

PROPOSAL FOR THE AMENDMENT OF DOCUMENT SA-CATS 68 ISSUED UNDER THE CIVIL AVIATION REGULATIONS, 2011

PROPOSER

SACAA

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CENTURION

PROPOSER'S INTEREST

The proposer has been established in terms of the Civil Aviation Act, 2009 (Act No. 13 of 2009), to control and regulate civil aviation in South Africa and to oversee the functioning and development of the civil aviation industry, and, in particular, to control, regulate and promote civil aviation safety and security.

GENERAL EXPLANATORY NOTE

Words in **[bold and solid square bracket]** indicate deletions from the existing regulations.

Words underlined with a solid line indicate insertions in the existing regulations.

1. PROPOSAL FOR AMENDMENT OF DOCUMENT SA-CATS 68

1.1 It is hereby proposed to amend Document SA-CATS 68 by by the insertion of the following definitions:–

‘Aerotow’: A glider that is towed into the air behind a light aircraft.

‘Self launching glider’: A glider equipped with an engine, allowing it to be launched under its own power. When the engine is shut down, a self-launching glider displays the same characteristics as a non-powered glider.

‘Touring motor glider’: A glider that is equipped with a fixed, nose-mounted engine and a full feathering propeller.

- (a) the substitution in Technical Standard 68.02.2 for section 3 of the following section:

“3.Subjects to be covered in theoretical training phase

The theoretical training phase must cover the following subjects:

- (a) *Aircraft technical general* on the type of training aircraft being used.
- (b) *Basic Air Law* as appropriate to student pilots.
- (c) **[Local Rules appropriate to the airfield in use as well as the surrounding areas.]**
Flight planning & Performance.
- (d) Human Performance and Limitations.
- (e) Meteorology.
- (f) Navigation.
- (g) Principles of flight.
- (h) Operational procedures.”;

- (b) the substitution for Technical Standard 68.02.3 of the following Technical Standard:

[THEORETICAL KNOWLEDGE EXAMINATION

1.Theoretical knowledge examination

The theoretical knowledge examination is to be based on the subjects prescribed in TS 68.02.2.

2.Invigilating

The written theoretical knowledge examinations must be invigilated by –

- (a)in the case of a conventional glider, the holder of an assistant glider pilot instructor rating or glider pilot instructor rating;
- (b) in the case of a touring motor glider, the holder of a Grade C, Grade B or Grade A national flight instructor with the appropriate rating or assistant glider pilot instructor rating or glider pilot instructor rating.]

THEORETICAL KNOWLEDGE SYLLABUS AND EXAMINATION

Ref. No.	SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE GLIDER PILOT	GLD
1.0	AIR LAW	
1.1	Civil Aviation Regulations (CAR) and Technical Standards (CATS)	
1.1.1	PART 1: DEFINITIONS AND ABBREVIATIONS	
	Definitions	X
	Abbreviations	X
1.1.2	PART 12: AVIATION ACCIDENTS AND INCIDENTS	
	12.02.1 – Notification of accidents	X
	12.02.2 – Notification of incidents	X
	12.02.4 – Particulars of notification	X
	12.04.1 – Guarding of aircraft involved in accident	X
	12.04.4 – Interference with objects and marks at scene of accident	X
1.1.3	PART 68: FLIGHT CREW LICENSING	
	Subpart 1: General	
	68.01.1 - Applicability	X
	68.01.2 - Authority to act as pilot	X
	68.01.3 - Ratings for glider pilots	X
	68.01.4 - Competency	X
	68.01.5 - Medical fitness	X
	68.01.6 - Language	X
	68.01.7 - Logging of flight time	X
	68.03.9 - Period of validity	X
	68.03.10 - Privileges and limitations	X
	68.03.11 - Maintenance of competency	X
1.1.4	PART 67: MEDICAL CERTIFICATION	X
	67.00.2 Classes of medical certificates	X
	67.00.6 Period of validity of medical certificates	X
	67.00.9 – Duties of holder of medical certificate	X
1.1.5	PART 91 – GENERAL OPERATING AND FLIGHT RULES	
	Subpart 1: General Provisions	
	91.01.2 – Authority of pilot-in-command	X
	91.01.10 – Endangering safety	X
	91.01.11 – Preservation of documents	X
	Subpart 2: Flight Crew	
	91.02.2 – Flight crew member emergency duties	X
	91.02.3 – Flight crew member responsibilities	X
	91.02.4 – Recency	X
	91.02.6 – Laws, regulations, and procedures	X
	91.02.7 – Duties of pilot-in-command regarding flight preparation	X

