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ATO – SIMULATION DEVICE EVALUATION CHECKLIST

Name of ATO:		ATO Number:	
Simulation Device Type:		Telephone number:	
Simulation Device Level:		Device registration:	
Inspector name:		Date of Inspection:	

NAMCATS 61 requirements (NAMCAT 61.01.9, Appendix C)

C – Compliant, A – Acceptable, NC – Not Compliant, U – Unacceptable, N/a – Not applicable

No	Item	N/a	C/A	NC/U	Finding no:
General					
1.	Master Quality Test Guide Submitted with application for approval				
2.	Master Quality test Guide Contains:				
	•Statement of compliance for each technical requirement listed in CATS				
	•Documented results of validation flight test/s as per "Flight Training Device Validation Tests				
	•Test results can be compared to aircraft data from the POH and/or AFM				
	Level of FSTD applied for is correct in terms of CATS:				
	•FNTF I - A static training device which represents the flight deck environment of a class of aeroplanes/helicopters.				
	•FNTF II or FNTF II MCC - A static training device which represents the flight deck environment of a multi-engine aeroplane or a single/multi-engine helicopter type or class to the extent that the systems appear to function as in an aeroplane/helicopter. It incorporates a visual system providing an out of the cockpit view.				
	•FTD - A full size replica of a specific type or make, model and series of aeroplane/helicopter flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aeroplane/helicopter in ground and flight operations to the extent of the systems installed in the device and a visual system providing an out of the flight deck view. It does not require a force cueing motion system.				
	•Flight Simulator - A full size replica of a specific type or make, model and series of aeroplane flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aeroplane in ground and flight operations, a visual system providing an out of the flight deck view and a force cueing motion system. (Use O-OPS 040 checklist from here onwards)				

Comments on Findings

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No	Item	N/a	C/A	NC/U	Finding no:
FNTF I					
4.	Device meets the following requirements:				
	•A training device without motion system that in its flight deck/cockpit layout generically replicates a class of aircraft (e.g. all single engine land aircraft up to 2000 kg).				
	•A cockpit/flight deck sufficiently enclosed to exclude distraction, which will replicate that of the aeroplane or class of aeroplane simulated and in which the switches and all the controls will operate as, and represent those in, that aeroplane or class of aeroplanes. The use of a computer mouse to actuate simulated aircraft controls and or interfaces in the cockpit is not allowed.				
	•Instruments, equipment, panels, systems, primary and secondary flight controls sufficient for the training events to be accomplished shall be located in a spatially correct flight deck area.				
	•Lighting environment for panels and instruments sufficient for the operation being conducted.				
	•In addition to the flight crew members' stations, suitable viewing arrangements for the instructor shall be provided. These shall provide an adequate view of the crew members, panels and station.				
	•Effects of aerodynamic changes for various combinations of drag and thrust normally encountered in flight, including the effect of change in aeroplane attitude, sideslip, altitude, temperature, gross mass, centre of gravity location and configuration.				

