



OPERATIONS MANUAL

1 MAY 2010

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1 HEALTH, SAFETY, ENVIRONMENT POLICY AND CHILD PROTECTION POLICY

Peterborough and Spalding Gliding Club (PSGC) is a limited liability company established to promote and encourage the acquisition of knowledge in all aspects of aeronautical interest, to promote the technique of gliding and soaring and to encourage social intercourse between members of the Company. The Club is committed to providing the highest practicable standards of health and safety to its members.

The Club is also committed to conducting its activities in such a way as to protect the safety of visitors on the airfield. It will also adopt the best practicable means to minimize its impact on the environment and meet legislative requirements.

The Club will provide and maintain safe and healthy facilities and equipment for its members and will provide all necessary information, instruction and training to them.

Whilst the Committee accept their health and safety responsibilities, they expect all members to play their part and to fulfill their obligations by taking reasonable care to avoid accidents to themselves and others, including visitors who should be briefed and supervised whilst on the airfield.

These Operating Procedures are issued by the Chairman and Committee of the PSGC Ltd. All members are expected to acquaint themselves with this document and operate in accordance with the rules and procedures defined, in addition to BGA defined Laws and Rules.

Definitions of membership types are contained in the PSGC Articles and Memorandum of Association.

We recognize that the welfare of children and young people is paramount and that they have equal rights of protection. We have a duty of care when they are in our charge and will do everything we can to provide a safe and caring environment whilst they attend our activities.

We will:

- treat all children and young people with respect and celebrate their achievements.
- carefully recruit and select all instructors and officers of the club.
- respond to concerns and allegations appropriately.

HEALTH, SAFETY, ENVIRONMENT POLICY AND CHILD PROTECTION POLICY

When there are concerns about the welfare of any child/young person all adults in our club are expected to share those concerns with the Lead Child Protection Officer (LCPO). The LCPO is responsible for:

- monitoring and recording concerns.
- making referrals to social care services without delay.
- liaison with other agencies.
- Arranging training where appropriate.

In all cases of disclosure of abuse by children, young people, parents or carers, we are obliged to share the information with the Lead Child Protection Officer who may have to refer our concerns to social care services, or police in an emergency.

Concerns about the behaviour of adult/s in the club will be referred without delay to the LCPO who will contact social care services or the police in an emergency.

Children and young persons are expected to:

- Treat everyone how they would like to be treated.
- Arrive on time with the correct clothes/equipment.
- Help anyone if needed.
- Join in with the activities and have fun.

2 FLYING RULES

2.1 DUTY INSTRUCTOR

A nominated Duty Instructor (Full or Assistant Rated) will authorize all weekend flying operations and is in charge of the airfield. In the absence of the CFI, the Duty Instructor is responsible for all flying activities on the airfield. The Duty Instructor shall be the final arbiter in any disagreement, until the matter can be referred to the CFI. Only the CFI, or a Full Rated Instructor, or an Assistant Rated Instructor approved by the CFI, can authorize a first solo. Only the CFI, or a Full Rated Instructor can carry out Bronze "C" checks. (See 2.18 for other flying operations).

No flying operations may take place, until a serviceable emergency vehicle is available, having been checked for fuel, oil and emergency equipment. Keys to these vehicles must be left in the ignition during flying operations.

No flying may take place unless the duty instructor has checked NOTAMs within 25 nm of Crowland. He must print and display any relevant NOTAMs and weather in the club house or at the launch point. All pilots must check the printout before flight. (On days when there is no Duty Instructor, it becomes the individual pilot's responsibility). Pilots intending to fly cross country flights beyond 25 nm from Crowland must individually check their route. (ANO refers).

2.2 DUTY PILOT

The weekend duty roster will appoint a solo pilot to run the launch point and the flying list and assist the Duty Instructor. The Duty Pilot is responsible for the order of flying, for logging flight details and checking authorization in accordance with membership rules. In order to assist the Duty Pilot, all members wishing to fly must add their name to the flying list. The Duty Pilot may delegate the keeping of the log to another competent club member but must be a solo pilot. Further duties of the Duty Pilot are contained in Annex A.

2.3 DUTY TUG PILOT

The instructions for the Duty Tug Pilot and training of tug pilots are contained in Section 4 of this document.

2.4 DUTY ROSTER

The Committee will publish a weekend duty roster, which details the Duty Instructor, Tug Pilot, Basic Instructor and Duty Pilot. It is vital that club members complete their duties. A member who cannot fulfill their obligations should attempt to swap duties with another member. If this is not possible, they should inform the CFI.

2.5 PILOTS

All pilots shall be a member of PSGC, or be a member of another BGA club having paid an agreed daily membership, unless a reciprocal arrangements exists. They also require the Duty Instructor's authorization to fly.

2.6 GLIDER PILOT CURRENCY

All pilots who do not hold an Instructor Rating must have flown a glider during the last 30 days to be considered "in current flying practice". After this period a check with an Assistant or Full Rated Instructor is required before flying as P1.

Annual **Spin Checks** for all solo pilots who are not Instructors must be completed by **1st May** and the pilot's log book must be endorsed by an Assistant or Full Rated Instructor. Any pilot who has not completed his Spin Check by 1st May will not be allowed to fly as P1.

Basic, Assistant or Full Rated Instructors who have not flown a glider during the last 42 days will require a check flight with the CFI or a Full Rated Instructor before flying as P1.

All solo pilots must have a current medical certificate in accordance with BGA Laws and Rules. They are to ensure that the CFI has seen the certificate and has a record of the expiry date. Any pilot without a valid medical certificate is not to fly as P1.

2.7 INSTRUCTORS

Instructor ratings must be renewed annually by the CFI or DCFI. All instructors are to fly with the CFI or the DCFI, at least once a year, between 1st Jan and 1st May. Instructor's hours for the BGA are on the BGA web site and are renewed annually, but at varying periods throughout the year according to the initial letter of your surname. The BGA will inform the instructor and CFI that renewal is due and it is the Instructor's responsibility to inform the CFI of your annual hours and launches. This will allow the CFI to update the BGA site and confirm your renewal. You will then get an email from the BGA confirming this has happened. Failure to do so could mean the cancellation of your rating. A current medical certificate must also be shown. Renewal requirements are as per the BGA's web site. Aeroplane or motor glider hours may not normally be included in these totals. Logbooks will be checked and signed by the CFI, before the rating renewal for the individual instructor is confirmed on the web site.

2.8 SYNDICATE/PRIVATE GLIDERS

New gliders, syndicate changes, insurance shares etc, need to be sanctioned by the CFI. If a type is new to all syndicate members then a flight in the glider by the CFI or

Full Rated Instructor may be made before members of the syndicate commence flying the glider.

2.9 AEROBATICS

Aerobatics are permitted provided that:

- The pilot has been cleared to fly aerobatic exercises by the CFI or a Full Cat and his logbook signed.
- The aircraft is fitted with a serviceable accelerometer.
- The pilot wears a parachute.
- The permitted aerobatics are listed on the glider's placard.
- All aerobatics are completed by 1500' (AGL) unless on an instructional flight.
- The pilot is fully briefed on flight envelope limitations of type.
- The pilot has clearance from the Duty Instructor.
- Spins and stalls are permitted without aerobatic clearance.

Aerobatics are not permitted by Basic Instructors carrying out Trial Lessons. These may only be carried out by a qualified Assistant Rated or a Full Rated Instructor after clearance by the CFI or a Full Rated Instructor at the time of flight.

2.10 MUTUAL FLYING - AEROBATICS

No aerobatics may be permitted during mutual flying in club gliders, unless with an Assistant, Full Cat or Basic Instructor in accordance with 2.9 above.

2.11 MUTUAL FLYING - CLUB GLIDERS

The following requirements apply to mutual flying in a Club glider:

- P1 must hold a minimum Bronze "C" badge, have 50 hours P1 in a glider plus a check flight with the CFI or Full Cat Instructor, showing a good standard of safe flying, and log book signed. This must be renewed annually by the CFI subject to a minimum of 10 hours P1 flying being achieved during the preceding 12 month period.
- P2 on such flights must be a solo glider pilot.
- If P2 is not a solo pilot P1 must hold a Basic Instructors rating or above and have a current medical certificate.
- P1 must be declared to the Duty Pilot before each flight and P1 has sole responsibility for the safe conduct of the flight.

2.12 PASSENGER CARRYING – private gliders

The following requirements apply to passenger carrying in a Private glider:

- P1 must hold a minimum Bronze "C" badge, have 50 hours P1 in a glider plus a check flight with the CFI or Full Cat Instructor, showing a good standard of safe flying from the front and rear seat, and log book signed. This must be renewed annually by the CFI subject to a minimum of 10 hours P1 flying being achieved during the preceding 12 month period.
- P1 must hold a current medical certificate and be a member of PSGC.
- P1 must have a minimum of 10 flights on glider type.
- The glider must be fully insured including passenger risk.
- A Temporary Membership Form must be signed by the passenger, before flight.

2.13 Passenger Carrying - Club 2 Seaters

The following requirements apply to passenger carrying in a Club glider:

- P1 must hold a minimum Bronze "C" badge, have 50 hours P1 in a glider plus a check flight with the CFI or Full Cat Instructor, showing a good standard of safe flying from the front and rear seat, and log book signed. This must be renewed annually by the CFI subject to a minimum of 10 hours P1 flying being achieved during the preceding 12 month period.
- P1 must hold a current medical certificate.
- P1 must have a minimum of 10 flights on glider type.
- Unless P1 is an instructor, P2 must be a solo pilot (as 2.11) or must be a named Family Member on P1's Family Membership.

