VOLUME IV
TEST MANAGEMENT PHASE

CHAPTER 11
QUALITATIVE FLIGHT TESTING

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PURPOSE

Qualitative flight testing determines the maximum amount of information in the minimum amount of flying time in order to evaluate an aircraft with respect to its entire mission or some specific area of interest.

Qualitative flight testing has essentially the same purpose as quantitative flight testing, i.e., to determine how well the aircraft flies and how well it will perform its designed mission. To accurately evaluate an aircraft from quantitative data requires analysis of large amounts of precisely measured data. The best a pilot can hope to do on a qualitative evaluation is to measure a limited amount of quantitative data. Thus, the test pilot's opinion on the acceptability of the aircraft is the important result and measured quantitative data (when available) is used primarily to support this opinion. Quantitative values of stick forces measured with a hand gage, for example, should be included in the report to support the pilot's opinion of acceptability. Estimates of stick forces can be made if no reliable measurements are available or qualifying terms such as "heavy", "medium", or "light" can be used to describe the forces. The point is that the difference in evaluating an aircraft qualitatively and quantitatively is a matter of degree. "Use what you've got." Pilot opinion supported by measured data is primary in qualitative testing, while the reverse is true in quantitative testing. The general rule is to first decide how well the aircraft does its job and then use the quantitative data you can get to support your opinion.

PILOT OPINION

Naturally, all pilots will not have exactly the same opinion regarding the acceptability of a particular aircraft characteristic. No two people think exactly alike. However, the opinions of pilots with similar experience and background will usually not differ greatly, particularly with respect to the capability of an aircraft to perform a specific mission. In other respects, such as cockpit arrangements, the opinions may vary more markedly.

For this reason, it is important for the qualitative test pilot to be as objective as possible in his evaluation. Guides which specify military requirements, such as MIL-STD-203F , should be used wherever possible to establish acceptability. However, mere compliance with a set of requirements does not necessarily yield a satisfactory aircraft. The primary question is "will it do the job?", not "does it meet the specifications?"

MISSION PREPARATION

A very limited amount of flight time is normally available for a qualitative evaluation. To acquire the information necessary to write an accurate and comprehensive report on an aircraft in this limited time requires a great deal of preflight study and planning.

The preflight preparation for a qualitative test is extremely important. It is almost impossible to put in too much time in planning for the flights. The amount of information acquired in the air will be directly proportional to the amount of preparation put in on the ground. A pilot who doesn't know what he is looking for is not likely to find it, and to know exactly what to look for in the evaluation requires considerable knowledge of the aircraft and its mission.

The precise mission of the aircraft is important in determining what specific investigations should be made in the evaluation. All fighters, for instance, do not have the same mission, and the characteristics of particular importance may not be the same. The roll characteristics of an air superiority fighter would be more important than for a long range strategic fighter, and the specific test plan should take this fact into account. Expected outstanding characteristics or weaknesses should also receive particular emphasis. Of course, the evaluation must be conducted within the cleared flight envelope of the aircraft, and the amount of flight time available may limit the number of altitudes, airspeeds, and tests that can be investigated. However, concentration on the extremes of altitudes, airspeeds, etc., and the areas dictated by the primary mission will provide the best approach to the test planning.

An outline of the test to be conducted and the various altitudes, airspeeds, and configurations to be used will aid in organizing the flights and planning the flight data cards. The points included in the outline should be compatible with the time available for the evaluation but it is always wise to overplan the flight and include more than seems possible to accomplish in the allotted time. Leave yourself the option of skipping the less important parts of your plan if time or fuel runs short. The sequence of tests should be such that as little time as possible is wasted. With proper planning a continuous flow from one investigation to the next is possible.

FLIGHT DATA CARDS

Before planning the flight data cards, as much as possible should be learned about the aircraft. Study the pilot's handbook if one is available, discuss the aircraft with the engineers, or with other pilots who have flown it, and get adequate cockpit time. The more the pilot knows about the aircraft and the more comfortable he is in it, the more thorough the evaluation will be. A pilot who doesn't know the aircraft procedures, both normal and emergency, or who has to spend most of his time in the air looking for controls or switches will not be able to do much evaluating.

The flight data cards should be self explanatory and should include all the points to be investigated during the flight. They should be designed so that a minimum of writing is required in the air because time will not be available to write down more than a word or two about each point. Remember, however, to provide places in the flight plan to write down these necessary comments. Numerous forms for the data cards are possible but completeness and legibility are essential.

Figures 1 through 4 present some possible formats and ideas for flight evaluation cards.

GENERAL TECHNIQUES

The cockpit evaluation can normally be made while getting cockpit time prior to the first flight. MIL-STD-203F specifies the standard cockpit arrangement for the various types of aircraft in considerable detail and should be used as a guide in making the cockpit evaluation. However, a summary of some of the points to note may prove helpful. These include ease of entry, comfort, adjustment of seat and controls, location of basic flight instruments, size and legibility of instruments, accessibility of switches and controls, ease of identification of switches and controls, location and identification of emergency switches and controls, methods of escape (both on the ground and airborne), and general impression of cockpit layout.

Several points should be observed and recorded during the start and while preparing the aircraft for flight. These should be weighed against the aircraft's mission requirements. An all-weather interceptor, for example, should be capable of fast, uncomplicated starts to meet its alert and scramble requirements. Starts for other types may not be so critical; however, no starting procedure should be unnecessarily complex or confusing. Evaluation of the start should include: complexity of start, time to prepare for start, time to start, external power and ground support equipment required, ground personnel required, and time from start to taxi. The system checks and normal procedure requirements from start to taxi should also be evaluated.

An evaluation of the ground handling characteristics can be made while taxiing. How much power is required to start moving and to taxi at the desired speed? Is braking action required to prevent taxiing too fast? Is the visibility adequate? Is the directional control satisfactory? Is the braking action satisfactory? What is the turning radius of the aircraft? Does the aircraft require any auxiliary equipment such as removable wheels, escape ladders, etc? Is there any problem with clearing obstacles with any part of the aircraft?

