



EVALUATION "SKILLS TEST" FOR A JET/TURBINE AEROBATIC RATING

1. Aim of the Skills Test

In terms of CAA/ARO 00002, the primary aim of the "skills test" is to evaluate a series of linked manoeuvres in the form of a short sequence of basic aerobatic manoeuvres. The applicant is to safely and smoothly demonstrate successful execution of the prescribed sequence below.

2. Objectives

2.1 Theory. Students are to prepare the sequence based on elements listed below.

- Ø Students are to demonstrate through their briefing a clear plan of entry and exit speeds, height requirements and positional information.
- Ø Students will be evaluated on their aerodynamic knowledge pertaining to aerobatic manoeuvres envisaged.
- Ø Students will be evaluated on theory applicable to high performance jet/turbine aircraft

2.2 Operating Parameters. The pre-determined manoeuvres have been selected in a particular sequence in order to evaluate the following elements;

- Ø Positioning
- Ø Energy Management
- Ø Recovery from bad positioning/energy management
- Ø Safety

3. Domestics

3.1 Students are to route to a safe area where exercise can be conducted unhindered by air traffic or ATC.

3.2 Students may conduct one sequenced exercise conducted down to minimum of 1,000 ft AGL by form of a "warm up" practice.

3.3 Students, through their briefing are to climb to a safe altitude for operations with adequate height to be recovered by 500 ft AGL for looping and rolling manoeuvres.

4. Ground Evaluation Checklist

4.1 Personal Psyche					
Personal Motivation	1	2	3	4	5
Attitude toward the Requirement for an Aerobatic Rating	1	2	3	4	5
Understanding of Previous Air Show Incidents & common causes	1	2	3	4	5

Comments by DAE:

4.2 Aerodynamic Considerations					
Relationship between TAS, Lift, Drag, Turn rate & Turn Radius	1	2	3	4	5
Relationship between CAS & TAS	1	2	3	4	5
Theory behind accelerated Stalling	1	2	3	4	5
Theory behind increased load factor & the effect on stalling	1	2	3	4	5
Theory of induced drag and how it can be controlled by the pilot	1	2	3	4	5
Effect of Aerodynamic lift or drag devices	1	2	3	4	5

Comments by DAE:

4.3 Operation at High Density Altitude					
Calculation of density altitude	1	2	3	4	5
Increased TAS and increased radii of turn and pull-out	1	2	3	4	5
Power plant performance degradation	1	2	3	4	5

Comments by DAE:

4.4 Review of Applicant's Specific Aircraft					
Wing loading	1	2	3	4	5
Power/thrust to weight ratio	1	2	3	4	5
Load factor ("g") Limits	1	2	3	4	5
Maximum operating speeds	1	2	3	4	5
Structural integrity and fatigue	1	2	3	4	5
The impact of special modifications existing on the aircraft	1	2	3	4	5

Comments by DAE:

4.5 Review of Energy Management					
Logic of sequence and energy management	1	2	3	4	5
Energy losing manoeuvres	1	2	3	4	5
Special adjustments for high density altitude	1	2	3	4	5
"Aborted" manoeuvres or interruption to the sequence	1	2	3	4	5
Loss of Control	1	2	3	4	5
Regaining or building energy	1	2	3	4	5
Actions in the event of insufficient energy for a manoeuvre	1	2	3	4	5
Techniques for a badly executed vertical manoeuvre	1	2	3	4	5

Comments by DAE:

4.6 Physiological Effects & Human Factors					
Temperature effects (High and low)	1	2	3	4	5
Hydration	1	2	3	4	5
Stress	1	2	3	4	5
"g" Tolerance and symptoms of GLOC	1	2	3	4	5
Loss of "g" tolerance affected by physical condition	1	2	3	4	5
Density altitude affects on the body	1	2	3	4	5
Breathing techniques and posture	1	2	3	4	5

Comments by DAE:

4.7 Environmental Considerations					
Wind velocity, on-crowd winds, off-crowd winds	1	2	3	4	5
Wind-shear	1	2	3	4	5
Winds paralleling the display line	1	2	3	4	5
Ceiling and visibility	1	2	3	4	5
Low, flat show	1	2	3	4	5
Terrain considerations	1	2	3	4	5
Effect of sunlight/lack of adequate light versus depth perception	1	2	3	4	5
Displays conducted over water/shorelines	1	2	3	4	5
Displays conducted in areas with obstructions	1	2	3	4	5

Comments by DAE:

4.8 Emergency Procedures					
Structural failure and aircraft control	1	2	3	4	5
Engine failure	1	2	3	4	5
Fire	1	2	3	4	5
Communications failure	1	2	3	4	5
Disorientation	1	2	3	4	5
Ejection or bail-out procedures and parachute considerations	1	2	3	4	5
Compressor stalls & recovery techniques	1	2	3	4	5

Comments by DAE:

5. Conduct of the Exercise

The Compulsory Basic Sequence is spelled out below;

- Ø Sequence to be flown initially at 1, 000 ft AGL then 500 ft AGL
- Ø Loop toward the display centre point along the 45° "off-line"
- Ø Exit the loop in "smear turn left.
- Ø Pitch to the 45° up line, exiting along the 45° "off-line"
- Ø Perform a wing-over back onto the display line
- Ø Perform a straight roll parallel to the display line
- Ø Pull up into a Cuban-8 parallel to the display line
- Ø Recover to the centre-point and perform a steep turn
- Ø Complete steep turn, position parallel to display line for inverted flight
- Ø Pull up to the 45° "up-line and perform a straight roll.
- Ø Exit the display area

5.1 Pre-Flight					
Briefing on the conduct of the sequence	1	2	3	4	5
Briefing in the event of an emergency/loss of control/orientation	1	2	3	4	5
Aircraft Pre-flight	1	2	3	4	5
Ensure aircraft is configured for aerobatics	1	2	3	4	5
Clearances and authorities for display area	1	2	3	4	5

Comments by DAE:

5.2 Routing to and from Practice Area					
Planning	1	2	3	4	5
Clearances	1	2	3	4	5
Airmanship	1	2	3	4	5

Comments by DAE:

5.3 Safety Checks					
Pre-aerobatic/manoeuvring checks to be completed	1	2	3	4	5
Ensure no fuel asymmetry with no configuration imbalances	1	2	3	4	5
Energy consideration requirement prior to sequence	1	2	3	4	5

Comments by DAE:

5.4 Loop					
Method of Entry	1	2	3	4	5
Positioning	1	2	3	4	5
Vertical Entry	1	2	3	4	5
Energy Management over the top	1	2	3	4	5
Vertical Recovery	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.5 "Smear" Turn & Positioning on 45° Line					
Positioning	1	2	3	4	5
Management of Energy	1	2	3	4	5
Achieving the 45° "up-line"	1	2	3	4	5
Achieving the 45° "offset-line"	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.6 Wing-over back onto the Display Line					
Energy Management "over the top"	1	2	3	4	5
Positioning	1	2	3	4	5
Dive technique for Energy Management	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.7 Straight Roll					
Height Control	1	2	3	4	5
Attitude Control	1	2	3	4	5
Energy Management	1	2	3	4	5
Entry and Exit Technique	1	2	3	4	5
Positioning	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.8 Cuban 8					
Height Control	1	2	3	4	5
Attitude Control	1	2	3	4	5
Energy Management	1	2	3	4	5
Entry and Exit Technique	1	2	3	4	5
Positioning	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.9 Steep Turn					
Height Control	1	2	3	4	5
Attitude Control	1	2	3	4	5
Energy Management	1	2	3	4	5
Entry and Exit Technique	1	2	3	4	5
Positioning	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.10 Inverted Flight					
Height Control	1	2	3	4	5
Attitude Control	1	2	3	4	5
Energy Management	1	2	3	4	5
Entry and Exit Technique	1	2	3	4	5
Positioning	1	2	3	4	5
Quality of the Manoeuvre	1	2	3	4	5