2.14 CROSS COUNTRY FLYING

The following requirements apply for Cross Country Flying:

- A minimum of a Bronze "C" badge is required plus the Bronze "C" Cross Country Endorsement.
- At least 3 flights to have been made in the glider to be used.
- A current air chart with controlled airspace shown must be carried.
- Bronze "C" pilots must be authorized for the flight by the Duty Instructor.
- The Duty Pilot must be fully informed of any attempted task by ALL pilots going cross-country.

- A retrieve crew must be organized before authorization will be granted.
- A suitable car and trailer for the retrieve must be available.
- Guidance for Cross Country flying are contained in Annex B.

2.15 GLIDER TYPE - QUALIFICATIONS FOR SOLO

The following requirements are applicable to club gliders prior to flying solo:

GROB II May be flown by any current solo pilot, subject to at least 2 check flights with an Assistant Rated or Fully Rated Instructor, with logbook signed, and clearance by the Duty Instructor.

PUCHACZ May be flown by any current solo pilot, subject to a check flight by an Assistant Rated or Full Rated Instructor, with logbook signed, and clearance by the Duty Instructor.

PIRAT May be flown by current solo pilots who have a minimum of 10 launches solo subject to a check flight by a Full Rated or Assistant Rated Instructor, with log book signed, and clearance by the Duty Instructor. This glider may be used for Silver distance attempts or above.

ASTIR May be flown by current solo pilots who have a minimum of 10 launches solo subject to at least 2 check flights in the GROBII by a Full Rated or Assistant Rated Instructor with log book signed and clearance by the Duty Instructor. This glider may be used for Silver distance attempts.

Having converted to one of the single seat types a new pilot is not to convert from one to the other until he has completed 10 flights in the first type and will be subject to the above caveats.

2.16 DAMAGE TO GLIDERS

Any damage, suspected failure or fault to any glider or aircraft must be reported at once to the Duty Instructor

Any accident or incident must be reported to the CFI as soon as possible.

2.17 GLIDER PILOT LICENCE RENEWAL

All glider pilots will be required to produce their current log book to the CFI who will stamp and sign the log book to confirm that the pilot has flown a minimum of 5 hours P1 during the previous 12 months and their spin checks are completed. If the pilot has not been able to achieve this minimum requirement, a number of check flights will be

carried out by the CFI or a Full Cat Instructor. Any pilot without a valid annual stamp is not to fly as P1.

2.18 NON WEEKEND FLYING

Flying is permitted on non planned days provided that the pilot holds a Silver “C” rating and is flying in a privately owned glider.

No club owned glider may be flown unless at least an Assistant Instructor is available and is willing to take responsibility for flying operations and remains on the ground or in the local vicinity at all times. In exceptional circumstances, the CFI or DCFI may authorize the midweek use of a club glider by a Silver “C” pilot when an instructor is not available on the field. These exceptional authorizations are only valid for the day.

On planned weekdays (Bank Holidays and Flying Weeks) a Duty Instructor is always required if club aircraft are to be flown.

If cross country flying is planned, each individual pilot is responsible for their own retrieve. (see Tug Operating Instructions (Section 4) for aircraft Airfield/Field retrieves).

2.19 THE CFI

The CFI's decision on flying matters is final.

3 AIRFIELD BRIEF

Crowland Airfield is an all aerotow site (i.e. no winch or autotow facilities) and as such, has its own special set of procedures, which maximize the utilization of the site.

Crowland Airfield is also a relatively small site, which makes certain rules necessary for everyone's safety. These rules are born out of over 40 years of operations from the site and are therefore proven through experience.

There are two strips: runway 03/21 and runway 09/27 (a layout is provided in Fig 3.1). All runways are somewhat undulating and can be considered fairly bumpy. In summer there can be cracks during very dry spells, however, in wet conditions the runways are generally well drained.

Our neighbours are fairly tolerant, however, to keep it that way avoid over-flying adjacent dwellings, especially if dumping water. Fenland Airfield is only 4 n.m. to the North East.

When launching, readiness is indicated by acceptance of the rope. The "Up Slack" will be given as soon as the rope is attached to the glider and the take-off path is clear. If you are not ready to launch, the rope should not be accepted.

There are two tugs: a Pawnee and a Husky. In general, the Pawnee will launch the two seaters and the Husky will launch the single seaters.

The normal aerotow speed is 60 Kts. If you have other requirements, let the tug pilot know before take off, the pilot will be monitoring on 129.975 Mhz. Release when you are ready, the glider breaks to the left and tug to the right.

There is no fixed circuit direction for any runway although both powered aircraft and gliders are encouraged to fly right hand circuits. This prevents aircraft flying opposing circuits from meeting "belly up" on finals. Keep a good look out at all times.

Thermalling within the airfield boundary below 1000' is not encouraged, especially on the downwind leg. Unlike winch sites you will be towed to the best lift and deposited in a thermal if possible. For competition launches and badge claims you will be taken to a geographical location for release.

The glider rigging area is small so space is at a premium. Please respect your fellow aviators and don't block the access to their aircraft or trailers. Cars should be parked in the car park, not the rigging area or the access track. When you are ready to fly, move your aircraft as close as possible to the launch point without causing an obstruction or delaying the launch process. You will find that club members are very helpful especially if you help them, just ask for assistance.

Please obey the rules, respect other people's property and enjoy your flying at Crowland Airfield.

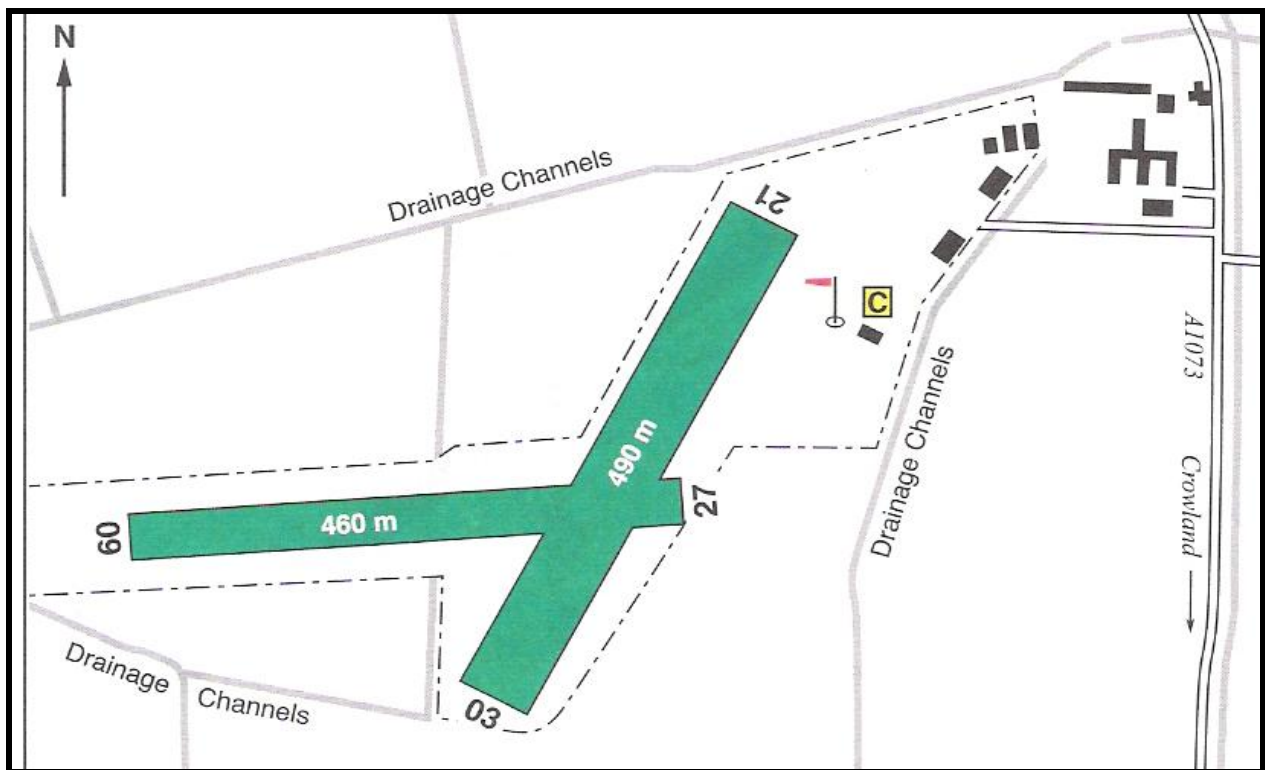


Figure 3.1 – Airfield Layout

4 TUG OPERATING PROCEDURES

These notes are produced to give guidance to the Chief Flying Instructor, the Tug Manager and all tug pilots operating the club aircraft.

It is the responsibility of the Tug Manager to ensure that all pilots are familiar with these notes before acting as a tug pilot in club aircraft.

4.1 PILOTS

4.1.1 AEROTOWING – GENERAL POLICY

AEROTOWING AT CROWLAND AIRFIELD, USING CLUB TUGS, IS A PRIVILEGE, NOT A RIGHT AND IS FOR THE BENEFIT OF THE GLIDER PILOT, NOT THE TUG PILOT.

