HARRIS

SERVICE BULLETIN

MAINTENANCE AND MODIFICATION DATA

Broadcast Group

Bulletin No. AM-156-TLH

Equipment: MW-5/5A **Date** November 1980

SUBJECT: Possible Arcing in 1A3C1 - DC/Dissipation Overloads

Field testing has shown that higher stability in the PA grid circuit may be obtained by replacement of the air variable capacitor in the PA grid circuit with a vacuum variable as is used in the PA plate circuit. The vacuum capacitor features high tolerance to broad variations in grid tuning, RF drive level, and PA tube characteristics, as well as immunity to factors created by environmental conditions such as high altitude, humidity, dust, etc. In select cases, the air variable capacitor has been known to arc-over on a random basis and cause DC/Dissipation overloads.

Since the expense of the modification kit required and the time necessary to install it are considerable investments, it is worth your while to determine if you would benefit from this modification. It is the intent of the following instructions to help you determine if the air variable capacitor in your transmitter is intolerant to broad variations in grid tuning and to establish a process for isolating the cause(s) of random DC and dissipation overloads.

1. Disconnect primary power and short out all high voltage components. Be sure to ground the neutralization feed thru bolt also.

2. Remove 1DS1, one of the lamps above the meters in the isolated plate area. This will darken the isolated plate area and heighten the visibility of arcing. Thoroughly examine the isolated plate area for loose connections. This is very important since a poor connection in the PA grid circuit can result in a loss of bias normally generated by the RF drive.

   Carefully examine the grid tuning capacitor as best you can for signs of previous arcing. This may show up as a whitish spot on the rotor or stator, but not necessarily both. Replacement of the capacitor is recommended if such a spot is found. You may later consider removing the capacitor for a more thorough examination if no abnormalities have been observed at this time.

3. Turn the primary power back on and depress filament on.

4. After 5 or more seconds, ground terminal 5 of the RF oscillator board.

5. Detune the PA grid on each side of resonance down to 100mA of grid current. As you do this, carefully observe the grid tuning capacitor for any arcing. The PA grid current should decrease smoothly as the grid circuit is detuned. Any abrupt change without the capacitor arcing indicates instability in the IPA, a subject beyond the scope of this bulletin. Arcing in the capacitor suggests replacement.

6. Peak the grid current reading and remove the ground from terminal 5 of the RF oscillator board.

7. Disconnect all primary power and short out all high voltage components.

8. Re-install 1DS1.

9. Put the transmitter back into normal operation.

10. Observe the PA grid current reading. Experience has shown that the PA never needs more than 240mA for positive peak performance at 5KW. The voltage applied to the grid tuning capacitor increases with PA grid current, therefore excessive grid current results in excessive voltage on the capacitor. Decreasing PA grid drive involves moving the RF driver tuning slug rack towards the tuning coils. Make this adjustment in 1/8" increments and re-peak the grid tuning after each change.

11. Check the DC and dissipation overload settings. Each should trip at 100% modulation at 20hz with 5.4KW output (approximately 5300 volts at 1.15 amps).

12. Check the operation of the VSWR trip circuit (refer to Service Bulletin No. AM-146-TLH for this adjustment). If the VSWR protection is not functional, a true VSWR condition may result in a DC/Dissipation overload instead.

13. Subsonic signals can and should cause DC/Dissipation overloads if they are of sufficient amplitude. Sources of subsonic signals are poorly erased tapes, turntable rumble, etc. Some audio processors do not pass subsonic signals, while others do. Substitution of the audio processing and/or the audio sources is your easiest means of determining if subsonic signals are the cause.

14. Momentary primary power interruptions can cause DC/Dissipation overloads, particularly if the interruptions are 0.5-3 seconds in length. If the time delay relay is shorted (a common failure mode), the transmitter will overload upon return of primary power even if the outage is extended.

There is no method of determining with absolute certainty that the modification kit is necessary for your transmitter. In a few select cases, we have found that it solved a random DC/ Dissipation overload problem where all other possibilities were ruled out. Please understand that this kit only solves a problem if a problem exists with the usage of an air variable capacitor in the PA grid circuit.

Harris kit, Part 994-8535-001, can be ordered by calling or writing the Harris Service Parts Department, Building 9, 2700 Ellington Road, Quincy, IL (62301) - Phone Number (217) 222-8200. The kit sell price is This price is based on a quantity build and good only through April 30, 1981. Fu ture builds of this kit could be significantly higher in price; and we therefore, recommend that you order this kit before April 30, 1981.