The takeoff distance may be difficult to determine without assistance from outside personnel, but an estimate should be made using whatever aid is available such as runway distance markers. Use the recommended takeoff procedure; don't try to make a maximum performance takeoff. The normal ground roll will be of more interest than the minimum possible. Some of the other points to note in the takeoff include: ability of brakes to hold in military power, directional control during ground roll, rudder effective speed, nose lift-off speed, visibility after nose up and during initial acceleration and climb, force required to raise nose, any over-controlling tendencies, airborne speed, adequacy of recommended takeoff trim settings, time to retract gear and flaps, trim changes with retraction of gear and flaps, any tendency to exceed gear or flap speed limitations, effectiveness of trimming action during acceleration, and any distracting noises or vibrations.

The in-flight techniques differ very little from the techniques used in flying quantitative tests. However, it generally is not necessary to be as precise in holding airspeeds and altitudes. To do so would only waste time because differences caused by variations of a few hundred feet in altitude or a few knots in airspeed will not be qualitatively discernible. This is not an endorsement for being lax in flying the aircraft. Just don't waste time with precision that will not contribute to the evaluation of the aircraft. If speeds are critical, such as in the climb or in the pattern, then maintain them as closely as possible. Otherwise, use good judgment in determining how close to an aim condition it is necessary to be and fly accordingly.

If the climb rate of the aircraft is relatively slow, it may be possible to get some stability information in the climb, i.e., stick pulses, sideslips, etc. Most present day fighter aircraft climb so rapidly that this may not be practical. If so, just record climb performance data (time, fuel, and indicated speed) at intervals of approximately 5,000 feet. Start the time at brake release. Intercept the climb schedule at a comfortable altitude and attempt to fly the recommended schedule precisely. Continue the climb only as far as necessary to meet the objective of the flight. Unless climb performance is of primary importance, this will probably be to the altitude selected for the first series of investigations. General aircraft characteristics should be observed during the climb. How difficult is it to maintain the recommended climb schedule? Are the control responses smooth, too fast, too slow? Is visibility adequate? Is there any buffet, vibration or excessive noise? Are the ventilation and pressurization systems satisfactory? Are the normal procedures complicated or excessively distracting? If dampers or other artificial stability devices are provided, check the applicable characteristics with them ON and OFF.

The altitude selected for the first series of stability investigations may be at the tropopause since this is where the aircraft will probably have its best performance. However, if the designed operating altitude is considerably higher it may be advisable to select an altitude at or near the aircraft's operating altitude. The stability maneuvers performed will be essentially the same at all the altitudes and airspeeds selected. These shculd be sufficiently spaced to assure discernible qualitative differences in the aircraft's characteristics.

The stability characteristics investigated should include longitudinal and directional static stability, longitudinal and directional dynamic stability, aileron rolls, and maneuvering flight at several different airspeeds and altitudes. An investigation of the transonic trim changes also should be made. All the dynamic characteristics should be checked with the stability augmentation devices, if any, both ON and OFF. With proper planning these investigations can be made in a minimum amount of time. The longitudinal static stability can be checked while accelerating to V_{max}, for instance. Once at V_{max}, the aircraft can be trimmed for approximately hands-off flight and the static directional stability checked by entering a steady sideslip out to maximum rudder deflection (if the aircraft is cleared to that limit). The periods of the dynamic modes can be timed using a stop watch or counting the seconds. Estimate the number of the cycles to damp completely or to one-half amplitude, as the case may be, for all the modes.

Approach the aileron rolls cautiously. Make several partial deflection rolls before making any full deflection rolls. The time to reach 90° of roll and the time to roll 360° can be estimated using a stopwatch or again by counting the seconds. It is advisable to make rapid reversals of ailerons and other rolling maneuvers if these can be expected in operational use of the aircraft. The rolling characteristics should also be checked in accelerated flight as well as 1g flight.

After completion of investigations at V_{max}, a windup turn to limit load factor can be made to check the maneuvering stability of the aircraft. Then zoom back to the original altitude and repeat these investigations at the second airspeed. The other altitudes and airspeeds can be checked in the same manner. Any differences resulting from altitude or speed changes should be noted.

If the aircraft is cleared for stalls, they should be investigated cautiously in all configurations and types of entry. Determine the approximate stall warning margin, what defines the warning and the stall, and the aircraft characteristics in the stall and the recovery. If possible, determine the best method of breaking the stall and altitude loss in recovery from several points in the stall.

If possible, check the tactical mission capability of the aircraft. Simulated dive bombing runs or LABS maneuvers could be made for a tactical fighter for example. All the information obtainable will be helpful in writing an accurate and comprehensive report.

Fly the traffic pattern as recommended and, if fuel permits, make a go-around on the first pass. Note the power response, power required in the pattern, airspeed control and sink rate, trim changes with gear and flap extension, trimming action, buffet with gear extension, and general aircraft feel in the pattern. On the go-around, recheck the trim changes with gear and flap retraction and with drag device reaction. Don't forget to look at engine out characteristics if time and fuel permit. On the first landing in the aircraft it is probably not advisable to attempt to get the minimum landing roll. Make a normal touchdown and use normal braking action (use the drag chute if provided). Note the touchdown speed, the effects of any cross-wind, directional control, nose lowering speed, etc. As with the takeoff, the normal landing roll is of more importance than the minimum possible.

Review the flight while taxiing back to the parking area. Re-evaluate the cockpit, and attempt to determine whether the aircraft will perform its design mission and is safe and comfortable to fly. Your opinion with everything fresh in mind is probably the most accurate. Put everything you remember about the flight and your impressions of the aircraft down on paper immediately after leaving the aircraft. Do this immediately and before talking to anyone about the airplane or the flight. Waiting or discussing points with other people may alter first hand impressions or cause important aspects of the flight to be forgotten.

INITIAL FLIGHT REPORT

The test pilot's ability to qualitatively evaluate an aircraft in limited flying time is only part of the evaluation. His ability to communicate his finding is an extremely important step that must not be neglected. An "Initial Flight Report" should be written as soon as possible after the flight. At the Flight Test Center this is accomplished on the AFSC FORM 5314. The report should express everything learned about the aircraft. A narrative form is normally used for qualitative reports. Comparisons with other aircraft can be used to assist in describing the aircraft. Take care to ensure that only aircraft familiar to most readers are used for comparison. Otherwise the comparison will mean nothing to them.