Aero towing of gliders should only be carried out by trained tug pilots who are members of the club and in current practice as a tug pilot and a glider pilot. (See 4.1.3 for currency).

Tug pilots must meet the following criteria before being considered as eligible;

- Holder of a UK PPL (A), NPPL or higher licence.
- Holder of Difference Training Certificate(s) to include tail wheel conversion and complex type conversion for the Variable Pitch Propeller fitted to the Husky.
- Holder of a current Medical Certificate.
- 50 hours total power flying before conversion to the Husky for solo flying and 100 hours before commencing solo aero tows which is an insurance requirement.
- 100 hours total power flying before conversion to the Pawnee which again is an insurance requirement.
- No flying accidents or losses in the last 5 years (Insurance Requirement).
- A Bronze “C” glider qualification and in current power and gliding practice.
- New tug pilots will be trained in accordance with procedures outlined in 4.4.
- New tug pilot training is at the expense of the new pilot, not the club.

4.1.2 WHO CAN FLY CLUB TUGS

A list of current, authorised club tug pilots is to be maintained by the Tug Manager. It is to be reviewed annually in line with the club membership date. (Currently May 1st of each year). Pilots on the list may fly the tugs as authorised provided that they are in current practice, as defined in 4.1.3.

A new tug pilot may NOT authorise use of a club tug without the authority of an experienced tug pilot being present on-site. (See 4.1.3 for definition of new tug pilot).

4.1.3 CURRENCY

An experienced pilot who has not flown as a tug pilot for more than 60 days, is not considered to be in current practice and should NOT fly as a tug pilot before seeking authorisation from the CFI, the Tug Manager or a current experience tug pilot.

A new tug pilot can be considered to be “off checks” if they have towed within the previous 30 days and have carried out a minimum of 50 tows within 6 months of their conversion training.

All pilots may be subject to check flights or briefings at the discretion of the CFI or the Tug Manager.

4.1.4 APPLYING TO BECOME A TUG PILOT

Any pilot meeting the requirements of 4.1.1 may apply to become a tug pilot. Acceptance for training will depend on the current number of active tug pilots, club requirements and any waiting list.

4.1.5 OUTLINE OF TRAINING PROCEDURE

Initial training will be carried out on the Husky. Type conversion and solo flying will be followed by dual pilot tows concentrating on speed control, emergency procedures and engine management.

A minimum of 20 dual tows will be required before the pilot is cleared for solo towing. This is an insurance requirement.

Please note that any pilot wishing to fly the Husky will require “Difference Training” in accordance with JAR/FCL 1 (Variable Pitch Propellers/Tail Wheel Aircraft) before being allowed to fly solo.

Section 4.4 covers type conversion and training in detail.

4.1.6 FLYING CLUB TUGS BUT NOT TUGGING

As Peterborough and Spalding Gliding Club is an all aerotow club, the tugs are not available to members who are not tug pilots or training to become tug pilots. The Husky may be made available for private hire if not required for tugging but the Pawnee is not available for private hire at any time, without the express permission of the committee.

4.1.7 TUG PILOT INSURANCE

IT IS THE PERSONAL RESPONSIBILITY OF EVERY TUG PILOT TO CARRY PERSONAL LIFE INSURANCE WHEN FLYING THE CLUB TUGS.

The club carries tug and third party liability insurance and a scheme is also in place to absolve all tug pilots for the first part of any excess of a claim.

4.1.8 CROSS COUNTRY RETRIEVES TO OTHER AIRFIELDS

Each flight should be authorised by the CFI, the Tug Manager or the senior instructor on the airfield.

In all cases, the safe conduct of the flight remains the responsibility of the tug pilot.

Please note that field retrieves are outlined in 4.1.12 and 4.1.13 and the towing of visiting gliders in 4.1.10.

The person authorising the flight should stay on the airfield to ensure the safe return of the tug and the glider.

Both the tug pilot and the person authorising the flight should be satisfied on the following points;

- The tug pilot satisfies the relevant club requirements and conditions and is in current practice.
- The tug can be released without penalising local club flying.
- The weather is suitable and the flight can be completed in time with adequate margins.
- Prior permission to land at the airfield is obtained.
- NOTAMs have been consulted.
- The flight is professionally planned taking into account weather, airspace, danger areas etc.
- Booking out procedures are complied with, which is a legal requirement.

4.1.9 CROSS COUNTRY FLYING – NOT TOWING

Conditions as per 4.1.6 & 4.1.8.

4.1.10 RETRIEVES FOR VISITING GLIDERS

Clearance and authorisation as per 4.1.8 is required.

If the cost of the retrieve cannot be determined, it is the duty pilots responsibility to obtain the full name, address and telephone number of the glider pilot. The tug pilot and glider pilot should agree on the following points before departure;

- The route
- Any radio frequencies between glider and tug.
- The towing speed.
- The cruising height, if any.
- The release point.

If the glider does not release at the designated point, the tug pilot should continue on course to the destination airfield.

4.1.11 PASSENGER FLYING IN TUGS

Passenger flying whilst towing is not a normal practice, except whilst training new tug pilots and giving trainee glider pilots “front end” experience of the aerotow.

Due to the reduced rate of climb of the glider/tug combination and the limited runway lengths at Crowland airfield, the tug pilot should take great care when allowing a passenger to be carried. As a minimum, the following points should be considered;

- Wind strength
- Runway in use.
- Glider to be towed.
- Fuel state of tug.
- Humidity and temperature. (engine performance limitations).

The tug pilot may refuse to carry passengers at any time.

Passengers may be carried in the tug on non towing flights provided that they are full or temporary members.

A passenger may be carried on airfield retrieves provided that the airfield to be visited is satisfactory for the tow out.

4.1.12 FIELD RETRIEVES

Pilots must meet the requirements of 4.1.8 and have clearance for field landings from the CFI or the Tug Manager. In all cases, the Pawnee should be considered as the first choice for field retrieves.

4.1.13 FIELD RETRIEVE QUALIFICATIONS

Only pilots with at least **100 hours on type** and in current practice will be authorised to carry out field retrieves.

4.1.14 ROLE OF THE TUG MANAGER

The Tug Manager (Tug Master) is responsible to the CFI and the club members for the safe and economic operation of the tug aircraft.

Any disputes that cannot be resolved by discussion between the Tug Manager and the CFI/members will be presented to the club committee for arbitration.

The Tug Manager will be involved in all committee discussions regarding any aspect of tug operations.

The Tug Manager will be responsible for compliance with the Air Navigation Order (ANO).

The Tug Manager will ensure that all relevant logbooks are kept up to date and that all service requirements are met in the most expeditious manner.

The rostering of tug pilots is met by the committee as part of the rostering of duty instructors and duty pilots. Any special (mid week) requirements are met on an individual basis.

Rostering is a scheme designed to avoid a shortage of tug pilots. Pilots who put their name forward are making a commitment to turn up on the day they are allotted. If for any reason, they cannot fulfil their commitment, they should arrange for suitable cover in the first instance, or inform the CFI or the Tug Manager if problems persist.

When more than one tug is required, any qualified tug pilot may bring another tug into operation, if requested to do so by the Duty Instructor or other responsible person. Priority of launches should always be given to the duty tug pilot.

4.2 TECHNICAL MATTERS

4.2.1 DAILY INSPECTIONS

The Daily Inspection of an aircraft is a mandatory requirement of the Air Navigation Order (ANO) and is referred to as a "Check A".

It is the responsibility of the pilot to ensure that this check is done prior to flight and that it is recorded in the Daily Inspection (DI) book.

This check should be treated as if a fault is present on the aircraft and it is your duty to find it. Experience shows that fuel leaks, undercarriage problems, structural cracks etc. can often be found during this check. Do it properly, your life may depend on it.

4.2.2 SNAG RECORDING

If a defect is found, it should be entered in the aircraft DI book.

If the defect is such that it is safe to carry on flying, it should be brought to the attention of any pilot taking over the aircraft.

If the defect makes the aircraft unsafe to fly, an obvious notice must be displayed in the cockpit in full view for all to see.

Contact the Tug Manager/CFI with full details as soon as possible so that arrangements can be made to rectify the problem.

TUG PILOTS ARE NOT AUTHORISED TO ATTEMPT TO RECTIFY FAULTS – UNAUTHORISED INTERFERENCE WILL INVALIDATE INSURANCE AND CAA REGULATIONS AND IS EXPRESSLY AGAINST CLUB RULES.

4.2.3 FUEL AND OIL

The **only** fuel to be used in club tug aircraft is 100LL Avgas. It is blue in colour and any other colour should be immediately investigated and reported to the Tug Manager.

When checking fuel for water, look for the blue fuel with clear water at the bottom of the fuel test jar. If it is all clear, it could quite easily be all water.

Tug pilots are to check the oil level at **every** refuelling, no excuses. Do not overfill as it only ends up on the outside of the aircraft.

Do not put the dipstick on the ground, this will help stop it getting trodden on and covered in dirt.

Do ensure that only the correct grade of oil is used. This is normally marked adjacent to the filler port.

4.2.4 FUEL MANAGEMENT/SAFETY PRECAUTIONS

There are a number of essential safety precautions, which must be observed when refuelling an aircraft. Refuelling at this club is done from a purpose designed fuel tank. Always position aircraft as close as possible to the tank and if possible upwind.

