DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
BRASILIA YC-97 EMBRAER - 120	2000

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
Qual Eval		4 OCT 88
D. FRONT COCKPIT (Left Seat)	**E. FUEL LOAD**	**F. JON**
BASS / DANNER	5170 #	996TPS
G. REAR COCKPIT (Right Seat)	**H. START UP GR WT/CG**	**I. WEATHER**
MR. GODOFREDO BASTOS	/ 14%	CLR 7
J. TO TIME/SORTIE TIME	**K. CONFIGURATION/LOADING**	**L. SURFACE CONDITIONS**
0820 / 1.5	6 PAX	CALM
M. CHASE ACFT/SERIAL NO	**N. CHASE CREW**	**O. CHASE TO TIME/SORTIE TIME**
—	—	—

4. PURPOSE OF FLIGHT/TEST POINTS

EVALUATE AIRCRAFT FOR USE AS A PERSONELL TRANSPORT FOR SHORT TO MEDIUM RANGE.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

COCKPIT - SEAT IS VERY COMFORTABLE AND FOV INCLUDES ENGINES. FLIGHT INSTRUMENTS ARE WELL PLACED AND EASY TO READ. ELECTRONIC HSI IS EXCELLENT WITH FULL COLOR CAPABILITY, IT ALLOWS EASY TO READ DISPLAY OF A LARGE AMOUNT OF INFORMATION. IT IS ALSO CUSTOMIZABLE AND DE-CLUTTERABLE. ENGINE INSTRUMENTS ARE BOTH ANALOG AND DIGITAL. WE STARTED UP INTO SUN AND LACK OF AN OVERHEAD SUN SHADE WAS A NOTICEABLE DEFICIENCY.

TAXI - NGS IS EXCELLENT WITH LIGHT FORCES ON HAND CONTROL AND RANGE OF MOTION THAT ALLOWS FOR PRECISE CONTROL. ON THE STRAIGHTAWAY RUDDER PEDALS ADEQUATE FOR CONTROL BUT I PERFERRED TO USE HAND CONTROLLER TO CORRECT FOR SMALL TENDENCIES TO DRIFT (SLANTED TAXIWAY ETC). TERMINAL SPEED AT GND IDLE WAS ABOUT 35-KTS, CONTROLLABLE WITH REVERSE PROP FOR TURNS. IP BACKED A/C INTO PARKING PLACE LIKE A CAR TO SHOW OFF GND MANEUVERABILITY. A/C NEEDS REAR VIEW MIRRORS. GOOD

TAKEOFF - ONE OVERSHOOT ON LINEUP CORRECTION BUT ADEQUATE CONTROL AVAILABLE WITH RUDDER PEDAL (±10°) NGS FROM ZERO A/S. >25 POUNDS AFT YOKE REQUIRED TO GET THE A/C ROTATED AND AIRBORNE. ABOUT 4-5 INCHES REQUIRED. VERY NOSE HEAVY FEELING AND LARGE AFT CONTROL YOKE MOVEMENT RESULTED IN TAKEOFF 5-10 KTS LATE. 2100 FT GND ROLL. A/C CLIMBED WELL RIGHT OFF. NO NOTICEABLE PITCH CHANGE WITH GEAR RETRACTION AND CHANGE WITH FLAPS WAS SMALL AND MASKED BY ACCELERATION.

CLIMB - 2500 FPM @ 8K' 150 KTS 93% % Climb prop
1200 fpm @ 14K' 160 KTS 81% % " "

OVER THE NOSE VISIBILITY IN CLIMB IS ACCEPTABLE AND AFFORDS ADEQUATE VFR TRAFFIC SCAN WITH TWO PILOTS

6. RECOMMENDATIONS

EQUIP AIRCRAFT WITH TACAN AND AT LEAST ONE UHF RADIO. - will
EQUIP AIRCRAFT WITH FOLD DOWN SUN SHADES (LIKE AN AUTOMOBILE)
REDUCE LONGITUDINAL AND LATERAL CONTROL FORCES.
Increase speed of electrical trim system