Keep in mind the purpose of the qualitative evaluation while writing the report. Mere figures are normally not enough to describe the stability of the aircraft, particularly on a qualitative evaluation since the data obtained are very limited. Analyze the aircraft's characteristics in light of its ability to perform its design mission, give opinions of the aircraft's ability to do the job and support these opinions with the facts obtained on the evaluation flights. Comment on anything personally disliked but be objective in condemning any shortcomings. Recommendations for specific changes in the aircraft are to be included in the report. The exact manner in which the aircraft should be fixed should not be specified or recommended. The test pilot's job is to evaluate the existing hardware and state what should be changed. It is then the manufacturer's responsibility to determine how to make the necessary changes.

QUALITATIVE EVALUATION PREPARATION CHECKLIST

_____ 1. Identify the mission in detail. (Is this newly proposed tasking, or related tasking but by a new user?)

_____ 2. Determine a typical and complete mission profile. (A full list of all mission tasks)

Generic tasks
Primary mission tasks
Mission flight conditions
Ancillary mission tasks

_____ 3. Accomplish a Detailed Task Analysis. (Don't slight this)

_____ 4. Research the aircraft thoroughly.

_____ 5. Build an evaluation profile.

Sortie length
Weather
Open loop "feel" of the aircraft
Start at the heart of the envelope
Mission tasks
Mission simulation tasks
Comparison tasks

Similar mission aircraft
Aircraft you are familiar with

Edges of the envelope
Problem exploration - open loop

_____ 6. Assemble / construct the data cards

Leave room to write
Sliding scales work greatly
Familiar cards are easier to use

_____ 7. Fly the evaluation.

_____ 8. Immediately complete an initial flight report (AFSC form 5314?)

Do this before talking to anyone
Don't get distracted or have your mind cluttered
Write it to yourself

_____ 9. Write / present a detailed Qual Eval report

Can it do the proposed mission?

APPENDIX B. Helicopter Qualitative Evaluation Cards

HELICOPTER

AIRCRAFT DESCRIPTION

MISSIONS ________________

AIRFRAME/MISC

EMPTY WEIGHT ________

MAX G.W. ________

ROTOR SYSTEM ________________

FLIGHT CONT. DESC. ________________

STAB AUG SYSTEMS ________________

ENGINES

TYPE ________________

MAX SHP ________

GOVERNING SYSTEMS ________________

SYSTEMS ________________

1

T/O TIME ______ FUEL ______ G.W. ______ C.G. ______

LAND TIME ______ FUEL ______ G.W. ______ C.G. ______

WEATHER OAT ______ P.HT ______

WIND ______ TURB ______

PREFLIGHT (EASE/TIME TAKEN) ________________

COCKPIT LAYOUT (INITIAL IMPRESSIONS, LOGICAL, COMFORT, CONTROLS, VIEW, WARNING/EMERG. SYSTEMS)

START UP (CHECK SEQUENCE, COMPLICATIONS, ETC.)

MECHANICAL CHARACTERISTICS

	CYC(LONG)	CYC(LAT)	COLL	RUDD
FREEPLAY				
B'OUT				
FRICTION				
F/GRADIENT				
DYNAMICS				
TRIM				

2

ROTOR ENGAGEMENT (EASE, VIBRATION, ETC.)

PRE TAKE-OFF DRILLS

GROUND HANDLING

TAXI (EASE)

BRAKES (EFFECTIVENESS)

TURNING RADIUS

VERTICAL LIFT OFF

HQR

IGE HOVER (QUAL. EVAL) W/V ______ Ht ______

INTO WIND ______ Tq ______ HQR ______

X WIND ______ HQR ______

DOWN WIND ______ HQR ______

OGE HOVER T_q ______ N_r ______ FUEL ______

TRANSITION (QUAL EVAL)

CLIMB (VFR) IAS RANGE

HQR ______

MAX POWER - LIMIT ______ IAS ______ V_v ______ FUEL ______

MISSION RELATED TASKS

(Carry out on way to operating area, as possible, to determine potential F.Q. problem areas).

TRIMMED FLIGHT CONDITIONS (All controls & attitudes/β. General impression of linearity of control movements and adequacy of control margins. Trimmability)

IAS	δ LONG	δ LAT	COLL	RUDD	REMARKS

LONGITUDINAL FLYING QUALITIES
(V_{cruise} or mission relevant airspeed)

STATIC STABILITY H_p ________

	TRIM	+ΔV	-ΔV
IAS			
LONG CYCLIC POS			
LONG CONTROL FORCE			

LONG TERM RESPONSE

SHORT TERM RESPONSE

CHARACTER_______TIME_______O'SHOOTS_______DAMPING_______

MAN. STAB

BANK ANGLE	'G	δ LONG	δ LONG FORCE

REMARKS ________________________________

CONTROL RESPONSE

INPUT	SENS	EFFECT	TIME (S/STATE)

REMARKS ________________________________

LAT/DIR

STATIC STAB (CARRY OUT TOIC & SHSS)

Dihedral Effect ________________________

Directional Stability ________________________

Sideforces - ________________________

DYNAMICS

SPIRAL STAB CHARACTER _______ TIME CONST _______

DUTCH ROLL

Period ___________

Roll/Yaw ___________

Damping ___________

LAT CYC CONT RESPONSE ________________________

MAX IAS (QUAL EVAL)

V_{MAX} ______________________

____

V_{NE} ______________________

____

____

AUTO F.Q. $V_{MIN\ SINK}$ ________ V_V ________

____

____

____

DEGRADED MODES (STAB AUG/HYD. OFF)

____

____

____

____

STAB AUG ASST

MODE	OPERATION

____

LOW A/S F.Q.