	<u>91.02.8 – Duties of pilot-in-command regarding flight operations</u>	X
Ref. No.	<u>Subpart 3: Documentation and Records</u>	<u>GLD</u>
	<u>91.03.1 – Documents to be carried on board</u>	X
	<u>91.03.2 – Aircraft flight manual</u>	X
	<u>91.03.4 – Air traffic service flight plan</u>	x
	<u>91.03.5 – Flight folio</u>	X
	<u>91.03.6 – Fuel and oil record</u>	x
	<u>91.03.7 – Certificate of release to service</u>	X
	<u>Subpart 4: Instruments and Equipment</u>	
	<u>91.04.1 – Use of instruments and equipment by pilot</u>	x
	<u>91.04.2 – Circuit protection devices</u>	x
	<u>91.04.3 – Aircraft operating lights</u>	x
	<u>91.04.4 – Flight, navigation and associated equipment for aircraft operated under VFR</u>	
	<u>91.04.11- Seat Safety Belts</u>	X
	<u>91.04.14 – Seats, seat safety belts, harnesses and child restraint devices</u>	x
	<u>91.04.15 –Stowage of articles, baggage, and cargo</u>	X
	<u>91.04.16 –Standard first aid kit</u>	X
	<u>91.04.19 – Supplemental oxygen in the case of non-pressurised aircraft</u>	X
	<u>91.04.18 – Hand-held fire extinguishers</u>	x
	<u>SUBPART 5 COMMUNICATION AND NAVIGATION</u>	
	<u>91.05.1- Communication equipment</u>	X
	<u>91.05.3- Use of global navigation satellite system</u>	X
	<u>Subpart 6: Rules of the Air – Flight Rules</u>	
	<u>91.06.1 – Landing on roads</u>	x
		X
	<u>91.06.5 – Operation of vehicle towed</u>	X
	<u>91.06.6 – Proximity and formation flights</u>	X
	<u>91.06.7 – Right of way</u>	X
	<u>91.06.8 – Following line features</u>	x
	<u>91.06.9 – Aircraft speed</u>	X
	<u>91.06.10 – Lights to be displayed by aircraft</u>	x
	<u>91.06.11 – Taxi rules</u>	x
	<u>91.06.12 – Operation on and in the vicinity of aerodrome</u>	X
	<u>91.06.13 – Signals (Gliding launch and air/ground)</u>	X
	<u>91.06.15 – Reporting position</u>	x
	<u>91.06.16 – Mandatory radio in controlled airspace</u>	X
	<u>91.06.17 – Mandatory radio in advisory airspace</u>	X
	<u>91.06.18 – Compliance with air traffic control clearance and instructions</u>	X
	<u>91.06.19 – Prohibited areas</u>	X

