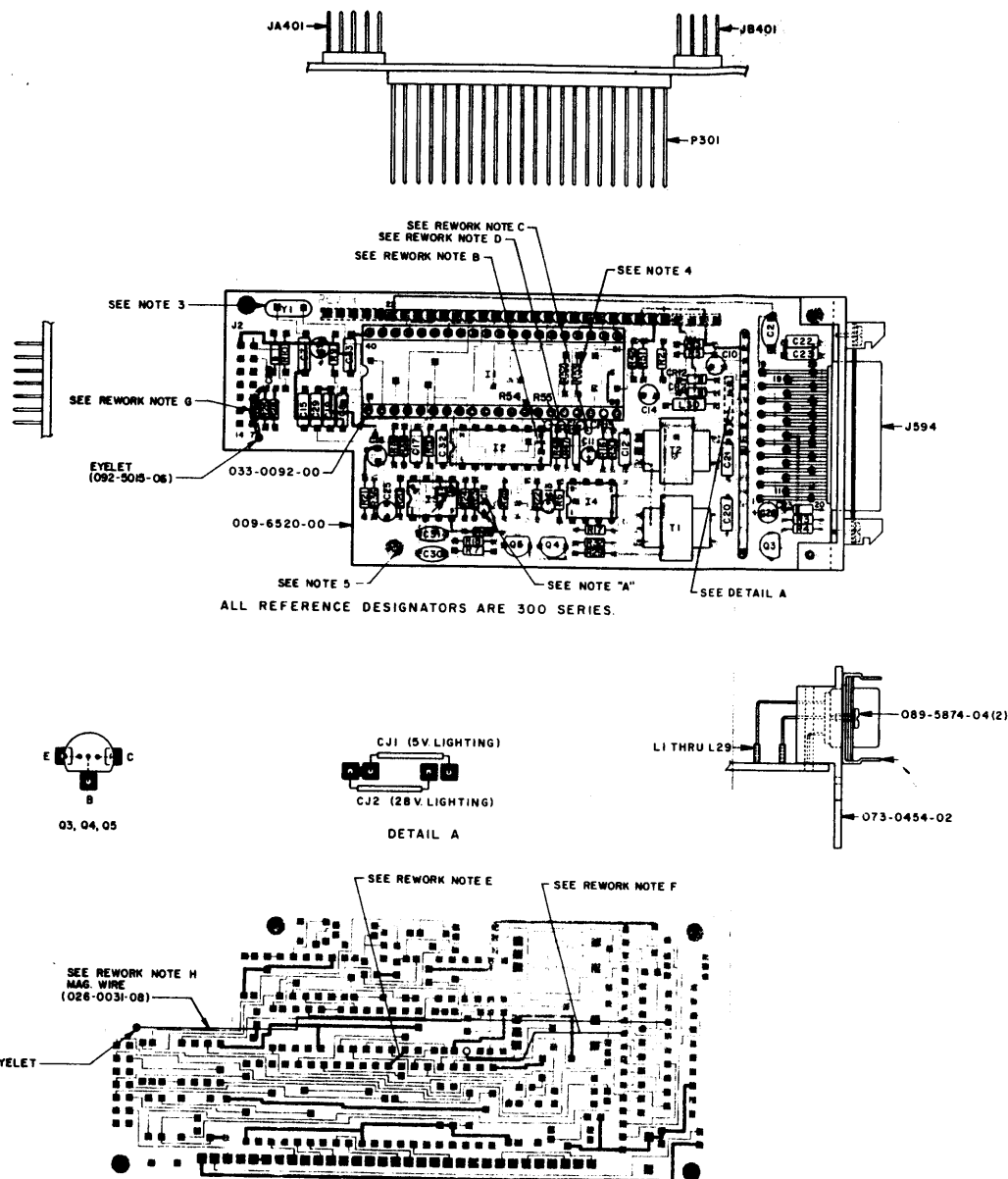
<u>KPN/BPN</u>	<u>QTY</u>	<u>DESCRIPTION</u>
026-0031-08	6 in (15.24cm)	MAGNET WIRE
092-5015-06	1	EYELET
111-0001-00	1	CAP. .01UF
120-3053-00	1	I.C. LM358
150-0004-10	1 in (2.54cm)	TUBING TEFLON
131-0103-13	1	RESISTOR, 10K
131-0152-13	1	RESISTOR, 1.5K
131-0474-13	1	RESISTOR, 470K
131-0512-13	1	RESISTOR, 5.1K
131-0824-13	1	RESISTOR, 820K

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NOTES:

1. PRIOR TO POST COATING BOTH SIDES OF PC BOARD WITH CLEAR URETHANE (016-1040-00), MASK OFF THE FOLLOWING: ALL MOUNTING AREAS, CJ1, CJ2, 033-0092-00, J302, J594, JA401, JB401, P301.
2. CLIP PIN20 OF J594 TO KEY CONNECTOR.
3. ADD (012-1021-08) YELLOW MYLAR TAPE COVERING TOP AND TWO FLAT SIDES OF Y1. SECURE CRYSTAL CAN TO PC BOARD RTV 016-1082-00 FOR VIBRATION PROTECTION.
4. R52 AND R53 ARE INSTALLED ON NEAR SIDE OF BOARD BENEATH I1.
5. SECURE C34 WITH RTV (016-1082-00).