TRIMMED FLIGHT CONDITIONS

SIDEWARD (L) LIMIT ________ PARAMETER ________

SIDEWARD (R) LIMIT ________ PARAMETER ________

REARWARD LIMIT ________ PARAMETER ________

REMARKS ______________________

VERTICAL CLIMB (Max Power)

CONTROL MOVEMENTS ______________________

V_v ________

FUEL ________ WIND ________

REMARKS ______________________

CRITICAL AZIMUTH

REL. WIND ________ LIMITATION ________

TURN ON SPOT (Qual Eval) ______________________

____

____

CONTROL RESPONSE (LONG/LAT/YAW)

INPUT	SENS	EFFECT	TIME (S/STATE)

REMARKS ______________________

____

DYNAMICS (LONG/LAT Pure Motions)

____

____

____

LOW A/S MISSION RELATED TASKS (NOE, Slopes, Quick Stops, etc.)

SYSTEMS EVAL. (IF RELEVANT)

SHUT DOWN

MISCELLANEOUS

THIS PAGE INTENTIONALLY BLANK

QUAL EVALUATION ______________________________ AIRCRAFT

DATE ________ LOCATION ____________________

CONFIGURATION ______________________________

____

CALL SIGN ____________ OPS # ____________ TAIL # ____________

G.W. ____________ CG ______ % FUEL LOAD ____________ GAL/LBS

IMPORTANT MISSION LIMITATIONS

BATTERY POWER TIME ____________

Start { ICS TIME ____________
IGNITION TIME ____________
TEMP ______ ° TIME ____________ }

EGT { TEMP ______ ° TIME ____________
TEMP ______ ° TIME ____________ }

FLAP SETTING ° OR % ____________

IDLE LIMITS

- RPM ________ ± ________
- EGT ________ ± ________
- FF ________ ± ________
- OIL P. ________ ± ________
- HYD ________ ± ________
- PNEU ________ ± ________
- TORQUE ________ ± ________
- NOZ/TOP/TIT ________ ± ________

MAX CANOPY SPEED ____________

MAX NGS SPEED ____________

MAX TAXI SPEED ____________

LINE UP CHECK

- RPM ________ ± ________
- EGT ________ ± ________
- FF ________ ± ________
- OIL P. ________ ± ________
- OIL QTY ________ ± ________
- TORQUE ________ ± ________

NOZZLE ____________

TOP/TIT ____________

GEAR LIMIT SPEED ____________

FLAP SCHED ________ 1 ________
________ 2 ________

FLAP LIMIT SPEED ____________

EJECTION ENVELOPE/BANK

- AS/ALT ________ BK ________
- AS/ALT ________ BK ________
- AS/ALT ________ BK ________

MAXIMUM AIRSPEED ____________

MAXIMUM MACH # ____________

MAX G (S) ________ WT ________

MAX G (S) ________ WT ________

MAX G (S) ________ WT ________

MAX G (A) ________ WT ________

MAX G (A) ________ WT ________

ENGINE LIMITS

	MIL	MAX
RPM	______ %	______ %
EGT	______ °	______ °
FF	______	______
OIL P	______	______
TORQUE	______	______
TOP/TIT	______	______

RPM OVERSPEED ____________

____

AOA ________ AOA ________

LOAD/VOLT MTRS ________ ± ________

CG LIMITS % ________ TO ________

STORE LIMITS

AIRSPEED ____________

G LIMIT ________ S ________ A

JETTISON ____________

ZERO G. LIMITS

____

NEGATIVE G. LIMIT

____

PROHIBITED MANEUVERS

1 ____________
2 ____________
3 ____________
4 ____________

NG LIFT OFF ____________

MAIN GEAR T/O ____________

FIGURE 1. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARD COVER PAGE

COVER CARDS

QUAL EVALUTION

AIRCRAFT ______

DATE ______

LOCATION ______

CONFIGURATION ______

CALL SIGN ______ OPS # ______ TAIL # ______

G.W. ______ CG ______

FUEL: ______ HRS FOB ______ JOKER ______

NORM ______ BINGO ______

MIN ______

EMER ______

WEATHER:	SKY	VIS	TEMP	WINDS	PA

WIND ALOFT (DIR/VEL/TEMP)

5	______	25	______
10	______	30	______
15	______	35	______
20	______	40	______

FRZ LVL ______

TOD ______

VALID TIME ______

IMPORTANT LIMITATIONS

ENGINE:	START	GND IDLE	RUN UP	MIL	AIR MAX
RPM					
EGT/FTIT					
FF					
OIL P					
NOZZLE					
TORQUE					

STARTING NOTES:

GENERAL NOTES:

OTHERS

SPEEDS

CANOPY ______

GEAR ______

FLAPS ______

V_{MAX} ______

MACH ______

LOAD FACTOR

	G	WT
SYM		
ASYM		

ZERO G ______

NEG G ______

AOA

XWINDS

STORES

PROHIBITED MANEUVERS

A. Support Equipment
   1. Power Unit
      Type
      Capacity
   2. Other

B. Cargo Compartment
   1. Entrance
   2. Egress
   3. Systems Accessibility
   4. Other

C. Flight Deck
   1. Crew Stations
      a. Pilot
         Seat Adjustment
         Clearance
         Vision
         Rudder
         Pedal Adjustment
         Restrictions
         Other

      b. Copilot

      c. Flight Mechanic

      d. Navigator

   2. Instrument Panel
      a. Flight Instruments
         Grouping
         Readability
         Adequacy

      b. Engine Instruments
         Grouping
         Readability
         Adequacy

      c. Warning Lights
         Placards
         Switches
         Controls

   3. Pedestal
      a. Engine Controls
         System Controls
         Switches
         Guards
         Placards
         Lights
         Feel Identification
         Accessibility
         Confusion Factor
         Arrangement

      b. Remarks

   4. Overhead Panel
      a. Engine Controls
         System Controls
         Switches
         Guards
         Lights
         Placards
         Accessibility
         Feel Identification
         Confusion Factor
         Arrangement

      b. Remarks

   5. Side Panels
      a. Switches
         CBs
         Lights

      b. Remarks

   6. Flight Controls
      a. Rudder
         Break-out Force
         Travel
         Adjustment
         Clearance
         Slop
         Friction

      b. Elevator
         Break-out Force
         Travel
         Slop
         Friction
         Clearance

      c. Control Wheel
         Aileron Break-out Force
         Travel
         Slop
         Friction
         Clearance
         Grip
         Switches