	<u>91.06.20 – Restricted areas</u>	X
	<u>91.06.21 – Visibility and distance from cloud</u>	X
	<u>91.06.22 – Special VFR weather minima</u>	x
	<u>91.06.23 – Responsibility to ascertain whether VFR flight is permitted</u>	x
	<u>91.06.29 – Identification and interception of aircraft</u>	x
	<u>91.06.30 – Air traffic service procedures</u>	x
	<u>91.06.31 – Priority</u>	x
	<u>91.06.32 – Minimum heights</u>	x
	<u>91.06.33 – Semi-circular rule</u>	x
Ref. No.	Subpart 7: flight operations	GLD
	<u>91.07.1 – Routes and areas of operation</u>	x
	<u>91.07.2 – Minimum flight altitudes</u>	x
	<u>91.07.3 – Use of aerodromes</u>	x
	<u>91.07.9 – Meteorological conditions</u>	x
	<u>91.07.10 – VFR operating minima</u>	x
	<u>91.07.11 – Mass and balance</u>	X
	<u>91.07.12 – Fuel and oil supply</u>	x
	<u>91.07.13 – Refuelling or de-fuelling with passengers on board</u>	x
	<u>91.07.14 – Smoking in aircraft</u>	x
	<u>91.07.17 – Submission of air traffic service flight plan</u>	x
	<u>91.07.18 – Seats, safety belts and harnesses</u>	X
	<u>91.07.19 – Passenger seating</u>	X
	<u>91.07.20 – Passenger briefing</u>	X
	<u>91.07.23 – Use of supplemental oxygen</u>	X
	<u>91.07.28 – Starting of engines</u>	x
	<u>91.07.29 – Acrobatic flights</u>	x
	Part 94 Operation of Non-Type Certified Aircraft	
	<u>94.01.2- Authority to Fly</u>	X
	<u>Subpart 3 – Documentation and records</u>	X
	<u>Subpart 4 – Communication Equipment</u>	X

Ref. No.	TECHNICAL	GLD
2.0	AIRCRAFT GENERAL KNOWLEDGE	
2.1	Airframe and Engines	
	<u>Airframe structure (aeroplane)</u>	X
	<u>–components</u>	X
	<u>–fuselage, wings, tailplane, fin</u>	X
	<u>–primary flying controls</u>	X

	<u>-trim</u>	X
	<u>-flap systems</u>	X
	<u>-landing gear</u>	X
	<u>-Engines</u>	x
2.2	Instruments	
	<u>Pitot/static system</u>	X
	<u>-pitot tube, function</u>	X
	<u>-pitot tube, principles and construction</u>	X
	<u>-static source</u>	X
	<u>-alternate static source</u>	X
	<u>-system drains</u>	X
	<u>-errors caused by blockage or leakage</u>	X
	<u>-effect of pressure/density altitude</u>	X
	<u>-performance as a function of pressure and temperature</u>	X
	<u>-Slip indicator and similarity to the string</u>	X
2.3	Airspeed indicator	
	<u>-principles of operation and construction</u>	X
	<u>-relationship between pitot and static pressure</u>	X
	<u>-definitions of indicated, calibrated and true airspeed</u>	X
	<u>-instrument errors</u>	X
	<u>-airspeed indications, colour coding</u>	X
	<u>-pilot's serviceability checks</u>	X
2.4	Altimeter	GLD
	<u>-principles of operation and construction</u>	X
	<u>-function of the subscale</u>	X
	<u>-effects of atmospheric density</u>	X
	<u>-pressure altitude</u>	X
	<u>-true altitude</u>	X
	<u>-international standard atmosphere</u>	X
2.5	Variometer	X
	<u>-principles of operation and construction</u>	X
	<u>-function</u>	X
	<u>-inherent lag</u>	X
	<u>-Mechanical variometer (types)</u>	X
	<u>-instantaneous VSI</u>	x
	<u>-presentation</u>	X
	<u>-pilot's serviceability checks</u>	X
2.6	Magnetic compass	GLD
	<u>-construction and function</u>	X
	<u>-earth's magnetic field</u>	X
	<u>-variation and deviation</u>	X

	<u>-turning, acceleration errors</u>	X
	<u>-precautions when carrying magnetic items</u>	X
	<u>-pilot's serviceability checks</u>	X
2.8	Airworthiness and Emergency Procedures	
	Airworthiness	
	<u>-certificate to be in force</u>	X
	<u>-compliance with requirements</u>	X
	<u>-periodic maintenance inspections</u>	X
	<u>-compliance with flight manual (or equivalent), instructions</u>	X
	Limitations, placards	
	<u>-flight manual supplements</u>	X
	<u>-provision and maintenance of documents</u>	X
	<u>-glider logbooks</u>	X
	<u>-recording of defects</u>	X
	<u>-permitted maintenance by pilots</u>	X
	Emergency Procedures	
	<u>-emergency equipment and its use</u>	X

