



West Mercian Wing Training Weekend

Flight Simulator Competition



AIR CADETS
the next generation

Wing Training Day: Flight Simulator Competition

Mission: *To fly a safe, accurate and controlled circuit.*



- Teams of two will fly a basic circuit .
- Marks will be awarded for correct procedure and accurate, controlled and smooth flying.
- The team with the highest score will be the winner.

The competition will utilise Microsoft “Flight Simulator FSX”

Scoring and test

- Each team will have a maximum of 20 minutes from brakes off to fly one left hand circuit.
- An invigilator will provide Tower Communication and will monitor the team and assess their performance against an expectations document, awarding marks from the maximum possible for each category.
- The test will be terminated when either:
 1. The aeroplane is successfully landed on completion of the circuit
 2. The simulator closes the flight due to an impact or over-stress damage
 3. The 20 minute test period expires.

In the case of 2 & 3 scores accumulated up to the point of termination will become the final score for the team

Scoring and test structure

Segment	Expectation of pilot	Available marks	Awarded marks	Expectation of co pilot	Available marks	Awarded marks
Take off and climb out	Make Aeroplane ready for take off including basic checks, trim and flap settings	10		Challenge & check take-off check list	10	
				Call Tower and request permission to take off and stay in circuit. Confirm by read back	20	
	Smooth Take off roll, rotate and climb out	10				
	Climb out rate of climb between 500 and 1000 ft./min	10				
	Maintain hdg +/-10 degrees	10				
	Retract flaps at minimum 1000ft AGL	10				
	Level off to maintain height of 1500ft +/-300ft	10				
	Make coordinated rate 1 left turn to heading of 330 for Crosswind leg	10				
Fly Crosswind leg	Adjust power and trim to maintain heading of 330	10				
	Hold heading for 20 secs	10				
	maintain hdg +/-10 degrees	10				
	maintain Altitude of 1500ft AGL +/-300 ft.	10				
	After 20 secs make coordinated rate 1 left turn to heading of 240 for downwind leg	10		Check and advise timing on crosswind leg	10	
Fly Downwind leg	Fly downwind leg at Altitude of 1500 ft. AGL +/- 300ft	10				
	Maintain 240 hdg +/-10 degrees	10		Call Tower and advise downwind to land and confirm by read back .	20	
	At pilot's discretion, start descent, perform landing checks as required and make coordinated rate 1 left turn to heading of 150 to position for base leg	20		Challenge & check landing check list	20	
Fly Base leg	At pilot's discretion continue to position and configure aeroplane for finals	10				
	At pilot's discretion make turn on to finals	10				
Fly finals and land				Call Tower and request permission for full stop landing and confirm by read back .	20	
	Fly smooth approach, adjusting speed and altitude ahead of landing on runway 06	30				
	Touchdown at speed not exceeding 70 knots, main undercarriage first within the first 25% of the runway	30				
	roll out and brake to stop within runway confines	10				

Totals

250

0

100

0

Test location and conditions

- The circuit will be flown from (a virtual) RAF Cosford, landing and departing runway 06.
- Conditions will be set to calm and visibility good.
- Wind will be less than 5kts from the north east.
- Circuits will be left hand, and heights will be given as QFE.
- There will be no other traffic in the circuit.