1. Always ensure that fire extinguishers are readily available at the refuelling point and positioned upwind.
2. Always use the earthing clamp between the fuel tank and the aircraft to minimise the risk of static electrical sparks.
3. Always ensure that the fuel is correctly filtered, and that the first fill of the day is tested for water and accordingly logged in the fuel log sheet.

4.2.5 TUG HANGAR FUEL TRAILER KEYS

The tug hangar should be kept locked overnight. The tug hangar is secured by means of a good quality combination lock, which requires no key. The key to the shed (Oil etc) should be placed in the caravan on the tool board. It has an orange tag on it to prevent it going home in your pocket!

4.2.6 HANGARING AIRCRAFT

The last person to fly an aircraft is responsible for ensuring that it is washed, refuelled and put away safely in the hangar.

Washing is generally beneficial but discretion must be used when icing is expected as water ingress can damage structure/paintwork etc.

Leaving aircraft out overnight is not recommended. Instruments get stolen, cushions disappear, headsets go missing etc.

Extreme care must be used when putting the aircraft into the hangar. Structural damage to wingtips etc. is easily avoided but extremely costly and time consuming to repair.

Never attempt to put an aircraft into the hanger on your own, get help.

Be careful in strong winds, the hangar doors are large, relatively light and should be handled with care. NEVER park an aircraft between open hangar doors.

4.2.7 AEROTOW ROPES

The Tug Manager is responsible for ensuring that sufficient towropes, weak links and rings are available for normal day to day operations.

Tug pilots (or the tug pilot setting up an additional tug) is responsible for checking the towrope as part of the daily inspection for the tug.

Tow ropes should be approximately 50 metres (160 feet) long for normal operations. (BGA recommendations are 180 feet but our short, grass strip requires a slightly shorter rope).

A weak link is fitted at both ends with the glider end having an additional 2-3 feet of heavy rope after the weak link. This additional "tail" prevents the rope from knotting when being dragged over the ground.

4.2.8 FIRST AND LAST FLIGHT TIMES

Flying is legally allowed from 30 minutes before sunrise until 30 minutes after sunset, as determined on the ground. Late cross-country retrieves should be carefully considered because if you are outside of the time rule, you are not insured. If you cannot comply with this rule, don't go.

4.2.9 PROPELLOR SWINGING

ALWAYS TREAT PROPELLORS AS LIVE AT ALL TIMES OR EXPECT TO BE MAIMED OR KILLED!!!!!!

Switching the mags off is not a fail-safe procedure; it requires that the wiring and switches provide a good earth in the "off" position.

The last shut down of the day should always include a dead cut check but even this cannot guarantee a safe propellor.

If a live mag is discovered, do not fly the aircraft. If you have a propellor break-up, the engine will probably rip itself out of its mountings before fuel cut-off has time to work.

Every tug pilot must know how to turn over an engine safely as it is part of the DI and cold start procedures.

Before turning a propellor by hand, ensure that:

1. The brakes are on.
2. Mixture is fully weak and at cut-off position.
3. Mag switches are "off".

4. The throttle is closed.

Before trying to hand-start an engine, ensure that:

1. There is a licensed pilot in the cockpit.
2. The aircraft is on flat, level, non slippery ground.
3. Check the brakes by attempting to rotate a wheel.
4. You have no loose clothing that could catch in the propellor.

Always try a few swings first with the mags off, to get the feel of it. You may find that gloves are needed, especially with metal props.

Get into the habit of stepping back after each swing and pause before stepping forward to try again.

After the engine starts, **step away immediately**, it is easy to get mesmerised by a close rotating propellor.

A good rapport between the prop swinger and the pilot is essential. If there is any cause for doubt as to the status of the hand start routine, stop and re establish communications.

4.2.10 ACCIDENT PROCEDURES

If a tug or a glider on tow is damaged whilst in your charge you are considered responsible and you must not fly tugs again until authorised to do so by the Tug Manager or CFI.

Any incidents must be reported immediately to the Tug Manager or CFI and a written statement may be requested.

In accidents involving serious damage or personal injury, the aircraft must not be moved without permission from the Department of Transport (Aircraft Accident Investigation Branch – AAIB).

Report the accident on the appropriate telephone number

AAIB - 01252 512 299.

BGA - 01162 531 051.

In less serious cases, move the tug into the hangar for safe keeping. The insurance company should also be contacted at the earliest opportunity before making arrangements for repairs.

In cases where the damage is not obvious, leave a large clear notice in the cockpit stating that the aircraft is not to be flown.

4.2.11 WINDSCREENS

Flying with dirty windscreens in busy skies is stupid and dangerous. Tugs must not be flown with dirty windscreens and if a pilot needs to stop to clean the windscreen he should do so regardless of the number of gliders waiting for a launch.

Cleaners such as Pledge or Sparkle are perfectly safe on Perspex but any polish with silicone in it should be kept away from aluminium surfaces. Do not use abrasive polishes. They scratch the surface and make it go cloudy.

4.2.12 TACHO LOGGING

The tug log sheets have a facility for entering the tacho hours and tenths. Tug pilots are required to enter the hours at the start and end of each day so that the aircraft log books can be correctly filled in and maintenance schedules can be planned.

4.2.13 DUAL TOWS

Dual tows are legal within the constraints of the combined weights of the two gliders. Details are to be found in the Flight Manual for each tug. However, dual tows at this club are not encouraged due to the restricted size of the airfield, the grass surface that can sometimes be long and there being no advantage to either the tug or glider.

4.2.14 TUG INSURANCE

The tugs are insured for authorised pilots as described in Section 4.1.2. Full details are kept by the Tug Manager. If you are unsure as to the status of the insurance pertaining to you, do not fly the tugs until any points have been satisfactorily resolved.

Note....Tug pilots are responsible for their own life cover, the above insurance is Aircraft Insurance.

4.2.15 ENGINE OVERHEATING

In warm weather the tug pilot may notice either the cylinder head temperature or the oil temperature creeping up towards the red line. If this happens, try increasing the towing speed (no more than 10 knots). If this does not help, wave off and land.

After landing, check the following;

Oil: Allow a few minutes for the oil to settle and then check the contents.

- Consumption** Check under the aircraft for oil loss. Check inside the engine bay for oil leaks. Older engines can be expected to use up to a quart of oil per twenty tows. Any more than this should be referred to the Tug Manager for further investigation.
- Oil Cooler:** Check the intake and surrounding area for debris.
- Air Baffles:** Check for loose or worn baffles. These simple devices play a very important role in engine cooling. If they are worn, displaced or missing, get them replaced.
- Silencer** Loose silencer baffles cause an increase in back pressure which leads to overheating and loss of power. In the worst case there may be insufficient power to sustain level flight!
- Carb Air Intake:** Check for debris around the intake filter and make sure that no piping has collapsed causing restricted airflow into the engine.

4.2.16 TOWING SLOW GLIDERS

Different types of tug have different safe minimum towing speeds. With gliders requiring slower towing speeds, it is always advisable to select the tug best suited to the task. When towing slowly, monitor the oil and cylinder temperatures regularly and do not exceed the red line.

4.2.17 FLIGHT MANUAL LIMITATIONS

Documents such as the Air Navigation Order (ANO), CAP 393, Air Information Circulars (AIC's), BGA Laws and Rules and the aircraft Flight Manual all contain information which is mandatory either for the safe conduct of the flight or for the maintenance of the aircraft and its equipment. When conflicting information is given, it is advisable to stick to the aircraft Flight Manual as this forms part of the aircraft's ARC. Operating outside of this document invalidates the aircraft's ARC and Insurance.

4.2.18 ENGINE HANDLING

Aircraft engines cost in the region of £20,000 when new and replacement parts such as cylinder heads and pistons can cost up to £2,000 each! These figures should always be born in mind when operating an aircraft engine, as your management technique has a direct bearing on engine life.

4.3 AEROTOW PROCEDURES

4.3.1 THE AEROTOW

The purpose of the aero tow is to launch the glider on what may be a soaring, training or trial flight. The tow should be as helpful as possible to the glider pilot and should not be regarded merely as a means of gaining height, nor should it be used for site seeing or hour building by flying wide circuits as a means of extending the flight.

The aero tow should provide whatever the glider pilot needs. For a two seater training flight this could mean plenty of turns for training and not straying too far from the airfield. For a water ballasted glider this changes to adequate speed, minimum turns and dropping in lift. The tug pilot should take pride in using his skills and experience to satisfy the requirements of the glider pilot.

The tow should also be smooth and free of any movements that would cause anxiety to the glider pilot.

Do not fly over trees or over any area low down where an engine failure would risk the tug. If the tug is safe, the glider will also be safe.

Avoid known areas of turbulence whilst low and avoid noise sensitive areas such as houses and areas where you may disturb farm animals and wild life.

Keep all turns shallow and do not fly directly into the glare of the sun.

Do not pass too close to other gliders especially if they are circling. It is better to turn away and come back to a thermal when it is clear to do so.

4.3.2 LOGGING THE TOW

Clear, accurate logging is essential as it provides the means of billing glider pilots for the use of the tug. Logging the gliders' type, identification and release height also ensures that the correct information is available for badge claims etc. If the tug pilot does not recognise the glider as a resident glider, it is essential that the type and registration is recorded so that the correct person gets the invoice!