   7. General Comments

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS

5. Vibration
   a. Noise
   b. Air vent deflectors
   c. Ventilation/heating
6. Control Required To Maintain Proper Taxi Speed
7. Remarks:

D. Pre-Take-Off (line up at even 1,000 feet and check W/V)
   1. Flight Control Check With Boost Operating
      a. b/o force
      b. rate
      c. deflection
      d. slop
      e. friction
   2. Flaps Set ______________________ Trim Set ______________________
   3. Engine Power Check
      a. Acceleration
         Idle ________________ to ________________ (MRP) __________ Sec.
         Asymmetric ____
         Overshoot ____
      b. Stabilized conditions: OAT ______________________________________

Eng	% RPM	Torque	TIT	Throttle Pos
1				
2				
3				
4				

   4. Brakes Hold At MIL PWR
   5. Fuel reading ________________ lbs. W/V ________________ __________ kts.

E. Take-Off. (Use flight data on knee board)
   1. Start Time Form BRAKE RELEASE TO START CLIMB ______________________________
   2. Brake Release Action
   3. Directional Control. Rudder Effective ________________ kts.
   4. Elevator Effective (nose wheel off) ________________ kts.
   5. Aileron Control ________________ kts.
   6. T.O. Distance ________________ ft. Lift-Off Speed ________________ kts. Time ________________ sec.
   7. Control Force ________________ Pitch ________________ Trim ________________
   8. Trim-Out – Raise Gear
      Time ________________ sec.
      Yaw ________________
      Trim ________________
   9. Trim-Out – Raise Flaps
      Time ________________ sec.
      Trim ________________
   10. Acceleration to MINIMUM CONTROL SPEED
   11. Acceleration to Climb Speed (1,000 ft)
   12. Visibility and Pitch Angle ________________
   13. Remarks:

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

F. Climb (M N ________°, 90° to W/V).

1. Visibility ________
   Pitch Angle ________
2. Record: FUEL at START CLIMB ________________

TIME	Hi	Vi	R/C	Ti	% RPM	TORQUE	TPT	Wf
________	4M							
________	6M							
________	8M							
________	10M							
________	12M							
________	14M							
________	16M							
________	18M							
________	20M							
________	22M							
________	24M							
________	26M							
________	28M							
________	30M							
________	32M							

FUEL at LEVEL-OFF ________________

3. Check Cabin Pressurization:
   10M ________________
   15M ________________
   20M ________________
   25M ________________
   30M ________________ Note any fluctuations or surges.

4. Cabin Heat Adequacy
   a. Nesi glass

5. Remarks

G. Cruise

1. Vmax
   a. Hi ________
   b. Vi ________
   c. OAT ________
   d. Flt. Controls ________
   e. RPM ________
   f. Torque ________
   g. TIT ________
   h. Wf ________
   i. FUEL ________

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

2. Dynamics (Hi ________ Vi ________) Note Control Position
   a. Phugoid
      1. Trim ________ Vi_{in} ________ V_{max} ________ V_{min} ________
      2. Sec/cyc ________ ° ________ Damping ________
   b. Porpoise Mode. input ________ cycls ________ ampl. ________
   c. Spiral stability
      1. RT Ø 10° ________ °/ ________ sec.
      2. LFT " " ________ °/ ________ sec.
      3. Remarks:

   d. Dutch Roll
      1. RT sideslip s/c ________ Roll ________ Yaw ________
         Damping ________ (1) ________ (2) ________ (3) ________
      2. LFT sideslip s/c ________ Roll ________ Yaw ________
         Damping ________ (1) ________ (2) ________ (3) ________
      3. (1) Norm (2) Damper Off (3) Rudder Power Off.
   e. Short Period
      1. Fixed (1.0g) Damping ________
      2. Fixed (−1.0g) Damping ________
      3. Free (1.0g) Damping ________
      4. Free (−1.0g) Damping ________
      5. Remarks:

3. Maximum Range Data
   a. Hi ________ Vi ________ OAT ________ FUEL ________
   b. RPM ________ Torque ________ TPT ________ Wf ________
   c. Remarks:

4. Systems Check: Hi ________ Vi ________
   a. Engine shut-down, No. ________
      1. Time to feather ________ Control force ________
      2. Procedure, etc:
   b. Engine restart
      1. Time to Normal power ________ Surge ________ Trim ________
      2. Procedure, etc:
   c. Anti-icing/de-icing system
      1. Full operation effect on engines ________
      2. Nesi glass
         Other
      3. Remarks:

   d. GTU/ATM operation ________
   e. Pressurization/heating ________
   f. Other:

5. Emergency Descent, Hi ________ Vi ________ (Initial)
   a. Time from cruise to start descent ________
   b. Procedure: G and F ________ Clean ________ Pressurization ________
   c. Time ________ from CR to Hi ________ at Vi ________
   d. Visibility ________ Pitch ________ Control ________
   e. Remarks:

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

6. Static Longitudinal Stability and Performance Hi ____________
   a. Acceleration check Trim at Max Range Vi ____________
      1. Decel to Vi ________ Control Force *(Trim setting)
      2. Speed/Pwr Vi ________ RPM ________ Tq ________ TIT ________ OAT ________
         Speed/Pwr Vi ________ RPM ________ Tq ________ TIT ________
      3. Acceleration, (RESET TRIM), Time/10 kts (MRP) Initial Vi ________
         10 ________
         20 ________
         30 ________
         40 ________
         50 ________
         60 ________
         70 ________
         80 ________
         V/S ________ ft/min. Control forces/gradient
      4. Remarks: FUEL ________