Comments by DAE:

5.11 Pitch to 45° Up-line with upward Roll					
Height Control	1	2	3	4	5
Attitude Control	1	2	3	4	5
Management of Energy	1	2	3	4	5
Achieving the 45° "up-line"	1	2	3	4	5
Holding the attitude for the roll	1	2	3	4	5
Quality of the manoeuvre	1	2	3	4	5

Comments by DAE:

5.12 Positioning and Orientation Throughout					
Overall Opinion	1	2	3	4	5

Comments by DAE:

5.13 Energy Management Throughout					
Overall Opinion	1	2	3	4	5

Comments by DAE:

5.14 Emergencies/Contingency Plans					
As selected by Examiner (indicate in comment block)	1	2	3	4	5
Overall Management of the Emergency	1	2	3	4	5
Success of the Recovery form the Emergency	1	2	3	4	5

Comments by DAE:

5.15 Safety & Airmanship					
Overall Opinion on Safety	1	2	3	4	5
Overall Opinion on Airmanship	1	2	3	4	5

Summary Comments by Designated Examiner:

Jet Aerobatic Rating

Approved

Not Approved

Level 10	Level 5	Level 2,5	Level 0
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Restrictions:

Signed:.....

Full Name of DAE:

Licence Number:

Aero Club Membership No.

Date of Test:

Testing Centre:

Notes to Examiners.

1. During the ground phase, the student is to demonstrate his knowledge of the performance manual pertaining to the aircraft. Students are to produce a take-off and landing card prior to the flight.
2. During the ground evaluation phase, instructors are to evaluate the students psyche and attitude toward the exercise. Beware of over-confidence and "gung-ho" attitudes. If anything is detected, please note this from the outset.
3. Under the sections 4.2 "Aerodynamic Considerations", 4.3 Operation at High density Altitude", 4.4 "Review of Applicant's Specific Aircraft", 4.5 "Review of Energy Management", 4.6 "Physiological Effects and Human Factors", 4,7 "Environmental Factors", and 4.8 "Emergency Procedures", examiners may select two (2) aspects from each section for the student to explain. Examiners may also lead with questions pertaining to certain of the aspects. It is not expected for students to answer all aspects as this should have been covered in the training phase. If unsure, examiners may elect to randomly select other aspects for discussion.
4. Prior to the practical exercise, examiners should allow students to brief their sequence and explain there reasons for the selection of a particular entry altitude. The sequence is so designed

To be continued

4.4 Basic Flight Training Syllabus

It is recommended that a basic minimum number of aspects are covered during the initial aircraft conversion. The basic elements of a proposed flying training syllabus (as applicable) for a type rating are specified below.

! *Aircraft Familiarization*

! *Effect of Controls (including spoilers, boundary layer control, airbrakes, etc.)*

! *Climb and Descent Profiles*

! *Low Speed Handling and Aircraft Behaviour*

! *Stalling (if applicable) at Various Speeds and Configurations*

! *Medium, Steep Turns and Maximum Rate Turns*

! *Accelerated Stalling*

! *Inertial Cross-Coupling*

! *Divergence*

! *Incipient Spinning and Spinning (if permitted)*

! *Precautionary Landings*

! *Forced Landings*

! *Approaches (different speeds and configurations)*

! *Landings (different speeds and configurations)*

! *Navigation (low, medium and high level)*

! *Introduction to instrument flying (if applicable)*

! *Aircraft Emergencies:*

- *Engine failures/ flame-outs during different stages of flight*
- *Engine fire/overheat during different stages of flight*
- *Generator/Alternator Failure*
- *Hydraulic/Pneumatic Failures*
- *Flight Control Failures*
- *Flap/Lift Augmentation Device failures*
- *Undercarriage Failures*
- *Smoke in Cockpit*
- *Pressurization Failure*
- *Loss of Canopy in Flight*
- *Ejection Procedure and "Bail-out" Limitations*