4.3.3 BADGE CLAIM TOWS

When a tug pilot is made aware that the launch is for a badge claim, the following should be recorded on the log sheet and signed;

1. The exact release height above the airfield.
2. The position of release.

3. The time of the release.

Silver C tows are not normally above 2000ft but for other badges or records the tug pilot may be asked to go to a specific point or height.

4.3.4 THE TAKE OFF

NO TUG IS TO TAKE OFF WITH LESS THAN 7 GALLONS OF FUEL.

Normally, the tug should line up in front of the glider. If there is a strong cross wind the tug should be positioned a half span on the downwind side.

It is also common practice to put the wing runner on the downwind wing as this aids countering of any swing due to weather cocking in the early stages of the take off.

Radio signalling should be used at all times. A launch controller who has clear visibility all around should give the appropriate radio signals under guidance from the wingman.

Radio may be used between the tug pilot and the glider pilot, provided that the glider pilot has been told that it is clear to take off by the ground crew. The tugs' call sign should always be used to prevent any confusion.

If ANY person has cause to stop the take off, it is their duty to stop the take off by any safe means at their disposal. Shouting "STOP" is usually enough. Reasons come later.

In many cases the tug pilot may be the most experienced pilot at the launch point, if they are unhappy about any aspect of the launch they should not hesitate to stop flying until things are put right. Watch out for things like deteriorating weather, inexperienced signaller's or runners on the wrong wing in a cross wind.

The tug pilot, having completed all essential checks, should move forward at no more than walking speed until all slack is taken up in the rope and the "all out" signal is given.

The throttle should be opened over a period of 2 seconds (essential with the Pawnee) so that everything happens smoothly at the back. Too fast and you may jerk the glider, too slow and the glider may overrun the cable. Be particularly careful with gliders that do not have a nose hook. **Be absolutely certain about the all out signal.**

If the rope breaks it is the tug pilots responsibility to ensure that the glider does not run into the back of the tug. He may do this by either seeing the glider in the rear view mirror slowing down and then abandoning the launch or, if the speed is high when the break occurs, continuing with the take off and flying a low circuit.

Each tug has its own characteristics and is either going to have to be smoothly rotated into the climb attitude (Pawnee) or held down to gain airspeed (Husky). Whichever is the case do not wait until the ASI is indicating the towing speed before commencing the

climb, try to make the transition from the acceleration phase to the climb phase as smooth as possible. Be aware of any wind shear and the sudden affect this may have on your airspeed and react accordingly.

4.3.5 THE CLIMB OUT

In the climb the nose up attitude makes maintaining a good lookout more difficult and more essential, frequent gentle turns are the only way around the problem. Hold the correct attitude for the speed, even if the speed varies slightly. Attempting to correct every small speed fluctuation will result in “chasing” and make it difficult for the combination to stabilise. Climb at full power, monitor the CHT, oil pressure and temperature. Speed up if the temperature approaches the red line, wave the glider off if the limits are exceeded. The mixture stays rich throughout, the use of carb heat should not be necessary with full power, however, if you feel that you have less than full power on a cold damp day, it may be worth a try. Feed it in slowly and expect some backfiring and rough running. The worse the backfiring the greater the need to persevere with full carb heat. If all you get is reduced rpm and slight rough running, the problem is not carb ice and you need to look elsewhere.

If everything is going normally and then you find that you have to use more and more forward stick, the chances are that the glider is going, or has gone into the low tow position. When this happens, maintain the normal towing speed and re trim to reduce the stick load. The glider may not be visible in the rear view mirror but provided that the combination is stable, fly the climb out as normal. If the stick hits the forward stop, expect the speed to reduce as the nose rises, and expect a torque roll to develop due to the power being maintained. Once the roll starts, release the glider but continue to climb to avoid descending into the glider that you know is below you. A gentle turn should be commenced to regain visibility and only then should you start the descent.

4.3.6 THE TOWING PATTERN

In addition to the basic airmanship considerations, the following will, in general, determine the towing pattern chosen;

1. If there is any cross wind, the first turn will normally be into the wind unless there are other over-riding considerations such as terrain, turbulence, unfavourable land-out area, noise considerations etc.
2. If possible, the flight path should be optimised to give the glider the best choice of fields and the earliest opportunity to get back to the airfield in the event of a rope break.
3. The distance upwind of the airfield at which the glider should be positioned depends on the wind strength and the visibility.
4. The tow pattern should enable the glider pilot to easily remain orientated by having the airfield in sight for as much time as possible.

5. If possible the tug should be flying straight and level at the normal release heights.
6. The glider should be towed through any areas of lift available during the climb, avoiding areas of sink if at all possible.
7. Most 2 seat tows are for training. Do several 90-degree turns with positive entry and exit, using not more than 15-20 degrees of bank.

4.3.7 THE RELEASE

If you have arranged your flight path such that you have your back to the airfield, this will allow you to make a 180 degree descending turn, whichever way the glider goes.

Always ensure that the proposed descent path is clear and that the aircraft is “clean” before initiating the descent.

Do not rely on the jerk felt as the glider releases, to indicate that it has released. **Use the mirror to ensure that it really has released.**

Turn in the opposite direction to the glider to ensure maximum separation. If there is any doubt, descend gently, straight ahead until release can be visually confirmed. If the glider continues on tow above the anticipated release height, continue as normal bearing in mind any possible problems such as poor visibility.

4.3.8 THE DESCENT

The start of the descent is undoubtedly a critical phase of the flight as things start to happen quickly and can be potentially damaging to both pilot and engine!

A good lookout and proper engine handling are critical.

Once the glider has released, start a steep descending turn. This is important, as it is the only way you can keep a lot of power on and at the same time, descend. Take care not to over speed the engine and close the throttle very slowly, sufficient to stay within limits. You should aim to be pointing back at the airfield in a stable, powered descent with a minimum of 2,000 rpm and around 90 kts. (See Section 4.4 for specific tug handling details). The descent should be flown with the aim of arriving at the upwind end of the airfield at 1,000ft. You should now, very slowly reduce power and airspeed so that a tight circuit can be flown onto finals such that the correct airspeed for the final turn is attained with just a trickle of power available. Your circuit and approach should always be flown with a very good look out, ensuring that you do not obstruct any gliders or other tugs that are closer and lower than you are.

4.3.9 THE CIRCUIT PATTERN

On joining the circuit, slow down. It reduces the risk of collision. If you are low it is easier to see any other aircraft but it makes it difficult for them to see you. Consider what to do if the engine quits and always position yourself so that you can make the airfield or some other safe landing area.

Downwind checks must be done before every landing, do not include flaps at this stage but you must include fuel. The repetitive nature of tug flying makes it easy to forget these checks but be warned, forget them and one day it will lead to an incident.

Once on base leg reduce speed and apply the first stage of flap. Only use full flap once you are established on finals. Exceeding flap speeds by just one knot is sufficient to fail a check flight.

To reduce the risk of collision aim to be where other pilots would expect you to be.

If you have been using carb heat on the descent, go back to cold air on finals. This selects filtered air and prevents dust and debris from entering the carburettor.

The tug pilots' judgement plays an important role in the safe operation of the airfield and in the financial outlay of the operation. Bad engine handling costs money. Bad circuit planning (wide, sight seeing type circuits) costs money. Expect a descent from 2,000 feet to take around 3 to 4 minutes, any longer and you are wasting time, any shorter and you are likely to overcool the engine. Time yourself and check your performance.

Tug pilots must also accept responsibility for the trailing rope, if you are blocked on finals, adjust the overshoot so that you do not over fly any obstacles that could be damaged or cause damage to the rope or aircraft.

4.3.10 THE LANDING

Never land towards parked gliders or similar instructions. Assume that the brakes may fail.

Never land in formation with another tug or glider.

Never turn after landing until you are absolutely sure that it is safe to do so.

Never brake harshly, you could upend the tug and it overheats the brakes causing excessive wear.

Always comply with local rules regarding taxiing back to the launch point or obey Rule 17 (7) (c) of the Rules of the Air.

4.3.11 OVERSHOOTS

In practice, there are two overshoot situations. The first is the overshoot from short finals and the second is where it is necessary to orbit on base leg or at the start of short finals to avoid a situation where an overshoot is inevitable.

Neither is without risk.

Overshoots from short finals

It is vital that the tug maintains its heading whilst starting to climb and does not turn until at least one-third down the airfield. Full power is rarely necessary, use sufficient to climb and stay below the flap limiting speed. Avoid climbing with the nose high as a good lookout is impossible and ensure that you are not operating outside any limits. Also with the Husky ensure you return the propeller to fully fine.

Orbits

These should be avoided if at all possible as the risk of collision is considerably increased. If an orbit seems sensible a good lookout is essential, before, during and after establishing the orbit. Orbits are normally flown with half flap but beware of slipping and skidding sensations caused by strong crosswinds, use the ball to stay out of trouble.

Never orbit over property, people, vehicles, animals or trees.

4.3.12 SAFETY LIMITS

Training flights often involve out-of-position exercises which pull the tug's tail around. The tug pilot should attempt to fly straight ahead using rudder and aileron as necessary. This sort of towing can occasionally be alarming if the glider instructor lets things go too far but it is not an unacceptable risk providing that full control inputs are not required and the combination is above 1,000 feet. If the tug needs full up elevator, **watch out!** It indicates that the glider has gone high, has probably lost sight of the tug and could well pull up the tug's tail very quickly.