	•Full 6 degree of freedom simulation model is employed, recreating aerodynamic effects attributable to combinations of in-flight drag and thrust, to include effects due to changes in aircraft attitude, altitude, environmental temperature, wind, turbulence, weight, loading and aircraft configuration. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.				
	•Full complement and functionality of navigation equipment with operational tolerances equivalent to reality, including the simulation of air-to-ground communication procedures.				
	•Control forces and control travel shall broadly correspond to that of the replicated aeroplane or class of aeroplane.				
	•Complete navigational data for at least 5 different Namibian airports with corresponding precision and non-precision approach procedures including current updating within a period of 3 months. All navigational aids should be useable, if within range, without restriction and without instructor intervention.				
	•Engine sounds shall be available.				
	•The following shall be available ◦variable effects of wind and turbulence ◦hard copy of map and approach plot ◦provision for position freeze and flight freeze ◦instructor controls necessary to perform the training task				
	•Stall recognition device corresponding to that of the replicated aeroplane or class of aeroplane.				
Comments on Findings					
No	Item	N/a	C/A	NC/U	Finding no:
FNTP II					
5.	Device meets the following requirements:				
	•A training device without motion system that in its flight deck/cockpit layout replicates the cockpit of a multi-engined class or type of aircraft with the aircraft systems realistically represented. It includes a visual system providing an "out of the cockpit" view.				
	•A cockpit/flight deck sufficiently enclosed to exclude distraction, which will replicate that of the aeroplane or class of aeroplane simulated and in which the switches and all the controls will operate as, and represent those in, that aeroplane or class of aeroplanes. The use of a computer mouse to actuate simulated aircraft controls and or interfaces in the cockpit is not allowed.				
	•Instruments, equipment, panels, systems, primary and secondary flight controls sufficient for the training events to be accomplished shall be located in a spatially correct flight deck area.				
	•Crew member's seats shall be provided with sufficient adjustment to allow the occupant to achieve the design eye reference position appropriate to the aeroplane or class of aeroplane and for the visual system to be installed to align with that eye position.				
	•Lighting environment for panels and instruments sufficient for the operation being conducted.				
	•Circuit breakers shall function accurately when involved in procedures or malfunctions requiring or involving flight crew response.				
	•In addition to the flight crew members' stations, the instructor's station shall be enclosed with suitable viewing arrangements for the instructor. These shall provide an adequate view of the crew members, panels and station.				
	•Effects of aerodynamic changes for various combinations of drag and thrust normally encountered in flight, including the effect of change in aeroplane attitude, sideslip, altitude, temperature, gross mass, centre of gravity location and configuration.				
	•Full 6 degree of freedom simulation model is employed, recreating aerodynamic effects attributable to combinations of in-flight drag and thrust, to include effects due to changes in aircraft attitude, altitude, environmental temperature, wind, turbulence, weight, loading and aircraft configuration. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.				
	•Systems shall be operative to the extent that it shall be possible to perform all normal, abnormal and emergency operations as may be appropriate to the aeroplane or class of aeroplane being simulated and as required for the training. Once activated, proper systems operation must result from system management by the crew member and not require any further input from the instructor's controls.				
	•Full complement and functionality of navigation equipment with operational tolerances equivalent to reality, including the simulation of air-to-ground communication procedures.				
	•Control forces and control travel shall broadly correspond to that of the replicated aeroplane or class of aeroplane.				
	•Control forces and control travels which respond in the same manner under the same flight conditions as in the aeroplane or class of aeroplane being simulated. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.				
	•Complete navigational data for at least 5 different Namibian airports with corresponding precision and non-precision approach procedures including current updating within a period				

	of 3 months. All navigational aids should be useable, if within range, without restriction and without instructor intervention.				
	•Engine sounds shall be available.				
	•Significant cockpit/flight deck sounds, responding to pilot actions, corresponding to the aeroplane or class of aeroplane being simulated.				
	•A visual system (night/dusk or day) capable of providing a field-of-view of a minimum of 45 degrees horizontally and 30 degrees vertically, unless restricted by the type of aeroplane, simultaneously for each pilot, including adjustable cloud base and visibility. The visual system need not be collimated. The responses of the visual system and the flight deck instruments to control inputs shall be closely coupled to provide the integration of the necessary cues.				
	•A generic ground handling model shall be provided to enable representative flare and touchdown effects to be produced by the sound and visual systems.				
	•The following shall be available				
	◦variable effects of wind and turbulence				
	◦hard copy of map and approach plot				
	◦provision for position freeze and flight freeze				
	◦instructor controls necessary to perform the training task				
	•Stall recognition device corresponding to that of the replicated aeroplane or class of aeroplane.				
	•The instructor's station shall include the following controls:				
	◦representative crosswinds				
	◦a facility to enable the dynamic plotting of the flight path on approaches, commencing at the final approach fix, including the vertical profile.				
	•Aerodynamic modelling shall reflect for aeroplanes:				
	◦effects of airframe icing				
	◦the rolling moment due to yawing				
	•Aerodynamic modelling shall reflect for helicopters:				
	◦effects of airframe icing				
	◦Vortex ring simulation				
	◦Hover ceiling limitations				
	◦Dead man's curve simulation				
	◦Retreating Blade Stall				
MCC requirement					
6.	Device meets the following requirements in addition to those for FNPT II:				
	•Turbo-jet or turbo-prop engines				
	•Performance and handling -				
	◦to be representative of the aircraft type or class being simulated.				
	◦Performance reserves in the case of an engine failure may be simulated by a reduction in the aeroplane gross mass.				
	◦Conformance is to be proven according to the requirements contained in the table "Flight Training Device Validation Tests".				
	•Retractable landing gear (for aeroplanes)				
	•Pressurization system (for aeroplanes)				
	•De-icing systems (for aeroplanes)				
	•Fire detection/suppression system				
	•Dual Controls				
	•Autopilot with automatic approach mode (for aeroplanes)				
	•1 VHF Transceivers including oxygen masks intercom system				
	•2 VHF NAV receivers (ILS, DME)				
	•1 ADF receiver				
	•1 Marker receiver				
	•1 Transponder				
	•The following instrument indications shall be located in the same positions on the instrument panels of both pilots:				
	◦Airspeed				
	◦Flight Attitude with Flight Director				
	◦Altimeter				
	◦Flight Director (for aircraft) with ILS (HSI)				