   b. Trim Changes: Hi ________ Vi ________
      1. Control boost off ________ on ________
      2. Runaway Trim: Elev ________ Ail ________ Rud ________
         5 sec delay (build-up)
   c. Turning Performance and Aileron Rolls. Cruise. (Build-up). FULL DEFLECT
      1. 60° Ø, Time 360° ________ V_{max} ________ Hi ________
      2. 45° Lft – 45° Rt (FIX) Time for 90° ________
      3. 45° Rt – 45° Lft (FIX) Time for 90° ________
      4. 60° Ø, Time 360° ________ Vi ________ Hi ________
      5. 45° Lft – 45° Rt (FIX) Time for 90° ________
      6. 45° Rt – 45° Lft (FIX) Time for 90° ________
      7. 60° Ø, Time 360° ________ Vi ________ Hi ________
      8. 45° Lft – 45° Rt ________ (FIX) Time for 90° ________
      9. 45° Rt – 45° Lft (FIX) Time for 90° ________
         POWER APPROACH
      10. 45° Lft – 45° Rt (FIX) Time for 90° ________
      11. 45° Rt – 45° Lft (FIX) Time for 90° ________
   d. Spiral Stability PA Hi ________ Vi ________ Pwr ________
      1. Rt Ø 10° ________ °/ ________ sec. (½ - 2).
      2. Lft 10° ________ °/ ________ sec. (½ - 2).
   e. Phugoid (Hi C_L) ________
   f. Sideslips, TRIM (L) Hi ________ Vi ________
      1. Rt ________°, Fr ________ Fa ________ Fs ________ dr ________ da ________ de ________
      2. Lft ________°, Fr ________ Fa ________ Fs ________ dr ________ da ________ de ________
         TRIM (CR) Hi ________ Vi ________
      3. Rt ________°, Fr ________ Fa ________ Fs ________ dr ________ da ________ de ________
      4. Lft ________°, Fr ________ Fa ________ Fs ________ dr ________ da ________ de ________
      5. D.E. with rudder (Pick up wing) ________
      6. Remarks: FUEL ________

7. Stalls, Gross Weight ________ Hi Trim ________
   a. CR 1.0g TRIM Vi ________ Vw ________ Vs ________ Hi ________
   b. CR 2.0g TRIM Vi ________ Vw ________ Vs ________ Hi ________
   c. Remarks:

   d. PA 1.0g TRIM Vi ________ Vw ________ Vs ________ Hi ________
   b. PA 1.5g TRIM Vi ________ Vw ________ Vs ________ Hi ________

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

8. Asymmetric Power - III ____________________
   a. Climb configuration (MRP, Climb Vi, Trimmed-out)
      NTC ____________ Feather ____________ No. 1 Eng. Rudder Free, 2 sec.
      Decel to 1.4 Vsl ____________ kts. Ø and sideslip
      (Cond. permitting check 2 out on one side)
   b. T.O. Configuration at V_{max} Gear and T.O. Flaps (168 kts.)
      Fail 1 and 2 and decelerate holding Ø = ZERO.
      Vi_{min} ____________. Check Ø = 5° and SIDESLIP = ZERO.
   c. AT Min control speed fail 3 and 4, Fr ____________ Fa ____________
      Fs ____________ TRIM OUT HANDS OFF AT 1, 2 Vsl ____________
   d. Remarks:

9. Boost OFF Operation Hi ____________ Vi ____________ Pwr ____________
   a. Asymmetric Control 1 and 2 idle, 3 and 4 MRP
   b. Response ____________ Fr ____________ Fa ____________ Fs ____________
   c. Remarks:

10. Descent
   a. CR Configuration Vi ____________ V/S ____________
      1. Visibility ____________ Attitude ____________
      2. Engine operation at idle ____________
      3. Pressurization, systems, etc. ____________
      4. Remarks:

   b. L Configuration Vi ____________ V/S ____________
      1. Visibility ____________ Attitude ____________
      2. Engine operation at idle ____________
      3. Remarks:

11. Trim Changes Trim at Placard Speed, PLF
   a. Flaps to 50% Vi ____________ Hi ____________ PLF/Trim
   b. Gear DOWN Vi ____________ Hi ____________ PLF/Trim
   c. Flaps to 100% Vi ____________ Hi ____________ PLF/Trim
   d. Power to IDLS Vi ____________ Hi ____________ Trim
   e. Idle to HRP Vi ____________ Att ____________ Trim
   f. Gear UP Vi ____________ V/S ____________ Trim
   g. Flaps UP Vi ____________ V/S ____________ Trim

12. Asymmetric Power Go-around
   a. ____________ Out, Pa Vi ____________ Hi ____________ Pwr ____________
   b. Fr ____________ Fa ____________ Fe ____________ Response and Control
   c. Remarks:

13. General Comments Prior to Completion of Flying.

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

H. Approach and Landing

1. Pre-landing check: Operating Weight ________________
   Alt Setting ________________ Fuel Weight ________________
   W/V ________________ Landing GR WT ________________
   Runway ________________ Best Flare Speed ________________
   (Pilot Pwr and Steer) Touchdown speed ________________
   (Copilot Ailersons) VS_L ________________

2. Traffic pattern:
   a. Visibility ________________ Control
   b. Power response ________________
   c. Remarks:

3. Landing:
   a. Flare ________________ Response ________________ Control ________________
   b. Float ________________ Characteristics in ground effect ________________
   c. Touchdown ________________ Nose-wheel off ________________ Grd idle ________________
      Reverse ________________ Brakes ________________ Steering ________________
   d. Directional control with ailerons ________________
   e. Stopping distance ________________

4. Remarks:

I. Post-flight and Shut-down

1. Normal procedures. Ease and time to accomplish ________________
2. Coordination ________________
3. Fuel ________________
4. Flight Time ________________
5. Squawks ________________

J. Re-evaluate Cockpit and A/C in General

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

EXTERNAL INSPECTION

TOD START ____________

TOD FINISH ____________

Remarks:

COCKPIT EVALUATION

1. Ease of Entry

Ladder ____________

Steps ____________

2. Location of Instruments and Controls
3. Adjustment of Seat and Controls
4. Comfort
5. Ease of Identification of:
   - Switches
   - Controls
   - Emergency Devices
   - Warning Lights
6. Egress – ground and Airborne

BEFORE STARTING CHECKS

TOD ____________

Remarks

Complexity:

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight)

STARTING ENGINES Fuel ____________ TOD ____________

Complexity:

Ground Support:

Equipment ________________________

Personnel ________________________

BEFORE TAXI CHECKS TOD ____________

Estimated Break-out Force

Longitudinal + ________ # − ____________ #

Lateral+ ________ # − ____________ #

Directional+ ________ # − ____________ #

Trim rate (Longitudinal) Aft ______________ Sec

Fore ______________ Sec

Flap Extension ______________________ sec Retraction ______________________ sec

---

TAXIING Fuel ____________ TOD ____________

RPM req to move ____________

Visibility

Steering N.W.S.