IF THE STICK TOUCHES THE BACK STOP, RELEASE THE GLIDER INSTANTLY

You are also fully justified in releasing the glider if you find that you are moving the stick back quite quickly with little effect, this indicates that the glider is moving upwards very quickly and will result in the tug having its tail lifted with a resulting loss of airspeed and a stall. Recovery from this situation may well take up to 1,000ft!

4.4 TUG PILOT TRAINING

4.4.1 TUG PILOT TRAINING SCHEDULE

This training schedule is to be used for all pilots converting onto the club tugs, regardless of their previous experience.

Whilst it should be possible for an experienced pilot to demonstrate his/her competence right from the start of the flying exercises, it is accepted that instruction will be necessary for those pilots who only have a limited amount of power experience. For this reason, no set amount of hours apply to the schedule, it is tailored to suit each individual.

The intention of the schedule is to first get the trainee to the point where they can fly the club aircraft safely solo. Before tugging training commences it is important that the individual is familiar with the aircraft type so that should they be faced with a problem soon after being cleared to tow, they can handle the situation without endangering the glider or themselves.

Training flights will be logged in accordance with CAA requirements as laid down at the time of training. This requires the pilot who is giving the training to log the time in their own log book as P1 and for the trainee to log their time as Pu/t.

In the case of the experienced trainee pilot where they demonstrate competence in handling the aircraft, they can log the flight as P1/s and the check pilot signs the remarks column as an indication of a satisfactory check.

Before anyone flies a tug aircraft solo, they should have a signature in their logbook authorising them to fly the type.

The last part of this schedule includes an oral examination concerned with operating procedures and knowledge of the aircraft type. Before being allowed to fly solo as a tug pilot, most of these questions must be answered, any grey areas being used as a means to obtaining further knowledge.

4.4.2 TRAINING TO SOLO

This schedule is intended to take the early solo pilot to solo standard.

Familiarisation with the aircraft on the ground.

Location of every control and instrument.

Ground handling.

The daily inspection (Check "A")

Hangar, keys, codes, refuelling, oil storage, DI book, status board.

Tug log sheets, booking out.

Propeller swinging.

Positioning. Start up. Run up. Taxying. Awareness of obstructions and airfield layout.

Correct control positioning at all phases of taxiing when the wind is strong.

Pre-flight checks and circuit planning.

Local area flying to review noise sensitive areas and local obstructions.

Dual flying will commence, and continue until the Instructor is satisfied that the student is competent at the following exercises;

Take off, keeping straight and noting T & P and rpm.

Accurate speed control at all phases of flight.

Use of flap and staying within the flap limiting speeds.

Handling at the stall.

High level practice engine failures down to a safe level.

800 ft circuits including down wind checks and accurate approach control and good landings.

Cross wind take offs and landings.

Low level engine failure (400') at a height and position appropriate to towing.

The student should be able to answer at least 75% of the questions contained in Section 4.4.4 before they can be signed off to solo. 50% – 75% answered and they can carry on into the solo flying phase but the instructor must ensure that the learning curve continues by progressive questioning. Less than 50% means more reading and less flying!

4.4.3 TOW TRAINING

Solo Flying

Once the student has been cleared for solo flying, he/she is expected to fly the aircraft on at least 3 separate days and to be observed for at least 10 take offs and landings. If possible, the student should fly with different runway directions and varying weather/winds.

They should also carry out a DI (Check "A") refuel the aircraft and inspect and hook up the tow rope so as to become as familiar as possible with the towing operation.

It is also useful to have someone apply tension to the tow rope and get the student to release it whilst sitting in the cockpit so that friction, travel distances of the release knob/lever become familiar.

Tow Training

Aero towing is conducted at the pace dictated by the gliders and the launch point rather than the needs of the student, so it is expected that the student will have become familiar with the Tug Pilots Procedures before starting the tow training phase.

The instructor will fly the first few tows explaining what he is doing and why. Once the student shows a high level of comprehension they can be moved to the left seat and the

next 6 tows should allow him/her to develop and demonstrate their competence paying particular attention to the following;

- Engine handling.
- Speed selection and accurate speed control.
- Good safe descent planning, joining the circuit and ground handling.

The following exercises will need the cooperation of a two seat glider.

- A tow that includes the low tow position.
- A tow where the glider practices out-of-position training.
- A tow where the gliders brakes come open.
- A tow where the tug waves the glider off.
- A tow where the glider simulates an inability to release.
- A tow involving level and descending flight.

Once the instructor is satisfied that the pilot is safe to continue towing on his/her own, and has done all of the exercises on the schedule and answered the questions satisfactorily, the instructor may clear the pilot for solo towing.

If the new tug pilot is a low hours pilot, they must be made aware that they cannot authorise flying.

Experienced tug pilots converting to type may be cleared to authorise aero towing immediately.

4.4.4 QUESTIONS

- a) What speeds are going to be used in the various stages of the tow?
- b) What is the minimum fuel load for take off?
- c) When do you use hot air (carb heat)?
- d) How can poor piloting cause a mag drop?
- e) Do you expect to use the mixture control whilst towing?
- f) Why is it important to trim the aircraft?
- g) How will a glider let you know he cannot release?
- h) Why must rope knots be removed?

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- i) Which way should the first turn after take off be?
- j) What action will you take if the glider brakes are open?
- k) Can you point out noise sensitive areas on a map?
- l) What should you do if the engine stops at low level?
- m) Describe a sensible overshoot procedure.
- n) Describe the risks to the tug in a strengthening wind.
- o) In deteriorating conditions, who makes the decision to stop flying?
- p) What should you do if the glider pulls off during take off?
- q) How and when do you wave off a glider?
- r) When is it best to use the tug emergency rope release?
- s) What is meant by “Max manoeuvring Speed”?
- t) How do you handle the engine at the point of release?
- u) Why do 180 hp Lycomings have a red band on the rev counter?
- v) How do you avoid the rope from hitting anyone?
- w) What authorisation do you need for the various types of flights you may make in our tugs?
- x) What is more important, saving time, saving fuel or saving the engine?
- y) Why is it so important to monitor the engine instruments whilst towing?

4.5 TYPE CONVERSIONS

The following Sections offer briefing notes to cover the aircraft operated by Peterborough & Spalding Gliding Club.

Data is taken from the aircraft Flight Manuals and makers handbooks.

All aircraft must be operated within the limits laid down in the up-to-date Flight Manual.

Operating outside these limits invalidates the ARC and the insurance.

4.5.1 BEAGLE AUSTER D5 SERIES 180 (HUSKY)

REGISTRATION G – ASNC

CONSTRUCTORS NO 3678

This aircraft was constructed in 1963 at Rearsby near Leicester and is certified in the Private Category with the LAA Annex 2 aircraft.

Here are some of the statements to be found in the Flight Manual for this aircraft.

Maximum number of occupants is 3.

Maximum number of gliders on tow is 2.

Maximum cross wind for safe handling is 15 kts.

The aeroplane shall not be used for public transport when towing a glider.

This aircraft is approved for glider towing, provided that the weight towed, be it one or two gliders, shall not exceed the following:

Glider Group	Maximum Weight of Glider	
	Single Occupant (Tug)	Two Occupants (Tug)
A	2000lb	1700lb
B	1800lb	1525lb
C	1600lb	1350lb

*As defined in BGA document “Notes for Tug Pilots”

The breaking load of the tow rope (or weak link) shall not exceed 1000lb when towing one glider. Dual tows are not encouraged at PSGC.

A serviceable CHT gauge must be fitted when towing gliders.

The Flight Manual is kept by the Tug Manager for safe keeping. A copy is available for reference to any tug pilot upon request.

4.5.2 Daily Inspection

Start in the cockpit. Check that all switches are off and the controls for full and free movement. Lower the flaps. Inspect for loose objects, dirt, fire extinguisher showing pressure and stowed correctly. (If you have never done it before, operate the securing device so that you know how it works).

Check the fuel gauges for contents and make sure you know how to select the appropriate tank and which end of the selector switch is the "right end".

Carry out a full external inspection ensuring that the fuel caps are secure (hand tight only) and that the oil level is above "6" on the stick. Don't over fill the oil, it only ends up all over the underside of the aeroplane.

Tug aeroplanes, on average, execute 10 times more take-offs and landings than any other type so pay particular attention to the undercarriage, the brakes and the tyres, and don't forget to pay the same attention to the tail wheel assembly.

Expect some play in the flaps, this is normal.

4.5.3 Start Up (Cold)

Brakes	Apply toe brakes, hold stick back with knees.
Flaps	Select up.
Fuel	On-Selected-Sufficient
Primer	Four full strokes and then lock.
Throttle	Set ¼" open
Pitch	Fine
Master	On
Mags	Left only on
Start	Engage electric starter. Engine starts
Mags	Right mag to on
Oil Pressure	Rising above 25 psi within 30 seconds
Gen Field Switch	GFS to on. Check positive charge

4.5.4 Start Up (Warm)

As above but do not use primer. Operate throttle lever twice, set and start.

Taxy with stick full back unless the wind is on the tail and strong.

Turn using rudder and power, use the brakes only when absolutely necessary. To help with tight turns, reduce the amount of backpressure on the stick, this lightens the tail loads and allows the castoring mechanism to operate more freely.