Aeroplane and settings

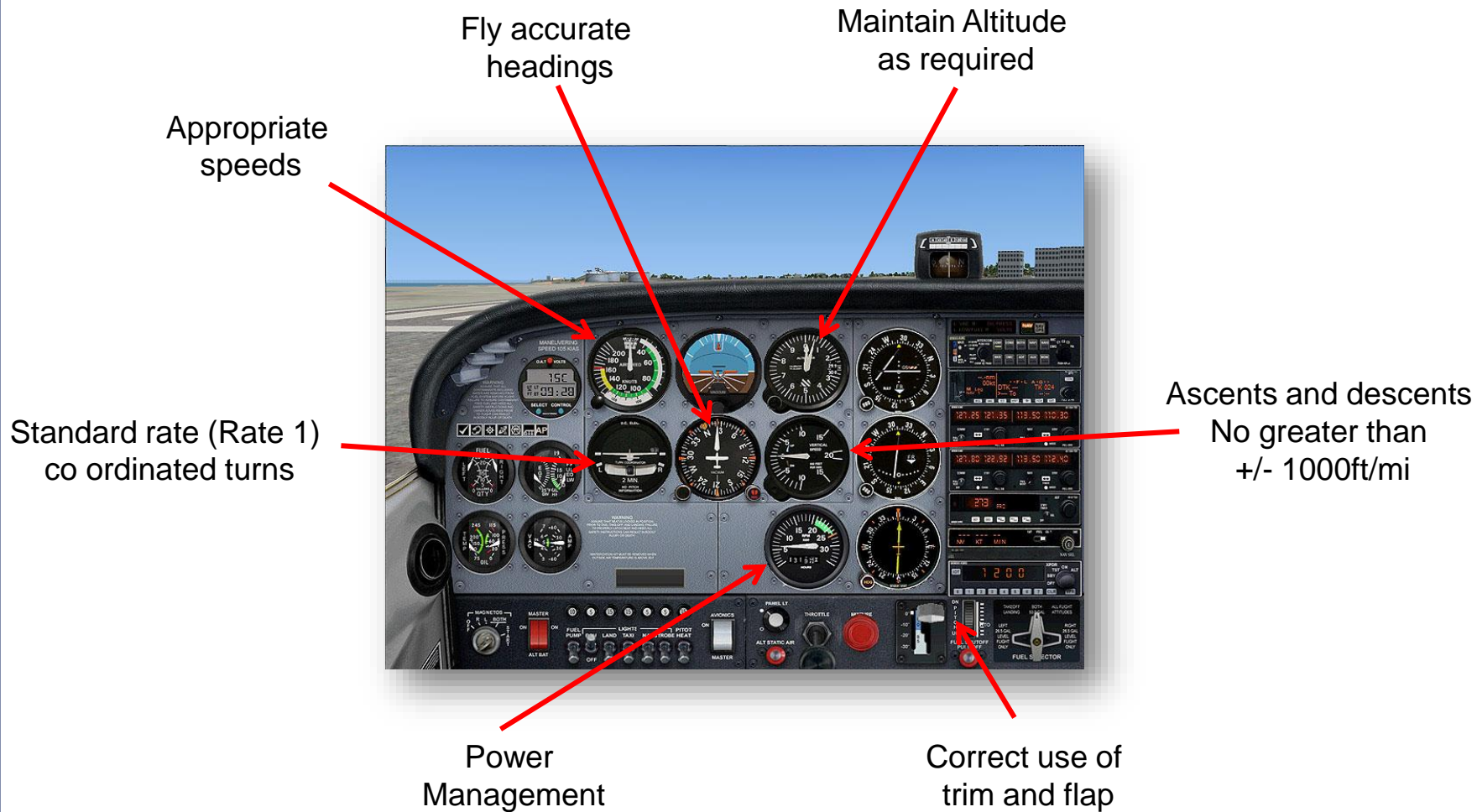
- The aeroplane used for the test will be the default FSX Cessna 172SP.
- There will be no start up shut down or taxi requirements.
- The aeroplane will be configured as follows:
 - Fuel quantity: 30 Gallons (15 left 15 right)
 - Payload: 340lbs
- Simulator realism settings will be set to “hard”.
- Auto rudder will be disabled.
- Crash detection tolerance will be set to fully realistic.



Pilot and Co pilot Team

- Each Squadron can submit one team, consisting of:
 - P1 Pilot in Command: responsible for flying the aeroplane
 - P2 Co-Pilot: responsible for Communication with Tower and check lists. P2s may use their own check lists or aide memoirs, or a check list provided.
- The team is encouraged to work together with the P2 providing support and guidance as well as their own primary duties.
- The scores achieved by the P1 and P2 will be summed to provide the overall score for the Squadron.

Pilot: Test expectations *(see also scoring and test criteria slide)*



Co-Pilot: Test expectations *(see also scoring and test criteria slide)*

- “Challenge and check” pre- take off and landing as a minimum.
- Provide Tower communications using accepted conventions with read-back for:
 - Take-off
 - Report downwind
 - Landing
- Act as timekeeper especially on timed base leg
- Provide “extra eyes” and encouragement for the handling pilot