Brakes

Visibility

Power required ____________ RPM, fuel/flow ________________ pph

Runway temp ______________ °F. P.A. __________________________ ft.

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

TAKEOFF Fuel __________ #TOD __________________

Do brakes hold in MIL PWR Yes No

Symmetry of brake release

Directional control

Rudder effective speed ________________________ knots

Ease of rotation

Lift-off speed ________________________ knots

Estimated T/O distance ________________________ feet

Gear up time _____________ sec Flaps up time ________________________ sec

Trim changes Landing gear + − ________________ #

Flaps + − ________________ #

Are placards hard to exceed? Yes No

Visibility during T/O and Initial Climb

Adequacy of T/O trim setting:

Speed stability during acceleration:

CLIMB Fuel __________ #TOD __________________

Control during climb

Longitudinal

Directional

Lateral

Climb Schedule			
	5000 ft.	.89IMN	550
	10000 ft.	.89IMN	510
	15000 ft.	.90IMN	470
	20000 ft.	.905IMN	430
	25000 ft.	.910IMN	390
	30000 ft.	.915IMN	360
	35000 ft.	.92IMN	320
	39000 ft.	.92IMN	

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

LEVEL OFF Fuel __________ #TOD ________________

EASE

Attitude Change ____________________________ °

****

CRUISE 90% RPM .86IMN (recommended cruise)

Start Fuel ___________ # TOD ________________

Linear?

Sideslip: C_{ℓ_β} Hvy Med Lt Yes No

C_{n_β} Hvy Med Lt Yes No

Dutch Roll Period ____________________ sec

Damping Hvy Med Lt

Cycles to Damp ______________

CRUISE cont. 39,000 ft. .86IMN

PIO Tendency Yes No

Short Period Cycles to Damp _________________________

Period __________________________________ sec

Do controls have dynamic tendency?

Yes No

Aileron Rolls: t90

R L Adv. Yaw

½ deflection ________ sec ________ sec

Full deflect. ________ sec ________ sec

** DAMPERS OFF **

Linear?

Sideslip: C_{ℓ_β} Hvy Med Lt Yes No

C_{n_β} Hvy Med Lt Yes No

Dutch Roll: Period ____________________ sec

Damping Hvy Med Lt

Cycles to Damp ______________

PIO Tendency Yes No

Short Period: Cycles to Damp _________________________

Period __________________________________ sec

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

** DAMPERS ON **

Finish: Fuel ____________ # TOD ______________

Speed brake trim change Hvy Med Lt

Extend Push Pull

Retract Push Pull

MANEUVERING FLIGHT .9 IMN 39-35,000 ft.

Fuel ____________ #

Initial buffet ______________________ g

Heavy buffet ______________________ g n_{max} ______________________ g

Stick force Hvy Med Lt

Linear Yes No

****

ACCELERATION TO 1.2 IMN at 35,000 ft. (trim .9 IMN)

Start: Fuel ____________ # TOD ______________

NB Light L ____________ sec R ____________ sec

NB Trim Change ____________ # Push Pull

Stick force gradient ______________________________________

Transonic trim change ______________________________

Finish fuel ______________ # TOD ______________

****

CRUISE 1.15 IMN 35,000 ft.

Start Fuel ____________ # TOD ______________

					Linear?	
Sideslip:	C_{ℓ_β}	Hvy	Med	Lt	Yes	No
	C_{n_β}	Hvy	Med	Lt	Yes	No

Dutch Roll: Period ______________________ sec

Damping Hvy Med Lt

Cycles to Damp ______________

PIO Tendency Yes No

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

CRUISE cont 1.15 IMN 35,000 ft.

Short Period: Cycles to Damp ____________________

Period ________________________________ sec

** DAMPERS OFF **

					Linear?	
Sideslip:	C_{ℓ_β}	Hvy	Med	Lt	Yes	No
	C_{n_β}	Hvy	Med	Lt	Yes	No

Dutch Roll: Period ____________________ sec

Damping Hvy Med Lt

Cycles to Damp ______________

PIO Tendency Yes No

Short Period: Cycles to Damp ________________________

Period ________________________________ sec

** DAMPERS ON **

Aileron Rolls: t_{90} Adverse Yaw

	R	L
½ deflection	________ sec	________ sec
Full deflect.	________ sec	________ sec

Finish: Fuel ________________ TOD ________________

****

SPEED BRAKE TRIM CHANGE 1.15-1.1 IMN

Hvy Med Lt

Extend Push Pull

Retract Push Pull

MANEUVERING FLIGHT 1.1 IMN 35-35,000 ft.

Fuel __________#

Initial buffet ____________ g Heavy buffet ____________ g

n_{max} ____________ g

Stick force Hvy Med Lt

Linear? Yes No

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

DECELERATION TO 210 knots 30,000 ft. (Long Stat)

Stick Force gradient ______________________________

****

CRUISE 210 knots 30,000 ft.

Start: Fuel __________# TOD ______________

					Linear?	
Sideslips:	C_{ℓ_β}	Hvy	Med	Lt	Yes	No
	C_{n_β}	Hvy	Med	Lt	Yes	No

Dutch Rolls: Period __________________ sec

Damping Hvy Med Lt

Cycles to Damp ____________

PIO Tendency Yes No

Short Periods: Cycles to Damp ______________________

Period ______________________________ sec

************************************** DAMPERS OFF **************************************

					Linear?	
Sideslips:	C_{ℓ_β}	Hvy	Med	Lt	Yes	No
	C_{n_β}	Hvy	Med	Lt	Yes	No

CRUISE 210 knots at 30,000 ft.