4.5.5 Run – Up

1800 rpm - Max drop 125 rpm - Max difference 100rpm - Carb Heat drop 100rpm

Exercise prop twice, ensure positive rpm drop and set fully fine.

Check T & P's.

Throttle back and ensure even tick-over between 500-700rpm.

4.5.6 Pre Take-off Checks

Trim	Set 1-2" forward of neutral
Throttle	Friction nut tighten (Not too tight)
Mixture	Ensure fully rich
Mags	Ensure both on
Fuel	On – Selected - Sufficient
Flaps	Select for take-off (First stage)
Gauges	Check for correct indications
Gyro's	Running – Vacuum correct – Set DI
Hatches	All closed and secure
Harness	Tight (Don't forget the passenger)
Pitch	Ensure in full fine
Pump	Fuel pump on – Fuel pressure correct

Note....The above checks can be used for **any** simple light aeroplane. If you do them all, all of the time, you don't forget anything important.

The mnemonic is: **TT MM FF GG HH PP.**

Immediately prior to take-off, mentally brief yourself for emergencies and ensure that you know where the glider release is.

Always expect the worst, it is one of the few times when pessimism could pay off!"

4.5.7 Climbing Speeds

This aircraft shows a high position error when towing gliders due to the large angle of attack. The speeds listed below will give the corresponding speeds listed for the glider.

- Minimum climbing speed 50kts
- Normal climbing speed 55kts Glider shows 60kts
- Heavy climbing speed 60kts Glider shows 65kts

It may be necessary to fly at 65-70kts if the glider is full of water but at these speeds the position error progressively becomes less.

Engine failure:

- Best glide speed 59 kts with flaps retracted. L/D is 1:8.

4.5.8 Descent Speeds

Once the glider has released, descend at 2,000 rpm/20"/95kts, aiming to be at 1,000ft as you join downwind. Slowly close the throttle on the downwind leg, reducing speed to 64kts as you turn base. You **must** reduce speed to below 64 kts before you select any flap. The approach and landing should be flown in the normal manner, described elsewhere. Always check pitch on finals and ensure that it is full fine in case of overshoot.

Rough Air Speed	83kts
Max Manoeuvring Speed	97kts (Limit of full control input)
Normal operating Limit	109kts (This speed shall not normally be exceeded)
Never Exceed Speed	138kts
Flap Limiting Speed	64kts (This is low , pay particular attention)
Approach Speed	50kts (Full flap – 1.3VS)

4.5.9 Shut Down

- Non-essentials off (Radio – lights etc.)
- Check for dead cut
- Stop engine, using mixture cut-off at 1000 rpm
- Mags off
- Generator Field Switch off
- Master off.
- Leave fuel on.

4.5.10 General Notes

This aircraft might seem a little slow on finals with full flap at 50 kts. Use 55kts until you are completely familiar, coming back to 50 kts over the threshold.

Remember, this aircraft will **not** stay on the ground with excessive airspeed, it **must** be fully stalled at touchdown. You will soon know if it's not.....

This aircraft is fitted with an Avco Lycoming O-360 engine that has an operating limitation placed on it due to internal vibrations that generate stress within the engine.

You cannot sense these vibrations but the engine will be damaged if the placarded warning is not complied with. It reads:

“Continuous operation at engine speeds between 2250 and 2550rpm with a manifold pressure setting below 15 “ mercury **must** be avoided while descending”.

4.6 PIPER PAWNEE PA25 235

REGISTRATION G-PSGC

CONSTRUCTORS NO 25-5324

This aircraft was built at Vero Beach, USA, as an agricultural spray plane.

It was bought by PSGC in 2005 and has worked as a glider tug ever since.

It is certified in the EASA ARC Annex 1 aircraft.

Here are some of the statements to be found in the Flight Manual for this aircraft.

Operation Day VFR Only

No aerobatic manoeuvres permitted.

The windows should be kept closed in flight as rate of climb is reduced if open.

The stall warning is inoperative with master witch "Off".

Glider towing limitations are exactly as per those mentioned in 4.5.1.

As the Pawnee is a single seater, it is essential that the pilot already has towing experience before converting to type.

This aircraft engine is fitted with crankshaft balance weights and the throttle **must** be operated slowly, to allow them to do their job. (At least 2 - 4 seconds from idle to full).

The high seating position also means that the aspect from the cockpit is a little different and requires getting used to.

Because the nose is level when in the tail down attitude, early conversion pilots have a tendency to get too slow on approach, something to be avoided.

The take-off is achieved without significant raising of the tail and a good three-point landing is achieved by bringing the nose parallel to the horizon and no higher.

4.6.1 Daily Inspection

Start in the cockpit.

This is a heavy aeroplane for the size of the brakes so check for pad wear as they can be worn out very quickly by heavy braking.

TUG OPERATING PROCEDURES

Fuel contents are checked by looking at the sight glass on the top cowling. This aircraft has an unusable fuel level of 3 US gallons and it will use at least 1.5 gallons per 2,000ft aerotow.

Never take off with less than 7 gallons on board.

Oil is checked by climbing onto the port wheel and opening the flap in the top of the cowl. Top up if necessary to level 9 on the dipstick. Do not overfill, it just gets thrown out.

The fuel drain is at the bottom of the front firewall on the left side, push it in to drain off. Ensure that it is resealed when you let go.

The tailplane stays must be taught and don't forget to check the static vents on the fuselage sides.

Pay particular attention to the undercarriage and tailwheel assembly as previously mentioned in the Husky notes.

Never turn the fuel off. There is a design flaw in the mechanism that means if you turn it off, it may not be turned fully on again in the normal manner as the push-pull cable "bends" and the valve does not fully open.

Another point to bear in mind is that the flaps produce no lift whatsoever, do nothing to the stall speed and should not be used for take off.

4.6.2 Start Up (Cold)

Brakes	Apply toe brakes, hold stick with knees.
Flaps	Ensure up.
Fuel	Ensure On.
Primer	4-6 full strokes and then lock primer.
Throttle	Set ¼" open
Master	On (Also switch strobe light on now).
Mags	Left only On
Start	Engage electric starter. Engine starts.
Mags	Right mag to on.
Oil Pressure	Rising above 25psi within 30 seconds.

4.6.3 Start Up (Warm)

As above but do not use primer. Operate throttle lever once to prime, set and start.

Taxy with the stick back unless the wind is on the tail and strong.

4.6.4 Run – Up

1700 rpm – Max drop 125 rpm – Max difference 100 rpm – Carb Heat drop 100 rpm.

Check T's & P's.

Throttle back and ensure even tick-over between 500-700 rpm.

Note....The engine manufacturer states that the engine is warm enough for take off if it responds smoothly to all inputs, there is no need to warm it up on the ground as it produces hot spots in the cylinders.

4.6.5 Pre Take-off Checks

Trim	Set ½ turn from full aft (Anti-clockwise)
Throttle	This is on friction nut.
Mixture	Ensure fully rich.
Mags	Ensure both on
Fuel	Ensure on and sufficient
Flaps	Ensure Up
Gauges	Check for correct indications.
Gyros	None fitted on this a/c.
Hatches	Ensure both sides are closed and locked.
Harness	Tight. (Ensure inertia lock is locked)
Pitch	Fixed
Pump	Mechanical only, no indications.

4.6.6 First Flight

Before doing anything with this aircraft, check the fuel contents.

As you cannot take a safety pilot with you on your first flight, please take note of the following;

Once you have strapped yourself in, take some time to memorise the aircrafts attitude, note the angle of the wingtips to the ground and look out alongside the nose. If it rains this is the only view you will have as the windscreen becomes completely obscured when only slightly wet!

There is virtually no need to move the stick on take-off, the tail lifts automatically as the throttle is opened and if the stick is held balanced, the aircraft will lift smoothly off the ground. Remember to open the throttle slowly and smoothly. Adopt a climbing attitude that will give you an IAS of 70 kts. (80mph) Get used to using the kts scale (inner) on the ASI as glider pilots will always use this scale when requesting differing tow speeds. Throttle back a little if things are happening a little too quickly and climb to a safe manoeuvring height. Try a few turns and note the control loads, if the ball is not in the

middle you might feel a slight buffet, this is quite normal and can be corrected with the proper inputs.

The stall is pretty docile with no strong tendency to drop a wing and quickly recovers when the correct action is taken.

Fly the aircraft at different speeds and power settings to get the feel of things but remember, you must not exceed the maximum manoeuvring speed of 106 kts and the engine must not exceed 2575 rpm.

Return to the airfield when you are happy and join downwind as normal. Do your checks and only use carb heat if you are sure you need it.

Set up your approach, ensure that you are inside the white arc on the ASI and select full flap in two movements. You will note only a small change in trim, adjust for an approach speed of 75 kts initially. You will note a large nose down attitude but look at the wing if you need assurance, this tells you what you need to know and you **were** warned!

Slowly close the throttle, reduce your speed to 70 kts maintain your attitude to the flare and then bring the nose to the horizontal attitude and no higher. The aircraft will settle in a perfect three point attitude every time. This aircraft does not need the stick on the backstop and is very forgiving for a tail dragger.

You can reduce both of the above figures by 5 kts once you get familiar with the aircraft.

4.6.7 Towing Speeds

Most gliders are happy at 60 kts but some may require a little less if they are of the older variety and some may like a little more if they are of the newer (heavier) types.