	<u>-fire extinguisher</u>	X
	<u>-engine/cabin fires</u>	X
	<u>-flammable goods/pressurised containers</u>	X

<u>Ref. No.</u>		<u>GLD</u>
3.0	FLIGHT PERFORMANCE AND PLANNING	
3.1	Mass and balance	
	Terminology:	X
	<u>-Arm, moment, reference datum, flight station, centre of gravity</u>	X
	<u>-Forward and aft limitations of centre of gravity, normal and utility operation</u>	X
	<u>-Maximum ramp and taxi mass</u>	X
	<u>-Maximum take-off mass</u>	X
	<u>-Limitations on maximum mass</u>	X
	<u>-Forward and aft limitations of centre of gravity, normal and utility operation</u>	X
	<u>-Mass and centre of gravity calculations</u>	X
3.2	Abbreviations, definitions and symbols	
	<u>-IAS, RAS, TAS</u>	X
	<u>-Vx, Vy, Vfe, Vfo, Vle, Vlo, Va, Vne, Vno, Vs, Vso (as applicable)</u>	X
	<u>-OAT, IOAT</u>	
	<u>-ISA temperature/deviation from ISA</u>	X
	<u>-pressure altitude, density altitude</u>	X
	<u>-QNH, QFE, QNE</u>	X

	<u>–glide range</u>	<u>X</u>
	<u>–landing performance, effect of flaps, mass, wind, density altitude, approach speed, ground surface and gradient</u>	<u>X</u>
	<u>–stall speeds</u>	<u>X</u>

<u>Ref. No.</u>		<u>GLD</u>
4.0	<u>HUMAN PERFORMANCE AND LIMITATIONS</u>	
4.1	<u>The atmosphere</u>	
	<u>–composition of the atmosphere</u>	<u>X</u>
	<u>–the gas laws</u>	<u>X</u>
	<u>–oxygen requirement of tissues</u>	<u>X</u>
4.2	<u>The heart</u>	
	<u>–basic physiology</u>	<u>X</u>
	<u>–blood pressure, pulse rate</u>	<u>X</u>
	<u>–composition of blood and circulation</u>	<u>X</u>
	<u>–ailments, recognition and treatment</u>	<u>X</u>
4.3	<u>The lungs</u>	
	<u>–physiology</u>	<u>X</u>
	<u>–respiration</u>	<u>X</u>
	<u>–ailments and treatment</u>	<u>X</u>
	<u>–effects of partial pressure</u>	<u>X</u>
	<u>–effect of increasing altitude</u>	<u>X</u>
	<u>–gas transfer</u>	<u>X</u>
	<u>–hypoxia, symptoms, prevention</u>	<u>X</u>
	<u>–time of useful consciousness</u>	<u>X</u>
	<u>–the use of oxygen masks and rapid descent</u>	<u>X</u>
	<u>–hyperventilation, symptoms, avoidance</u>	<u>X</u>
	<u>–effects of accelerations</u>	<u>X</u>
4.4	<u>Vision</u>	
	<u>–physiology of vision</u>	<u>X</u>
	<u>–limitations of the visual system</u>	<u>X</u>
	<u>–vision defects</u>	<u>X</u>
	<u>–optical illusions</u>	<u>X</u>
	<u>–night vision</u>	<u>X</u>
	<u>–spatial disorientation</u>	<u>X</u>
	<u>–avoidance of disorientation</u>	<u>X</u>
	<u>–ailments and treatment</u>	<u>X</u>
4.5	<u>Hearing</u>	
	<u>–basic physiology</u>	<u>X</u>
	<u>–vestibular system</u>	<u>X</u>
	<u>–inner ear sensations</u>	<u>X</u>