Dutch Roll: Period __________________ sec

Damping Hvy Med Lt

Cycles to Damp ____________

PIO Tendency Yes No

Short Periods: Cycles to Damp ______________________

Period ______________________________ sec

Finish: Fuel __________# TOD ______________

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

** DAMPERS ON **

AILERON ROLLS t90 Adverse Yaw

½ deflection R__________ sec L__________ sec

Full deflect. R__________ sec L__________ sec

****

MANEUVERING FLIGHT at 210 knots

Fuel ____________________#

Initial Buffet ________________ g Heavy Buffet ________________ g

"max" _________________________ g

Stick force gradient: Hvy Med Lt

****

STALLS Cruise Configuration 25,000 ft.

Fuel _____________#

Cr Vw ____________________ knots Vs ____________________ knots

GLIDE Vw ____________________ knots Vs ____________________ knots

Remarks

POWER APPROACH CONFIGURATION

Gear extension ________________ sec

Flap extension ________________ sec

Asymmetric power at 155 knots

MIL RWR Rudder Force Hvy Med Lt

MAX TWR Rudder Force Hvy Med Lt

Trimability MIL ________________________________MAX

STALLS: Fuel _____________

Vw ________________ knots Vs ________________ knots

Remarks:

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

Trim at 160 knots

						Linear?	
Sideslip:	C_{ℓ_β}	Hvy	Med	Lt		Yes	No
	C_{n_β}	Hvy	Med	Lt		Yes	No

Dutch Roll: Period ____________ sec

Damping Hvy Med Lt

Cycles to Damp ____________

PIO Tendency Yes No

Short Period: Cycles to Damp ____________

Period ____________ sec

** DAMPERS OFF **

Dutch Roll: Period ____________ sec

Damping Damping Hvy Med Lt

Cycles to Damp ____________

PIO Tendency Yes No

Short Period: Cycles to Damp ____________

Period ____________ sec

** DAMPERS ON **

AILERON ROLLS	t90		Adverse Yaw
½ deflection	R ________ sec	L ________ sec	
Full deflect	R ________ sec	L ________ sec	

****

ACROBATICS

Loop

Immelman

Barrel Roll

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

INSTRUMENTS

Holding at 20,000 ft.		250 knots	90-92%
Penetration	S/B	270 knots	90%
Initial	Clean	220 knots	94%

Low Cone gear, 86%, flaps, 155 knots

LANDING

Normal traffic pattern 60% flaps

Single engine go-around closed pattern

Full stop Full flaps

Touchdown speed ________ knots' marker ________

****

TAXIING Fuel ________ #TOD ________

Engine acceleration idle to mil ________ sec

Turning radius ________ feet

Re-evaluate cockpits

ENGINE SHUTDOWN

Check servicing for turn-around

Time ________

Oil ________ qts

Hydraulic fluid ________ qts

LOX ________ liters

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

TOD ____ beside A/C

START   Procedure

F Flow ______________ RPM ______________ F Flow ______________

Before Taxi Check

TOD ______________________

TAXI

Power to Roll ______________________ Brakes   S   NS

Nosewheel steering   Turn Rad. ________________

NWS Off   Brake turn ______________________

Canopy Operation

Visibility

TOD ______________________

LINE UP

Brakes Mil Pwr ________________

Pump one brake

Engine Acc Time ________________

RPM ______________ EGT ______________ FF ______________

Throttle friction   S   NS

FUEL   L __________   R __________

TOD ______________________

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight)

TAKEOFF

Brake release

A/B light

NWS rel at Rudder Eff   A/S ________________

CONTROL FORCES   L   M   H ________________ lbs

NW LIFT OFF ________________

T.O. ROLL ________________________ ft   A/S ________________

GEAR UP ________________ sec.   FLAPS UP ________________ sec

Trim Changes ________________________

Noises

Press. Sys

Acceleration   Rotation

CLIMB

Schedule   .9 to 35M

Control

Trim

Visibility

Dampers

35M   Time ________________   Fuel L ________________ R ________________

Throttle Mil   Level Off

TOD ____

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

SUPERSONIC

A/B Light time ________________

TRIM CHANGES

STABILITY

	DAMPERS	PULSE	CYCLE	TIME
	ON	Elev		
		Rud		
	OFF	Elev		
		Rud		

45° Roll

ONE ENGINE IDLE

Wind Up Turn to g Max.

A/S ________________ "g" ________________

Stick force gradient

Buffet

FUEL L ________________ R ________________

TOD ________________

FIGURE . .4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

TURNING PERFORMANCE 300 Kts __________ sec

Zoom to Slow A/C

PWR STALL WARN __________ STALL __________

230 Kts. Flight Roll

STABILITY

DAMPERS	PULSE	CYCLE	TIME
ON	Elev		
	Rud		
OFF	Elev		
	Rud		
Sideslip	6° Approx.		

CUT ONE ENGINE

EMERGENCY GEAR EXTENSION __________ sec

AIRSTART

170 knots Flaps Down

Aileron Power

Cycle gear Flaps up TRIM

FUEL L __________ R __________

TOD __________

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

DIVE 450 Kts 12M

CLOVERLEAF

BARREL ROLL

IMMELMAN

Level at 20M inbound to VOR

200 Kts F FLOW ____________________

250 Kts F FLOW ____________________

300 Kts F FLOW ____________________

HIGH CONE

240 Kts. Gear Flaps Dive Brakes

1 g stall

200 Kts.

STABILITY Check

STALL RIGHT TURN 190 Kts

Clean up A/C 275 Kts. turn to ILS

350 Kts. Speed Brakes Decelerate

ISL Gear, Flaps, D/C 170 Kts

TOD ____

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

SINGLE ENGINE GO-AROUND

SINGLE ENGINE TOUCH AND GO

RE-ENTER

PITCH OUT

TRIM CHANGES

TAXI

AFTER LANDING CHECK

SHUTDOWN

NO FLAP LANDING

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)