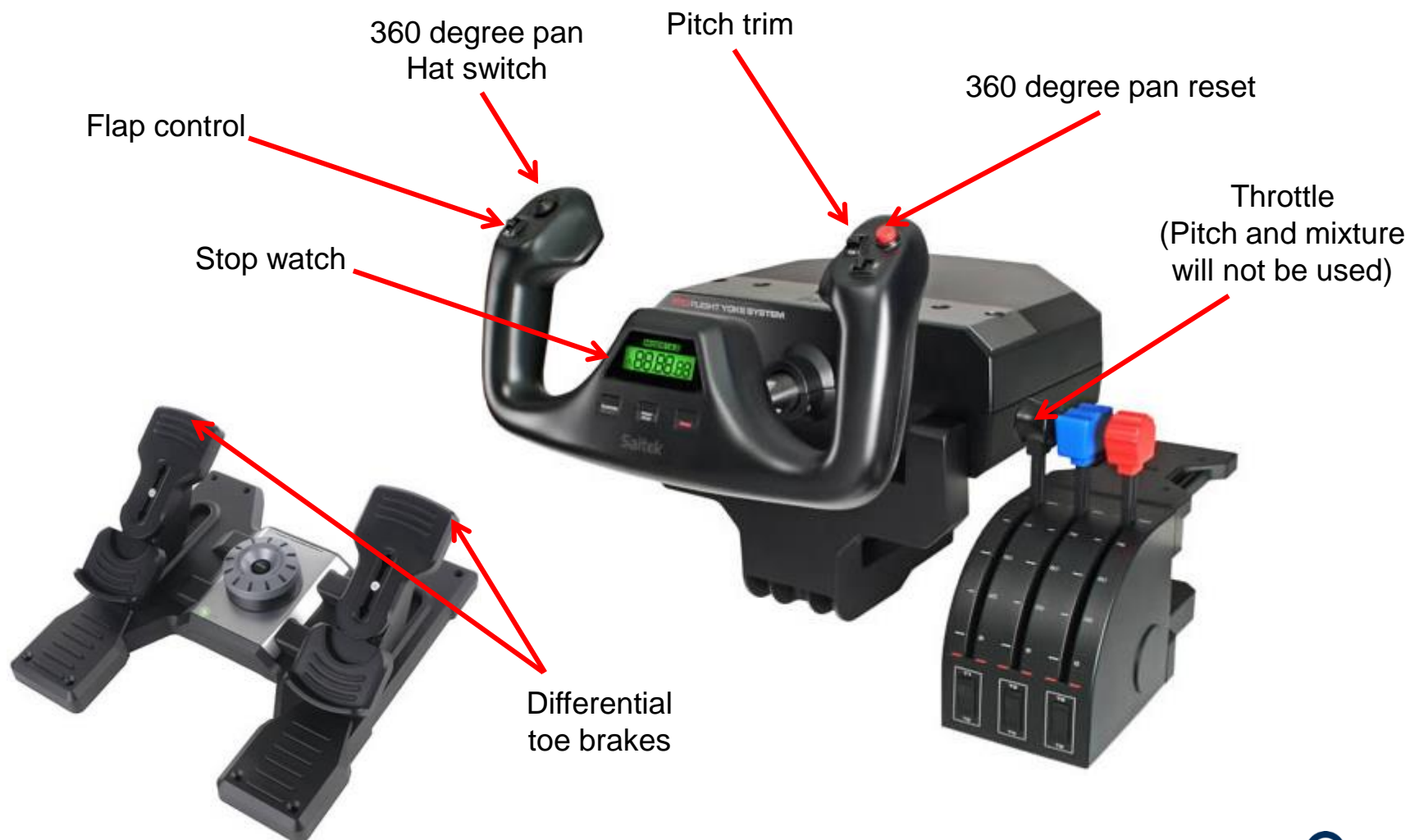


**See separate Scoring, Check lists
and Comm's hand-out**

Simulator controls

- Pilot control will be via Saitec Yoke and rudder pedals.
- In addition to pitch and roll inputs, the yoke will provide switch inputs for:
 - Pitch trim
 - Flap increment and decrement
 - 360 degree View panning with single click straight ahead reset
- Rudder pedals will provide yaw inputs as well as differential toe brakes
- A throttle quadrant will provide control of engine RPM. The mixture and propeller pitch controls will not be used.

Pilot controls



Preparation and training

- Teams wishing to enter this competition are strongly urged to practice flying circuits using conditions as described in this document.
- Study the scoring and test criteria. Note that the scoring is loaded and significant gains can be made in the final stages.
- There is no substitute for practice; practice often and use the in built FSX analytics to review your progress towards the perfect circuit.



Summary

- This is a test of both pilotage and teamwork; it will be a difficult challenge but well within the capabilities of a practised team.
- Ultimately, a team of six cadets will be selected to represent West Mercia Wing in the Regional competition.... This is your chance to impress the Wing Aerospace Team!
- Good luck!!