The ASI on GC under reads by 5 kts when compared with the glider on the back. Here is a list of towing speeds to be used when towing PSGC gliders; this is the IAS as seen on the ASI in the tug;

Puchacz	65kts	Pirat	65kts
Grob	70kts	Astir	70kts

Regardless of the above, always give the glider pilot the speed he requests, there may be a training exercise going on at the back.

Engine failure – Best glide speed 65kts with flaps retracted. L/D is 1:7.

4.6.8 Descent Speeds

Once the glider has released, throttle back very slowly to 2,000 rpm whilst increasing speed to 90kts. Maintain 2000rpm/90kts all the way down to the upwind end of the

circuit, aiming to arrive at 1,000ft. Slowly level off whilst reducing power and airspeed so that base and final turn can be flown at 1,500rpm and 70kts. The rest of the approach and landing should be carried out as described elsewhere.

Rough Air Speed	108kts
Max Manoeuvring Speed	95kts
Normal Operating Limit	108kts
Never Exceed Speed	135kts
Flap Limiting Speed	95kts
Approach Speed	70kts

4.6.9 Shut Down

- Non-essentials off (Radio)
- Check for dead cut
- Stop using Mixture cut-off at 1,000rpm.
- Mags off
- Master off/Strobe off.
- Leave fuel on.

4.6.10 Revalidation and Renewal

SEP class ratings must be revalidated or renewed in accordance with JAR FCL1.

5 AIRCRAFT ACCIDENTS

In the event of an aircraft accident on or adjacent to the airfield, The Duty Instructor is to take control of the situation. If the Duty Instructor is airborne, the Duty Pilot is to take control until the Duty Instructor lands.

The list of actions below is not exhaustive and may need to be altered to fit the situation. It is a set of reminders for the Duty Instructor:

- a) Dial 999 and request the following Emergency Services:

Ambulance

Fire Brigade

Police.

- b) Direct first aiders and emergency equipment (the crash trailer) to the scene of the accident and people to give First Aid. Do not disturb wreckage beyond that required to effect rescue or give First Aid.
- c) Start a log of proceedings.
- d) Set up internal communications.
- e) Station someone at the telephone.
- f) Station a marshal at the main road to meet the Emergency Services and direct them to the incident.
- g) Telephone an Accident Report to:
1. CFI, Chairman
 2. AAIB – 01252 512299
 3. BGA Accident Investigators – 0116 2531051
- h) Gather information, ultimately to complete a BGA Accident Report Form.
- i) Statements to the press should only be made by the Chairman. Brief all Club Members not to provide details to the Press, TV or Radio.

Refer to the Accident & Incident Manual for full details covering all levels of incident. This Manual should be available, at all times that flying is taking place.

A. DUTY PILOT RESPONSIBILITIES

The following list is a reminder to Duty Pilots of the importance of their job to ensure the smooth and safe running of the field. The most important aspect, therefore, is to turn up, the duty rota goes out in plenty of time, so please if you can't make your day then arrange a swap.

At the start of the day, providing an instructor is present

- Gliders and tugs, once out of the hangars, need 'DI'ing, cleaning if required, parachutes and charged batteries putting into gliders etc.
- The fire vehicle needs to be available, with the keys in. All children are to be kept out of the vehicle unless an adult is present who is willing to accept responsibility.
- The fire extinguishers must be placed near but not too close to the fuel tank.
- Ensure that the Crowland Base radio is on, on the correct frequency (129.975Mhz is on Channel 2) and that the battery is fully charged.

Once flying commences, organize appropriate ground crew:

- help people into parachutes & gliders, and try to ensure that females help females.
- assist in control checks, collect and attach the rope, hold wings
- most important – use the radio to control all activities, especially launches, or nominate someone to do it for you. The tug pilot cannot see behind, especially in the Husky, the mirrors are all but useless and a forward signaller is dangerous.
- Organize the retrieval of gliders that have just landed.

Keep the flying log:

- This is really important – anyone flying must be a member or they're not insured. So if they are not on the member's list and are not flying on temporary membership they must fill in a Temporary Membership Form, even if a member of another club. At least then we have a contact address in case of emergency and can also contact them if they happen to leave without paying as sometimes happens.
- Welcome visitors to the field – everyone can help in this – first impressions can mean a lot!
- Assign people to gliders as per the flying list; introduce Trial Lessons and new instructional's to their instructor.
- Record the details of the flight including all occupants, find out who is P1, record the tug providing the launch, collect heights from the tug pilot when convenient.
- Work out the cost using height and glider time – tariffs are contained in Duty Pilots book. Enter the actual amount paid and by what method such as cheque, credit card etc and add your initials. In the case of BI flights this should either be a

ANNEX A – DUTY PILOT RESPONSIBILITIES

'Voucher', or 'Red Letter'. Ensure that all Vouchers and Red Letters and any cash payment is collected, especially on a busy day, before our visitors have their flights.

- Basic Instruction – the costs of these flights have been calculated based on the launch fee, the flight duration, a month's membership and hopefully some profit for the club. If the flight exceeds the normal height/time it is the Instructor who is liable for the extra cost. Therefore for tow heights in excess of 2,500 ft or a flight duration of more than 30 minutes, in a club glider, the Instructor should be charged.
- On completion of the Basic Instruction flight, provide the visitor with a certificate signed by the Instructor and also a temporary membership card, valid for two month's, hopefully if you have done your job well they might come back.

On completion of flying all aircraft need packing away, tugs refuelled, parachutes returned to cabinet in workshop, batteries removed and placed on charge. Reminder to everyone - please don't leave the job of putting aircraft away to the same people.

Final job for the duty pilot – ensure all money is collected in and given to the Treasurer, alternatively place in the safe.

B. CROSS COUNTRY BRIEFING NOTES

The time for cross country flying comes round every year and some people are not always prepared, so here are as many points as possible to help you prepare and carry out the task. These notes are meant as guidance to cross country pilots.

THE TRAILER

- Is it roadworthy, good spare tyre, lights working?
- Is the correct number plate on it?
- Are all the rigging/derigging aids on board?
- Who has the trailer key?
- Retrieve crew organized, who has the car keys?
- Closed up and ready to go.

THE GLIDER

- D.I. completed.
- All batteries installed and electric instruments checked.
- ARC in date.
- Seat, pedals, ballast, parachute and cushions adjusted for **you**.

THE KIT

- Current chart marked up with the task. (1/2 million recommended for task navigation - 1/4 million if you have to!)
- NOTAMs checked?
- Radio - frequencies for en route airfields etc.
- GPS - Is Crowland Lat/Long in it for final glide?
- Landing out form?
- Copy of insurance document - useful if an unfriendly farmer is encountered.
- Mobile phone battery charged? Club telephone number? Retrieve driver's mobile number?
- Change for the phone if no mobile and money for drinks/bribes etc.
- Flight recorder (EW etc) battery checked, previous log cleared, switched on. Linked to GPS?
- Drink - non-sparkling and vented - stowed.
- Sweets/sandwiches - chocolate is not a good idea.

ANNEX B – CROSS COUNTRY BRIEFING NOTES

- Sun hat - no peaked hats.
- Long sleeved shirt and long trousers - it gets cold under clouds and at height.
- Sunglasses?
- Leak proof plastic bag - it has two uses.
- Portable radios/ipods etc are **not** recommended.

THE PILOT

- Feeling good - If you don't feel well, don't do it!
- Visit the loo - a few hours from now you will wish you had!
- Sunscreen on face and hands.
- Duty Instructor/Duty Pilot informed of your intentions?

YOU ARE READY TO ROLL

It doesn't matter whether it is a Silver attempt or a Diamond run, all of the above apply to you!

C. USE OF RETRIEVE VEHICLES

- 1 PSGC retrieve vehicles may only be driven by members of PSGC.
- 2 PSGC members below the age of 17 may only drive the retrieve vehicles, with written permission from their parent or guardian.
- 3 No person under 14 years old is permitted to drive a retrieve vehicle.
- 4 No person shall drive a retrieve vehicle without first receiving instruction on it's safe operation. (Instruction may be given by any competent person familiar with club operations).
- 5 No child may be carried in the rear of a PSGC Retrieve Vehicle at any time.
- 6 It is the responsibility of the driver of the retrieve vehicle to ensure that it is operated in a safe and professional manner at all times.
- 7 The retrieve driver is to take his/her instructions from the person in charge of the glider being retrieved, bearing in mind Item 6.
- 8 PSGC retrieve vehicles are only to be used on club business, not as personal transport around the airfield.
- 9 PSGC retrieve vehicles are also designated as crash/rescue vehicles; they may be needed in a hurry so **never** remove the keys whilst there is flying in progress.

When private vehicles are being used for retrieve purposes, please ensure that the radio etc. is off, the windows are open and that the towrope is fit for purpose. (i.e. long enough and fitted with a suitable ring).

SAFETY NOTES

When driving **any** vehicle for retrieve purposes you are entering an active runway and are presenting a potential danger to aircraft and gliders that are landing **and** taking off.

A good **lookout** at all times is essential and you must **not** allow yourself to be distracted from the task in hand.

Always check every direction of every runway for traffic movement before entering or crossing.

Stay to the side of any runway and cross at right angles when necessary.

LOOKOUT – LOOKOUT – LOOKOUT – LOOKOUT – LOOKOUT