REWORK NOTES:

- A. INSTALL C16 AS SHOWN WITH OPPOSITE POLARITY TO THAT MARKED ON PC BOARD; REMOVE '+' MARKING FROM BOARD.
- B. CUT TRACE UNDER I2, FROM I2-PIN8 TO GROUND.
- C. ADD EYELET IN OPEN AREA NEXT TO C11.
- D. ADD R54, R55, & CR13. CONNECT R54 FROM I2-PIN8 TO R55. CONNECT R55 FROM R54 TO R47 (+12V SIDE). CONNECT CR13 ANODE TO R54/R55 JUNCTION. CONNECT CR13 CATHODE TO EYELET.
- E. ADD JUMPER FAR SIDE FROM I2-PIN9 TO I1-PIN12.
- F. ADD JUMPER FAR SIDE FROM EYELET (CATHODE OF CR13) TO U1-PIN10.
- G. DRILL HOLE USING .032 BIT. INSTALL EYELET (092-5015-06) FROM COMPONENT SIDE OF BOARD. COVER EXPOSED LEADS OF R56 WITH TEFLON TUBING (150-0004-10). CONNECT R56 FROM EYELET TO LEAD OF R26 CLOSEST TO CR9.
- H. INSTALL MAG. WIRE (026-0031-08) FROM EYELET TO PAD OF J594 PIN 13.

Figure 1
Microprocessor Board Assembly

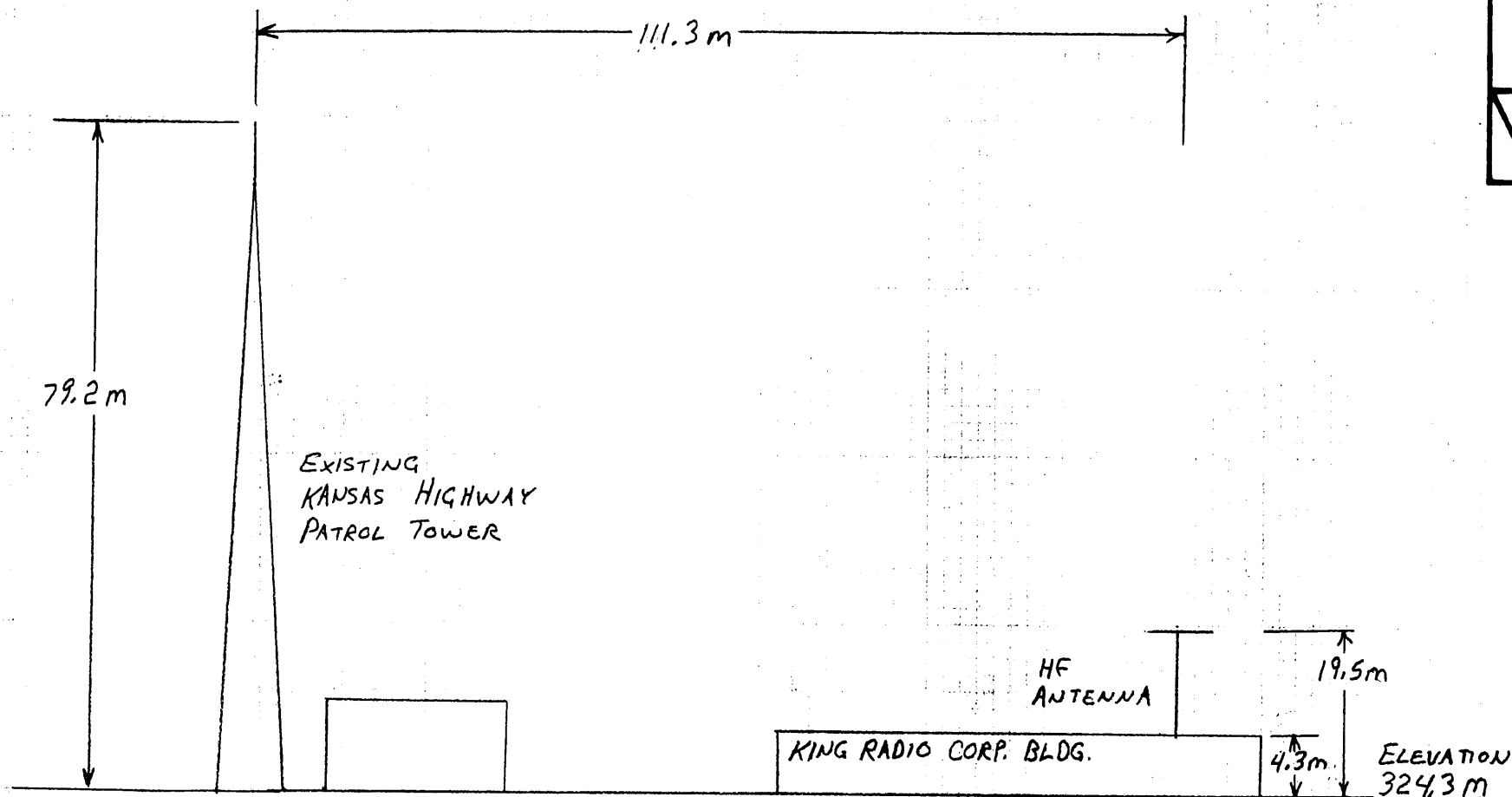
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VERTICAL PROFILE SKETCH
KING RADIO CORP.; OLAHE, KAN.



Gregory L. Triplett

AS VIEWD LOOKING NORTH

SCALE: 20 METERS PER MAJOR DIV. (1 INCH)

SPECIFICATION CONTROL DRAWING

CONTINUATION SHEET

KING RADIO CORPORATION

OLATHE KANSAS 66062

NUMBER

EXHIBIT 3

SHT

OF