	<u>-effects of altitude/pressure change</u>	X
	<u>-noise and hearing loss</u>	X
	<u>-protection of hearing</u>	X
	<u>-spatial disorientation</u>	X
	<u>-conflicts between ears and eyes</u>	X
	<u>-prevention of disorientation</u>	X
	<u>-motion sickness, causes, symptoms, prevention</u>	X

4.6	<u>Flying and health</u>	<u>GLD</u>
	<u>-medical requirements</u>	X
	<u>-effect of common ailments and cures</u>	X
	<u>-colds and flu</u>	X
	<u>-stomach upsets</u>	X
	<u>-hypotension, hypertension, coronary disease</u>	X
	<u>-obesity</u>	X
	<u>-nutrition hygiene</u>	X
	<u>-drugs, medicines, and side effects</u>	X
	<u>-alcohol</u>	X
	<u>-tobacco</u>	X
	<u>-self medication</u>	X
	<u>-personal fitness</u>	X
	<u>-scuba diving – precautions before flying</u>	X
	<u>-decompression sickness</u>	X
	<u>-acceleration/deceleration and vibration</u>	X
	<u>-effects of pressure change</u>	X
	<u>-incapacitation</u>	X
	<u>-faints</u>	X
	<u>-toxic hazards</u>	X
	<u>Threat and Error Management</u>	
	Single Pilot CRM and threat and error management	X

<u>Ref. No.</u>		<u>GLD</u>
5.0	<u>METEOROLOGY</u>	
5.1	<u>The atmosphere</u>	
	<u>-composition and structure</u>	X
	<u>-vertical divisions</u>	X
	<u>-International standard atmosphere (ISA)</u>	X
5.2	<u>Pressure, density and temperature</u>	
	<u>-barometric pressure, isobars</u>	X
	<u>-changes of pressure and density with altitude</u>	X

	-insolation and terrestrial energy radiation	X
	-diurnal variation of temperature	X
	-adiabatic process	X
	-temperature lapse rate	X
	-stability and instability	X
	-effects of advection and convection	X
5.3	Humidity and precipitation	
	-water vapour in the atmosphere	X
	-dew point, relative humidity	X
	-condensation and vaporization	X
	-precipitation	X
5.4	Pressure and wind	
	-high- and low-pressure areas	X
	-troughs, ridges, cols	X
	-pressure gradient, Coriolis force	X
	-geostrophic and surface winds	X
	-vertical and horizontal motion, convergence, divergence	X
	-effect of wind gradient and windshear on take-off and landing	X
	-relationship between isobars and wind, Buys Ballot's law	X
	-turbulence and gustiness	X
	-local winds	X
	-föhn wind	X
	-land and sea breezes	X
	-anabatic and katabatic winds	X
5.5	Cloud formation	
	-cooling by advection, radiation and adiabatic expansion	X
	-cloud types (high, medium, low and vertical development)	X
	-formation of cloud types	X
	-flying conditions associated with each cloud type	X
5.6	Fog, mist and haze	GLD
	-visibility	X
	-radiation fog	X
	-advection fog	X
	-frontal fog	X
	-freezing fog	X
	-steam fog	X
	-valley fog	X
	-formation and dispersal	X
	-assessment of probability of reduced visibility	X
	-hazards in flight due to low visibility, horizontal, vertical and slant angle	X
5.7	Air masses	
	-characteristics and factors affecting the properties of air masses	X

