

RADIO SYSTEM RELIABILITY

ASSESSMENT FOLLOWING A CRASH

THE FOLLOWING RECOMMENDATIONS WERE RECORDED DURING A ROUNDTABLE DISCUSSION AT THE SOUTHERN EAGLE SQUADRON MEETING IN DECEMBER, 2007.

References:

1. Radio technique, George M. Myers, 1975, AMA – MODELAIRCRAFT.ORG – ARCHIVE.
2. “Those Strange Things We Call Batteries” , Frank Grenelli, AMA Sport Aviator on-line magazine. 3 part series.

MOST FREQUENT ROOT CAUSES FOR LOSS OF RADIO CONTROL:

BATTERY FAILURE (REF 2 ABOVE)

BATTERY MANAGEMENT PROBLEM OR CRASH DAMAGE

POSSIBLE DAMAGE TO AIRBORNE SYSTEM FROM CRASH.

DAMAGE TO INTERCONNECTING CABLES/SWITCH

BROKEN WIRE, CONTACT SOLDER CONNECTION,

ERRATIC SWITCH OPERATION

DAMAGE TO RECEIVER

COMPONENT DAMAGED

PC BOARD CIRCUITRY BROKEN

PINS / SOLDER JOINTS DAMAGED

DEBRIS ENTERING RECEIVER VIA UNUSED SERVO CONNECTORS

RECOMMENDED APPROACH TO RADIO EXAMINATION/TESTING

BATTERY: (REF 2 ABOVE)

EXAMINE WIRES AND CONNECTOR FOR DAMAGE.

CYCLE BATTERY SEVERAL TIMES USING A CYCLER THAT DISPLAYS MAH CAPACITY. IF THE BATTERY DOES NOT DELIVER 300+ MAH EVEN AFTER SEVERAL CYCLES, REPLACE THE BATTERY PACK.

IF MEASURING BATTERY VOLTAGE, USE TESTER THAT APPLIES A LOAD WHILE MEASURING.

SERVOS:

CONNECT TO A KNOWN GOOD SYSTEM AND TRY EACH SERVO – REPLACE/REPAIR ANY THAT RUN NOISY, ROUGH, ERRATIC.

RECEIVER TESTING; (REF 1 ABOVE)

REMOVE FROM CASE AND EXAMINE UNDER MAGNIFICATION FOR ANY VISIBLE DAMAGE

CHECK ANTENNA WIRE FOR DAMAGE.

LEAVE RECEIVER COVER OFF -

CONNECT KNOWN GOOD BATTERY, CABLES, SERVOS TO THE RECEIVER AND TEST EACH SERVO/FUNCTION SLOWLY THROUGH FULL RANGE OF MOVEMENT. IF ANY SERVO MOVED INCORRECTLY, OR IF THERE WAS ANY JITTER, NOISE, OR MOVEMENT IN ANY OTHER SERVO THAN THE ONE BEING TESTED, THERE IS LIKELY DAMAGE TO THE RECEIVER.

IF ALL PERFORMED PROPERLY, REPEAT THE TEST WHILE PRESSING LIGHTLY THE TOP OF COMPONENTS WITH A WOODEN PROBE (POP-CYCLE-STICK, ETC.). IF THIS PRODUCES ERRATIC PERFORMANCE, THE COMPONENT TOUCHED IS DAMAGED.

IF THIS TEST IS OK, REPEAT TEST WHILE APPLYING VIBRATION TO THE RECEIVER –IF YOU HAVE NO VIBRATION GENERATOR, YOU SHOULD TEST THE WHOLE SYSTEM IN A PLANE WHILE THE MOTOR IS RUNNING TO EVALUATE PERFORMANCE UNDER VIBRATION AS FOLLOWS:

FULL SYSTEM TEST:

AFTER ASSEMBLING THE SYSTEM IN A PLANE, WITH THE ENGINE RUNNING, HAVE AN ASSISTANT OPERATING THE TRANSMITTER AT A RANGE CHECK DISTANCE WHILE YOU STAY WITH THE PLANE TO OBSERVE CONTROL SURFACE MOVEMENT. PERFORM A STANDARD RANGE TEST, MOVING EACH SURFACE ONE BY ONE SLOWLY THRU FULL RANGE. ANY ABNORMAL BEHAVIOR OF THE SYSTEM AT THIS POINT, INDICATES PROBABLE DAMAGE TO THE RECEIVER.