Very Good f/ YS

COMPLETED BY	SIGNATURE	DATE
CAPT GREG BASS / Capt Danner		18 OCT 88

CRUISE- 15K' 175 KIAS 42% Q 85% Prop

DYNAMICS- S.P. WAS DEADBEAT. DUTCH ROLL WAS LIGHTLY DAMPED WITH A FREQ ≈ 1 CYCLE/1.5 SECS. IT WAS NOT NOTICEABLY EXCITED BY AILERON INPUTS BUT WAS EASILY EXCITED BY RUDDER DOUBLETS. TURBULENCE WAS NOT REALLY ENCOUNTERED ON THIS FLIGHT SO ITS ABILITY TO EXCITE IS UNKNOWN. D.R. PD NOT BECOME NOTICEABLE DURING NORMAL MISSION RELATED MANEUVERS.

SHSS.: AT MAX R RUDDER: ≈ 50 lbs FORCE 20° AOB ≈ 12° β. LATERAL FORCE < 2 lbs. EASY TO CONTROL. RUDDER BOOST WAS TURNED OFF AND RUDDER FORCES INCREASED DRAMATICALLY >100 lbs AT MAX DEFLECTION, AND RUDDER DEFLECTION DECREASED AS WELL. STILL ADEQUATE TO CONTROL CRUISE ASSYMETRIC POWER.

STALLS: CONTROLLABLE IN ALL AXES DURING DECEL. AFT STICK FORCE BUILD UP LINEAR THROUGHOUT. GOT SHAKER AND A/C WAS STILL CONTROLLABLE, HOLDING BACK PRESSURE RESULTED IN STICK PUSHER (PUSHES STICK FWD AND THEN RELEASES) ABOUT 10 KTS LESS AND RESULTED IN 10° NOSE DOWN, FROM LEVEL STALL.

TRIM SYSTEM: ELECTRIC TRIM SYSTEM (ELEVATOR) IS VERY SLOW Very Good AND IT WAS VERY DIFFICULT (TOOK CONSIDERABLE PILOT TIME AND ATTENTION) TO TRIM IT UP AFTER A SPEED OR CONFIGURATION CHANGE, ESPECIALLY DOWNWIND IN THE PATTERN. MANUAL TRIM WHEEL WAS VERY EFFECTIVE (MECHANIZED WITH LIGHT FORCE AND GOOD RANGE OF MOTION) AND FINE OR GROSS TRIM ADJUSTMENTS COULD BE MADE MUCH FASTER AND MORE ACCURATELY THAN WITH ELECTRIC TRIM.

LANDING: SPEED STABILITY ON FINAL WAS ADEQUATE AND DID NOT REQUIRE AN INORDINATE AMOUNT OF PILOT ATTENTION. POWER RESPONSE WAS IMMEDIATE WITH PLENTY OF EXCESS POWER FOR WAVEOFFS AND GO-AROUNDS. POWER CHANGE WITH THROTTLE MOVEMENT IS VERY LARGE AND REQUIRES A LITTLE FINESSE TO AVOID OVER CONTROLLING POWER. THIS WAS NOT A MAJOR PROBLEM.

FLARE WAS A MAJOR PROBLEM HOWEVER DUE TO STICK FORCES REQUIRED AND PITCH TRIM CHANGE WITH THROTTLES TO IDLE. STICK FORCES ON INITIAL FLARE WERE UP TO 15-20 lbs BUT WHEN POWER WAS REDUCED, NOSE DROPPED AND A/C SETTLED 10-20 FT EVEN WITH IMMEDIATE PILOT REACTION. REQUIRED PILOT ANTICIPATION TO AVOID. AFT STICK FORCE AT TOUCHDOWN WAS IN EXCESS OF 25 lbs. LANDING ROLL < 2000' WITH REVERSE THRUST.

OVERALL: A/C IS SUITABLE FOR MISSION BUT HAS THE MAJOR DETRACTORS OF INADEQUATE ELECTRIC TRIM AND EXCESSIVE LATERAL CONTROL AND LONGITUDINAL CONTROL FORCES (ESPECIALLY ON LANDING)

EMERGENCY DESCENT: It was not as fast as it should be for a service ceiling of 29,800 ft. The rate of descent at 200 KIAS was only 2000 fpm. In the event of cabin depressurization at 29,000 ft it would take 2 minutes to get to an altitude not requiring oxygen. Other tactics need to be explored that provide a better descent capability for a military transport.