	<u>-classification of air masses, region of origin</u>	X
	<u>-modification of air masses during their movement</u>	X
	<u>-development of low and high-pressure systems</u>	X
	<u>-weather associated with pressure systems</u>	X
5.8	Frontology	
	<u>-cold fronts</u>	X
	<u>formation</u>	X
	<u>associated clouds and weather</u>	X
	<u>flying conditions</u>	X
	<u>changes with the passage of the front</u>	X
	<u>-warm fronts</u>	X
	<u>formation</u>	X
	<u>associated clouds and weather</u>	X
	<u>weather in the warm sector</u>	X
	<u>flying conditions</u>	X
	<u>changes with the passage of the front</u>	X
	<u>-occlusions</u>	X
	<u>formation</u>	X
	<u>associated clouds and weather</u>	X
	<u>-stationary fronts</u>	X
5.9	Thunderstorms	
	<u>-conditions required</u>	X
	<u>-formation, trigger action</u>	X
	<u>-air mass, frontal, orographic</u>	X
	<u>-development process</u>	X
	<u>-hazards for aircraft</u>	X
	<u>-effects of lightning and severe turbulence</u>	X
	<u>-avoidance of flight in the vicinity of thunderstorms</u>	X
5.10	Flight over mountainous areas	GLD
	<u>-hazards</u>	X
	<u>-influence of terrain on atmospheric processes</u>	X
	<u>-mountain waves, windshear, turbulence, vertical movement, rotor effects</u>	X
	<u>-valley winds</u>	X
5.11	Climatology	
	<u>-Basic Climatology</u>	X
	<u>-general seasonal circulation in the troposphere over Southern Africa</u>	x
	<u>-local seasonal weather and winds</u>	x
	<u>-development of a coastal low (orographic depression)</u>	x
	<u>-South Westerly Buster</u>	x
	<u>-Cape Doctor</u>	x
	<u>-Black South Easter</u>	x
	<u>-Berg winds</u>	x

5.12	Altimetry	
	-operational aspects of pressure settings	X
	-pressure altitude, density altitude	X
	-height, altitude, flight level	X
	-QNH, QFE, standard setting	X
5.13	Weather analysis and forecasting	
	-synoptic weather charts, symbols, signs	X
	-significant (prognostic) weather charts	x
	-upper wind and temperature charts	x
	-Tephigram use and interpretation	X
	-gliding weather forecasting information and software	X
5.14	Weather information for flight planning	
	-interpretation of coded information METAR, TAF, SPECI, SIGMET	x
	-Meteorological broadcasts for aviation	x
	-ATIS	x
	-interpretation of coded information Tephigrams, using commercial/non-commercial software	X
	Practical Soaring Techniques	
	THERMALLING	
	-Locating Thermals	X
	-Entering Thermals	X
	-Bank Angle, Centering and exiting thermals	X
	-Collision avoidance	X
	RIDGE/SLOPE SOARING	
	-traps	X
	-Bowls and Spurs	X
	-obstructions	X
	-Safe Flying Procedures	X
	WAVE SOARING	
	-Getting into the wave	X
	-Flying the Wave	X
	SOARING CONVERGENCE LINES	X
Ref. No.		GLD
6.0	NAVIGATION	
6.1	Form of the earth	
	-true north, axis, poles, direction and rate of rotation	X
	-cardinal and quadrantal points	X
	-meridians of longitude	X
	-prime (Greenwich) meridian	X
	-parallels of latitude	X
	-equator	X

	<u>-great circles, small circles, rhumb lines</u>	X
	<u>-convergency between meridians</u>	X
	<u>-hemispheres, north/south, east/west</u>	X
	<u>-distances</u>	X
	<u>-units in use</u>	X
	<u>-derivation of nautical mile and kilometre</u>	X
6.2	Time	
	<u>-Arc to time, relationship between universal co-ordinated (UTC) time, local mean time (LMT) and Standard time factor (STF)</u>	X
	<u>-definitions of sunrise and sunset times</u>	X
	<u>-official day and official night</u>	X
6.3	Mapping – general	
	<u>-aeronautical maps and charts (topographical)</u>	X
	<u>-Lambert’s conic conformal, (ICAO 1: 500,000 chart)</u>	X
	<u>orthomorphism</u>	X
	<u>-construction</u>	X
	<u>-convergence of meridians</u>	X
	<u>=</u>	
	<u>-measurement of tracks</u>	X
	<u>-indication of magnetic variation</u>	X
	<u>-scale, standard parallels</u>	X
	<u>-measurement of distance in relation to map projection</u>	X
	<u>-conversion of units</u>	X
	<u>-map analysis</u>	X
	<u>depiction of height</u>	X
	<u>topography</u>	X
	<u>relief</u>	X
	<u>cultural features</u>	X
	<u>permanent features (e.g. line features, spot features, unique or</u>	X
	<u>special features)</u>	X
	<u>features subject to change (e.g. water)</u>	X
	<u>aeronautical symbols</u>	X
	<u>aeronautical information</u>	X
6.4	Direction	
	<u>-true north</u>	X
	<u>-earth’s magnetic field, variation – annual change</u>	X
	<u>-magnetic north</u>	X
	<u>-isogonals, agonic lines</u>	X
6.5	Practical Navigation	GLD
	<u>-measurement of tracks and distances</u>	X
	<u>-dead reckoning, position, fix</u>	X

	<u>-procedure when uncertain of position</u>	X
	<u>-plotting positions</u>	X
	<u>-latitude and longitude</u>	X
	<u>-bearing and distance</u>	X
	<u>-use of navigation protractor</u>	X
	<u>-calculating headings (T), (M), (C)</u>	X
	=	
	<u>-Final Glide</u>	X
	<u>-rate of descent and rate of climb</u>	X
	<u>-compass headings, use of deviation card</u>	X
6.6	<u>GPS</u>	
	<u>-application</u>	X
	<u>-principles</u>	X
	<u>-presentation and interpretation</u>	X
	<u>-coverage</u>	X
	<u>-errors and accuracy</u>	X
	<u>-factors affecting reliability and accuracy</u>	X
6.7	<u>CROSS-COUNTRY FLYING</u>	
	<u>Preparation and planning</u>	X
	<u>Personal and Special Equipment</u>	X
	<u>Cross Country Techniques</u>	X
	<u>Soaring Faster or Further</u>	X
	<u>Final Glide</u>	X
	<u>Cross Country using other lift sources</u>	X
	<u>Outlanding</u>	x
Ref. No.		GLD
7.0	<u>PRINCIPLES OF FLIGHT</u>	
7.1	<u>The atmosphere</u>	
	<u>-composition and structure</u>	X
	<u>International standard atmosphere (ISA)</u>	X
	<u>atmospheric pressure</u>	X
	<u>Lift</u>	X
	<u>-Newton's Laws of motion</u>	X
	<u>-Equation of continuity</u>	X
	<u>-IAS, CAS, TAS</u>	X
	<u>-Bernoulli's principle – venturi effect</u>	X
	<u>-airflow around a flat plate</u>	X
	<u>-airflow around a curved plate (aerofoil)</u>	X
	<u>-Description of aerofoil cross section</u>	X
	<u>Relative Airflow</u>	X

	<u>Chord line</u>	X
	<u>Mean camber line</u>	X
	<u>Camber</u>	X
	<u>Symmetrical aerofoils</u>	X
	<u>Surface area</u>	X
	<u>Shape</u>	X
	<u>Angle of Attack</u>	X
	<u>Centre of Pressure</u>	X
	<u>Lift Force</u>	X
7.2	Pressure distribution about an aerofoil	
	<u>-The lift formula – definitions</u>	X
	<u>Velocity</u>	X
	<u>Coefficient of Lift (CL)</u>	X
	<u>Density</u>	X
	<u>Surface area</u>	X
	<u>-Lift curve</u>	X
7.3	Drag	
	<u>-Parasite (profile) drag</u>	X
	<u>form</u>	X
	<u>skin friction</u>	X
	<u>interference drag</u>	X
	<u>-Induced drag</u>	X
	<u>wingtip and trailing edge vortices</u>	X
	<u>downwash angle</u>	X
	<u>-Total Drag Curve</u>	X
	<u>-The Drag Formula</u>	X
	<u>-lift/drag ratio</u>	X
	<u>-aerofoil shapes and wing planforms</u>	X
	<u>-aspect ratio</u>	X
7.4	Thrust	
	<u>-Glider forward vector (force)</u>	X
7.5	Flying controls	GLD
	<u>-the three planes</u>	X
	<u>-pitching about the lateral axis</u>	X
	<u>-rolling about the longitudinal axis</u>	X
	<u>-yawing about the normal axis</u>	X
	<u>-primary effects of the elevator (stabilators), ailerons and rudder</u>	X
	<u>-further effects of the elevator (stabilators), ailerons and rudder</u>	X
	<u>-spiral dive recovery</u>	X
	<u>-Control in pitch, roll and yaw</u>	X
	<u>cross coupling, roll and yaw</u>	X
	<u>mass and aerodynamic balance of control surfaces</u>	X

	<u>effect of rotor configuration on control power</u>	X
	<u>adverse aileron yaw</u>	X
7.6	Trimming controls	
	<u>-basic trim tab, balance tab and anti-balance tab</u>	X
	<u>-purpose and function</u>	X
	<u>-method of operation</u>	X
7.7	Flaps and slats	
	<u>-simple, split, slotted and Fowler flaps</u>	X
	<u>-purpose and function</u>	X
	<u>-operational use</u>	X
7.8	Climbing	
	<u>-forces</u>	X
	<u>-maximum rate and maximum angle of climb</u>	
	<u>-effects of configuration, weight, temperature and altitude, wind</u>	X
7.9	Descending	
	<u>-forces</u>	X
	<u>-effects of configuration, weight, temperature and altitude, wind</u>	X
7.10	Turning	
	<u>-forces</u>	X
	<u>-load factor</u>	X
	<u>-turn rate and turn radius</u>	X
	<u>-effects of weight, speed, angle of bank, wind, configuration</u>	X
	<u>-Advanced turning</u>	X
	<u>reduction of performance during climbing and descending turns (reduction of performance during turning Gliding)</u>	X
	<u>steep turns</u>	X
7.11	The stall	GLD
	<u>-boundary layer</u>	X
	<u>-laminar and turbulent flow</u>	X
	<u>-stalling angle of attack</u>	X
	<u>-disruption of smooth airflow</u>	X
	<u>-reduction of lift, increase of drag</u>	X
	<u>-movement of centre of pressure</u>	X
	<u>-symptoms of development</u>	X
	<u>-glider characteristics at the stall</u>	X
	<u>-factors affecting stall speed</u>	X
	<u>-stalling from level, climbing, descending and turning flight</u>	X
	<u>-inherent and artificial stall warnings</u>	X
	<u>-recovery from the stall</u>	X
	<u>-effect of weight and flaps</u>	X
	<u>-basic stalling speed</u>	X
7.12	Avoidance of spins	

	-wing tip stall	X
	-the development of roll and autorotation	X
	-recognition at the incipient stage	X
	-recovery technique	X
	-full spin recovery technique	X
7.13	Stability	
	-definitions of static and dynamic stability	X
	-longitudinal, lateral and directional stability	X
	-effect of location of centre of gravity and speed	X
7.14	Load factor and manoeuvres	
	-structural considerations	X
	-manoeuvring and gust envelope	X
	-limiting load factors, (glider – with and without flaps)	X
	-changes in load factor in turns and pull-ups	X
	-vibrations, control feedback	
	-changes in load factor in turns and pull-ups	X
	-manoeuvring speed limitations	X
	-in-flight precautions	X
7.15	Stress loads on the ground	
	-side loads on the landing gear	X
	-landing	X

OPERATIONAL PROCEDURES

	-Aerotow abnormal and emergency procedures	X
	-Winch Launch emergency and abnormal procedures	X
	--self-launch glider malfunctions	X
	-system equipment malfunctions	X
	-Flight control malfunctions	X
	-other malfunctions	X

MOTIVATION

Theoretical examinations for the issuance of a glider pilot license are conducted by Declared Training Organisations (DTO). These examinations are developed and moderated by the chief flight instructor for each DTO. Glider Pilot Licenses are an Annex 1 license and to ensure consistency and standardisation of testing these examinations have now been developed by SACAA in consultation with industry. The examinations will be written on the online system at

SACAA approved examination centres. To ensure that industry is adequately prepared to complete the examination the technical standard has been amended to include the examination scope so that the DTOs can prepare students adequately.

